

**From start to finish:
Examining the interplay of reasoned action theory
and constructivism as they mutually inform
an instructional development effort**

Richard C. Goldsworthy

Dissertation
submitted to the faculty of the University Graduate School
in partial fulfillment of the requirements
for the degree
Doctor of Philosophy
Instructional Systems Technology, School of Education
Indiana University

May 2007

ACCEPTANCE

Accepted by the Graduate Faculty, Indiana University,
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy.

Doctoral Committee

Thomas M. Duffy, Ph.D.

Ken Kelley, Ph.D.

David G. Marrero, Ph.D.

Martin Fishbein, Ph.D.

Candidate: Richard Goldsworthy

Title: From Start to Finish:
Integrating Reasoned Action Theory and Constructivism to
Inform Development of Instructional Interventions

Oral Examination Date: May 7, 2007

COPYRIGHT

© 2007

Richard C. Goldsworthy

ALL RIGHTS RESERVED

DEDICATION

This work is dedicated to my loving wife and family, to whom I am deeply thankful for their ongoing patience, understanding, and support, and to my parents, who raised me to question everything and to always provide (at least) “five good reasons.”

ACKNOWLEDGMENTS

I would like to thank the members of my committee, Marty Fishbein, Ken Kelley, and David Marrero for their support and assistance throughout the research effort. I am especially grateful to my research chair and advisor, Tom Duffy, for his acumen, candor, and continual prodding. He represents the proverbial gadfly in my research career to date and his effects on my life and scholarship will extend well beyond the time we have spent together. Nancy Schwartz provided much needed editorial assistance, kibitzing, and moral support.

Any errors, omissions, or fallacious arguments that remain are, of course, my own.

ABSTRACT

This effort examined the interplay of reasoned action theory and constructivist epistemology as they mutually inform an instructional development effort to decrease the prevalence of pressure ulcers and their associated sequelae in home health care.

The effort is framed by the point of view, drawn from health behavior theory, that, barring external barriers, behavior occurs when people know what to do, know how to do it, and, in fact, want to do it. Moreover, in terms of wanting to do something, behavior can be predicted from people's intentions to engage in the behavior, attitudes toward the behavior, perceived norms regarding the behavior, and perceived control over the behavior.

This framework becomes richer when behavior and behavioral change are considered from an epistemological perspective that views individuals as active makers of meaning, as creators of personal stories. These dynamic personal narratives are influenced by experience and in turn influence interpretation of experience; they guide behavior, and they provide an explanation for it. From this perspective, for behavior to be understood, and behavior change to be fostered, researchers and developers need to find ways to understand, connect with, and influence personal narratives.

Guided by reasoned action theory, beliefs and associated psychosocial constructs regarding pressure ulcer preventive care were determined through elicitation and survey studies among home healthcare providers. This data, along with factual and procedural objectives identified in conjunction with subject matter experts, was used within a constructivist framework to inform the design of an instructional video. The video was evaluated in a between-within design with multiple dependent variables. Significant differences in learning were observed, with those viewing the video demonstrating greater gains on measures of knowledge, on multivariate composite of psychosocial variables, and on perceived control. No differences in intentions, attitudes, or perceived

norms were observed. Those viewing the video rated it highly on measures of consumer satisfaction.

The results of each stage of the effort are discussed individually and overall. The roles of reasoned action theory and the constructivist epistemological framework are discussed individually and as they mutually affect one another. Implications for other instructional intervention efforts are drawn.

TABLE OF CONTENTS

Acceptance	ii
Copyright	iii
Dedication	iv
Acknowledgments	v
Abstract	vi
Table of Contents	viii
Table of Figures	xii
Table of Tables	xiii
Chapter 1 Introduction	1
Overview of Remaining Chapters	9
Chapter 2 Background and Significance	12
Reasoned Action Theories	14
The Theory of Reasoned Action	15
The Theory of Planned Behavior	16
The Integrative Model of Behavioral Prediction	17
Applying the Models	19
Application of TRA/TPB for Description/Prediction	21
Meta-Analyses	22
Previous Studies	24
Applications of TRA/TPB to Development of Interventions	31
Development Cycles	32
The Role of Reasoned Action Theories	35
Previous Studies	36
Framing Theories	43
Constructivism	44
Narrative Mode	45
Authenticity	47
Scaffolding	49
Summary	56
Chapter 3 The Delineation of Content	57
Cycle 1: Preliminary Generation	58
Cycle 2: Specification Refinement	59
Elicitation Stage: Identification of Beliefs	68
Participants	69
Measures	69
Behavioral beliefs	70
Normative influences	70
Control beliefs	70
Procedures	71
Analysis	71
Results	72
Survey Stage: Beliefs and Attitudes Survey	80
Participants	80
Measures	81
Direct Attitude	83

Behavioral beliefs.....	83
Direct Subjective Norm.....	84
Normative beliefs.....	84
Direct Perceived Control.....	85
Control beliefs.....	85
Intention.....	85
Scale Construction.....	86
Direct indices.....	86
Weighted beliefs.....	87
Indirect indices.....	87
Analysis and Results.....	88
Correlation analysis.....	90
Direct determinant regression analysis.....	90
Individual belief regression.....	91
Descriptive and bivariate analyses.....	93
Discussion.....	102
Conclusion.....	104
Chapter 4 design and production of the video.....	106
Introduction.....	106
Identification of Content Objectives.....	107
The Design of Pressure Ulcer Prevention Instructional Materials.....	109
External Influences.....	109
Theoretical Influences.....	109
Narrative Mode: Understanding through Story (re)Construction.....	111
Vicarious Experience: From Story Arc to Plot Events.....	111
Story arc.....	112
Plot events.....	113
Authenticity.....	115
Authentic portrayal of characters.....	115
Authentic depiction of tasks.....	117
Authentic representation of environments.....	118
Scaffolding: From point A to point B?.....	119
Organization.....	119
Modeling.....	120
Mentoring.....	120
Other Design Considerations.....	121
Final Product.....	122
Chapter 5 evaluation of the impact of the video.....	124
Research Questions.....	125
Research Design.....	126
Participants.....	127
Procedures.....	132
Materials.....	133
Instructional Video.....	133
Data Collection Instruments.....	134
Distal Variables (knowSomeone, numClients, yrsField, jobSatis).....	135

Knowledge.....	135
Intention (INTD).....	136
Attitudes and Behavioral Beliefs.....	136
Attitude-Direct (ATTD).....	136
Behavioral beliefs (BBx).....	136
Attitude-Indirect (ATTI).....	138
Subjective Norm and Normative Beliefs.....	138
Subjective Norm-Direct (SND).....	138
Normative Beliefs (NBx).....	138
Subjective Norm-Indirect (SNI).....	139
Perceived Control and Control Beliefs.....	139
Perceived Control-Direct (PBCD).....	140
Control Beliefs (CBx).....	140
Perceived Control-Indirect (PBCI).....	141
Consumer Satisfaction (Experimental Group Only, Post-only).....	141
Analysis.....	142
Initial Analysis.....	143
Changes in Knowledge.....	143
Changes in Attitude, Subjective Norm, Perceived Control, and Intentions.....	143
Analysis of Consumer Satisfaction.....	144
Power.....	145
Results.....	151
Examination of Variables.....	151
Knowledge.....	155
Multivariate Composite of Psychosocial Variables.....	158
Consumer Satisfaction.....	167
Usability and Usefulness Scale.....	167
Perceived Value of Proposed Components.....	168
Training Preferences.....	169
Open-ended Feedback.....	169
Useful aspects.....	170
Not-so-useful aspects.....	170
Things to add or change.....	173
Discussion.....	174
“Knowledge”.....	174
Intentions, Attitudes, Subjective Norm, and Perceived Control.....	178
Consumer Satisfaction.....	181
Limitations of the study.....	182
Conclusion.....	186
Chapter 6 overall discussion.....	187
Summary.....	187
So, (now) What?.....	191
Reasoned Action Theory.....	194
When Should the Theory Be Used?.....	195
How Should the Theory Be Used?.....	203
What Are the Costs?.....	207

Constructivism.....	208
Integration of Narrative	209
Tension between Engagement and Learning.....	211
Consideration of “Attitude”	212
Reasoned Action Theory and Constructivism Together	213
Conclusion.....	218
References	219
Appendix A: Protocols and Instruments for All Study Phases	228
Appendix B: Scripts and Screen Shots	283

TABLE OF FIGURES

Figure 1: The Theory of Reasoned Action (Ajzen & Fishbein, 1980)..... 16
Figure 2: The Theory of Planned Behavior (Ajzen, 1991).....17
Figure 3: Fishbein's Integrative Behavioral Prediction Model (Fishbein, 2000). 18
Figure 4: An iterative, six cycle development process. 33
Figure 5: Reasoned Action Theory Applied to Present Project..... 62
Figure 6: Health behavioral model as applied to home health aides 63
Figure 7: Independent models of prevent and monitor behaviors 89
Figure 8: Regression model at Pretest 154
Figure 9: Mean Knowledge, Group x Occasion..... 156
Figure 10: Mean Intentions, Group x Occasion..... 162
Figure 11: Mean Attitudes, Group x Occasion..... 162
Figure 12: Mean Subj. Norm, Group x Occasion 162
Figure 13: Mean Perc. Control, Group x Occasion 162

TABLE OF TABLES

Table 1.	Themes Related to Attitudes and Behavioral Beliefs.....	73
Table 2.	Themes Related to Subjective Norm and Normative Influences	74
Table 3.	Themes Related to Perceived Control and Control Beliefs.....	76
Table 4.	Comprehensive List of Beliefs For Survey Development	79
Table 5.	Descriptive statistics for collapsed psychosocial constructs at survey.....	89
Table 6.	Correlations For Behavioral Beliefs with Intent	96
Table 7.	Correlations For Normative Influences with Intent	97
Table 8.	Correlations For Perceived Control Beliefs with Intent	101
Table 9.	Sequence for Preventing Pressure Ulcers Video	123
Table 10.	Types of Hands-On Care Provided	130
Table 11.	Mean(SD) of Primary Study Variables at Pretest, By Group.....	152
Table 12.	Descriptive Statistics for Individual Items.....	153
Table 13.	Correlation Matrix: Psychosocial Variables at Pretest	154
Table 14.	Within-Subjects Effects for RM ANCOVA (DV=Knowledge).....	155
Table 15.	Between-Subjects Effects for RM ANCOVA (DV=Knowledge)	155
Table 16.	Unadjusted Mean (SD) and Adjusted Mean (SD) Values	156
Table 17.	Proportion of Correct Responses for Individual Knowledge Items	158
Table 18.	Repeated Measures Multivariate Analysis of Covariance.....	159
Table 19.	Within-Subjects Univariate ANOVAs for RM MANCOVA.....	160
Table 20.	Between-Subjects Univariate ANOVAs for RM MANCOVA	161
Table 21.	Unadjusted Mean (SD) and Adjusted Mean (SD) Values.....	162
Table 22.	Descriptive Statistics for Behavioral Beliefs	164
Table 23.	Descriptive Statistics for Normative Beliefs.....	165
Table 24.	Descriptive Statistics for Control Beliefs.....	166
Table 25.	Ratings of Usefulness and Usability (Post test, Experimental Group)	168
Table 26.	Perception of “Newness” of Material Presented	168
Table 27.	Perceived Need for Additional Components.....	169
Table 28.	Ratings of Various Types of Training Modalities.....	169

CHAPTER 1

INTRODUCTION

Numerous theories of behavior and behavioral change with longstanding research programs behind them are utilized by health behavior researchers and professionals for describing and predicting personal and social factors related to behavior. These theories, which focus specifically on understanding, predicting, and, in the case of change theories, modifying personal behaviors, offer a significant source of information for the development of educational interventions in a number of fields. However, little research to date within the instructional design, educational development, or learning sciences fields has examined the use of such theories to inform educational development and evaluation. There appears to be an opportunity for disciplinary cross-fertilization.

One strand of health behavior research that addresses behavior and behavioral adoption is the reasoned action theories of health behavior, such as the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Together, these reasoned action theories represent a well-researched, well-established approach to understanding, describing, and predicting health-related behavior (c.f., Ajzen, 1991; Ajzen & Fishbein, 1980; Armitage & Conner, 2001; Sheppard, Hartwick, & Warshaw, 1988). The theories suggest that people's actions can be predicted based upon knowledge of their intentions. That is, if people intend to do something, then they usually do it, unless something prevents them from doing so. The theories also posit that such intentions can be predicted reasonably well if a person's beliefs about the consequences of performing the action, about what other people think about the action, and about things that make it easier or harder to do the action, are known.

These theories, therefore, suggest a four part model for understanding why people act the way they do in relation to specific behaviors. People's specific beliefs are

associated with their attitudes toward the behavior, their perceptions regarding how others feel about the behavior, and their perceptions of whether the behavior is something they are able to do. These attitudes, perceived norms, and perceptions of control are associated with people's intentions to engage in a behavior, and, finally, intentions to engage in a behavior are associated with actual engagement in the behavior. The three interrelated links in the chain between these four parts of the model are *specific beliefs <-> attitudes, perceived norms, and perceptions of control <-> intentions <-> behavior*.¹ By using theoretical constructs to illuminate the ways in which specific beliefs interact to affect intended behavior(s), the reasoned action theories provide information of value not only for predicting behaviors but also for changing them. This model should be useful for informing any type of focused intervention, including the design of instruction.

A small, but growing, number of studies in the health communications field have in fact drawn upon different aspects of the reasoned action theories to identify specific beliefs to be targeted within interventions designed to foster adoption of desirable behaviors and discontinuation of undesirable ones (e.g., Conner & Norman, 1995; Fishbein & Middlestadt, 1987; Fishbein & Yzer, 2003; von Haefen, Fishbein, Kasprzyk, & Montano, 2001). Fishbein, for example, proposed an integrative behavioral prediction model as an extension of the TRA/TPB and suggested its use for guiding the development of intervention materials (2000). Proposed methods for model use (Fishbein & Yzer, 2003; von Haefen et al., 2001) and evidence of their potential efficacy also exist (e.g. Fishbein, von Haefen, & Appleyard, 2001; von Haefen et al., 2001).

¹ This is not, strictly speaking, accurate. For the most part, reasoned action theory focuses solely on the forward directional chains (specific beliefs lead to intentions), although there is nothing in the theories that preclude attention to the reciprocal effect (i.e. forming an intention may lead to changes in specific beliefs). Additionally, specific beliefs directly influence intentions and the psychosocial constructs serve, in actuality, as useful proxies for various types of beliefs.

These studies represent important steps toward integrating the theories within the development and evaluation of instructional activities, materials, and interventions.

Although these studies have been described as guiding *development*, they are perhaps more accurately considered as guiding *content specification*. The theories provide guidance regarding how to identify the beliefs that are to be targeted within education and intervention efforts; they are, however, generally quiet on issues of how to develop interventions that change or reinforce those beliefs. That is, although the theories identify *content* to be incorporated within an intervention, i.e. the specific belief “targets,” they do not provide guidance regarding the *design* of interventions to address those targets. They do not answer the question: what should the intervention look like and why? Therefore, even though the underlying theories are sometimes referred to as health behavioral *change* theories, they are more accurately conceived of as health behavioral theories—theories that yield information regarding health behaviors but not, directly, about how to design interventions to change those behaviors.²

On the other hand, many learning and instructional design theories specify processes for developing interventions; provide theoretical frameworks for considering what it means to understand, to behave, to learn, and to educate; and suggest strategies that should be effective within such frameworks. Therefore, a careful examination of the use of reasoned action theory to identify beliefs to be targeted within intervention efforts and the use of learning theory to design interventions to change or reinforce those beliefs (in an effort to ultimately affect desired behaviors) appears worthwhile.

² Although the reasoned action theories do not perform these functions, it should be noted that there is an extensive literature in the health communications field that addresses theories and strategies that do perform these functions. Here, however, the focus is on how an epistemological framework and a health behavioral theory mutually inform instructional development. It should also be noted here that reasoned action theories, while used most commonly in health behavior and sometimes referred to as health behavioral theories herein, have also been applied to a wide range of areas, from voting behavior to professional development.

Interventions come in a wide variety of forms. Some may be instructional, such as presentations and group activities; others may be non-instructional, such as performance support tools, policy making, and organizational change. The present effort focuses on instructional interventions. Instructional programs, and the researchers and designers who produce them, always bring with them a perspective, if only tacit, of what it means to understand something (an epistemology), how such understanding changes over time and in response to experience (a learning theory), and the processes that might foster such changes in understanding (an instructional theory and instructional strategies). Similarly, health behavior change efforts rely, again often tacitly, on theories of behavior and of behavioral change: why does behavior occur, what factors play a role in whether an individual will behave in a particular way given a particular situation and a particular setting, and how might behavioral change be fostered?

Epistemologically and pedagogically the present effort is grounded in a view of understanding and learning that considers the person as a maker of meaning, an editor of his or her own personal, always changing, narrative (Bruner, 1990). The self, from this point of view, is a transactional self which creates and is created by experience (Barab & Duffy, 2000; Bruner, 1985, 1986, 1996; Dennett, 1987, 1991). Experience in general and learning in particular are active processes, then, in which people construct meaning based upon their enculturated and embodied interpretations of their experiences (c.f. Barab & Duffy, 2000; Bruner, 1986; Dennett, 1989, 1991, 1998; Duffy & Jonassen, 1992; Heidegger, 1962; Vygotsky, 1978; Wittgenstein, 1968). Such meaning making occurs within the framework of a person's own story of self, negotiated through language (Bruner, 1961, 1990, 1996). This ever-evolving narrative influences, and is influenced by, interpretation of experiences; it informs, and is informed by, behavior; and it explains, to one's self and to others, why behavior occurred. This perspective has implications for

how learning is conceptualized and how learning may be facilitated. Such implications are important to the design of health education and behavior change interventions.

The purpose of the research effort described here is two-fold: (1) to examine how a particular health behavior theory can be used to identify the psychosocial objectives and *content* for instructional materials and activities and (2) to examine the implications of a particular epistemological theory for the *design* of the instructional materials to target the identified content and objectives.

Examination of the interplay of these theories is perhaps best considered in the context of use. The present research therefore considers the use of a specific socio-cognitive model of behavior, reasoned action theory, and a specific epistemological framework, constructivism, to inform the development of educational materials for home health aides. Reasoned action theory is used to identify the beliefs that underlie the attitudes, perceived norms, and perceptions of control that are significantly correlated with intentions to engage in the target behaviors. Instilling, changing, or reinforcing these beliefs become objectives of an educational effort. The constructivist theoretical perspective is then used to guide the design of instructional materials that incorporate these psychosocial objectives, along with factual and procedural objectives. For the present effort, the specific outcome, context, and behavior selected is the reduction of pressure ulcer formation and sequelae in home care settings by increasing effective performance of pressure ulcer monitoring and prevention practices by home health care providers.

Pressure ulcer prevention among home health aides was selected for the present effort for three primary reasons: prevention of pressure ulcers has been identified by the federal government as an area of public health importance; this is a health-related professional behavior to which health behavioral theories can reasonably be applied; and the researchers have received support from the National Institutes of Health to produce

materials related to these prevention efforts. Ongoing efforts to understand and improve pressure ulcer prevention practices therefore afforded an opportunity to examine the use of health behavior theory to inform the design, development, and evaluation of instructional materials.

The instructional intervention is a video that introduces fundamental information about pressure ulcer formation and prevention; addresses behavioral, normative, and control beliefs related to adoption of pressure ulcer prevention practices; and demonstrates the skills necessary to perform these behaviors. Development of the instructional video was driven by an iterative six-stage instructional design process, from preliminary brainstorming and analysis through production to evaluation. Factual and procedural content decisions were guided by subject-matter expert input and review; behavior change content decisions were guided by constructs and processes drawn from reasoned action theory; and design decisions were informed by constructivism.

The overarching research effort, therefore, applies the health behavior and epistemological theories to the prevention of pressure ulcers by home healthcare aides and answers the questions: What factors affect home healthcare providers' engagement in prevention behaviors? What educational messages and materials might support engagement, and do such materials lead to predicted changes in target outcomes, including knowledge, attitudes, perceived norms, perceived control, and intentions?

The questions were answered through four stages of research:

1. an elicitation stage during which target audience members were interviewed in order to identify positive and negative beliefs associated with pressure ulcer prevention activities. The beliefs were coded. Summary frequency counts were generated. Additional beliefs were identified through interviews with subject matter experts and through

review of literature that addressed similar target audiences with similar target behaviors.

2. a survey stage in which the beliefs identified during the elicitation stage were used to develop a survey instrument based on the constructs and methodologies of reasoned action theory. Home healthcare aides were recruited to complete the surveys. The purpose of this stage was two-fold: to develop a parsimonious statistical model of pressure ulcer prevention intentions, attitudes, perceived norms, perceived control, and associated beliefs among home health care workers and to identify other beliefs that may be important for reinforcing and changing pressure ulcer prevention intentions and behaviors but which are not initially the most efficient predictors of intentions to engage in prevention. The first goal was achieved through a series of regression analyses. The second goal was met through correlation analyses of intentions, attitudes, subjective norms, perceived behavior control, and the individual belief items associated with these constructs. This information was then used to guide selection of beliefs to be targeted in instructional materials.
3. a design and production stage during which results from the survey stage were combined with procedural and factual information to produce an educational video. This video, designed through established instructional design and production processes, introduces factual and procedural information while simultaneously addressing identified negative beliefs and reinforcing positive ones. The content for the video is presented as a story, with a narrator, a cast of characters, a chief protagonist, and a plot which takes the protagonist on a quest for greater understanding. This format aligns with constructivist theories that view understanding as an

always ongoing act of story crafting—a continuous effort to make sense of the ever changing world. In addition to framing the content in narrative form, health communication and instructional strategies which align with the constructivist perspective were used. These include authenticity, modeling (vicarious experience), and scaffolding.

4. an evaluation stage during which data gathered before and after a group of home health care aides participated either in the experimental condition (watching the video on pressure ulcer preventive care) or control condition was analyzed to assess changes in knowledge, attitudes, perceived norms, perception of control, and intentions. Skilled performance and in situ behavior were not assessed. Consumer satisfaction data were gathered.

The study makes several contributions to related fields and the public good. Overall, the study examines what benefits are gained from linkage between health behavior and instructional design disciplines and, in particular, what opportunities for synergy exist between two particular theories: reasoned action theory and constructivism. Along the way, the study makes several related contributions. First, the study integrates, from a particular epistemological and pedagogical perspective, a reasoned action approach to understanding behavior, and examines the results, both process and outcome, of the integration. Second, the first three stages of the effort yielded a model of home healthcare providers' beliefs, attitudes, perceived norms, perceived control, and other influences related to pressure ulcer prevention. This model, by itself, is of use to researchers and public health educators. Such a model can foster a better understanding of home health aide beliefs and intentions, an area with little literature to date. Third, the model was used to inform design and development of an instructional video on pressure ulcer prevention. The availability of such a video may

improve public health outcomes, especially pressure ulcer incidence and sequelae in home health care settings. Finally, implications for similar health behavior instructional efforts are drawn from the process and outcomes. These implications may assist other designers and intervention developers to create more effective programs.

Overview of Remaining Chapters

Chapter 2 begins with a summary of the effort and the fields from which the project draws its foundations. A health behavioral framework that considers behavior to be the outcome of three primary factors—knowledge of a behavior, attitudes concerning that behavior, and the skills necessary to perform the behavior—is then introduced. Within this framework, one family of health behavior theories that focuses on psychosocial determinants of behavior is represented by the Theory of Reasoned Action, the Theory of Planned Behavior, and the integrative theory of behavioral prediction. The chapter specifically describes the purpose and theoretical foundations of these reasoned action theories and distinguishes them from health behavioral change theories. Application of the theories to behavioral description and prediction is canvassed along with criticisms and limitations. Next, various applications of reasoned action theories to intervention development are described, with several examples discussed in detail. Finally, a view of learning as an ongoing act of personal story construction, or meaning making, is presented in order to provide an epistemological and pedagogical framework for the entire effort. Educational implications of this view are delineated.

Chapter 3 shifts attention to a particular behavior, preventing pressure ulcers, and a specific target audience, home health aides. The nature of pressure ulcers, previously published work related to prevention of pressure ulcers, and findings relevant to the provision of care by home health care workers are discussed. The chapter then addresses the specification of factual, procedural, and psychosocial content, with

particular attention to the latter. A series of research studies that used reasoned action theory to identify beliefs for inclusion in the instructional intervention are presented.

Chapter 4 discusses the design and production of the instructional video. The chapter explains the way specific strategies drawn from the constructivist framework were used to inform design of an educational video to address the factual, procedural, and affective content derived from the research activities presented in chapter 3. The production process is briefly discussed, and the final materials are described in detail.

Chapter 5 describes an evaluation of the pressure ulcer prevention media. The study is a two (Group) by two (Occasion) randomized, controlled field trial with data gathered prior to and immediately following an intervention (n=63). Analysis proceeded in seven phases. First, descriptive and zero-order correlation statistics were generated and examined. Second, repeated measures univariate analysis of co-variance (RM-ANCOVA) was conducted to determine whether there were interaction effects (Group by Occasion) and main effects (Group, Occasion) on a measure of knowledge. Third, repeated measures multivariate analysis of co-variance (RM-MANCOVA) was conducted to determine whether there were interaction effects (Group by Occasion) and main effects (Group, Occasion) on the multivariate composite of four dependent psychosocial variables: Attitudes, Subjective Norm, Perceived Control, and Intentions. Fourth, significant effects observed in the multivariate analysis series were further examined through follow up repeated measures univariate analysis of co-variance (RM-ANCOVA) tests. Fifth, identified significant differences were investigated with post-hoc comparisons. Sixth, for direct indices for which significant differences were observed, individual salient beliefs associated with those constructs were examined individually via RM-ANCOVA. The covariates for each of the applicable analyses above were (1) prior experience with ulcers on the job, (2) knowing anyone who has developed an ulcer, (3) job satisfaction, and (4) years in field. Seventh, descriptive statistics for the consumer

satisfaction data for the experimental group were generated and tested against experimentally hypothesized benchmark values. The results for each analysis are presented and discussed.

Chapter 6 discusses the overall results of the research effort and delineates implications for behavioral change and instructional development efforts.

CHAPTER 2

BACKGROUND AND SIGNIFICANCE

When creating educational materials and activities, instructional designers should address not only the skills and knowledge requisite to performance but also psychosocial factors, such as intentions to engage in the behavior of interest and attitudes toward that behavior, that may increase the likelihood of such performance. Although the need to address these psychosocial factors may seem self-evident, instructional developers, when they consider such “attitudes” at all, tend to consider them in reference to motivation toward learning or as a supportive function of learning something else (see Simonson & Maushak, 1996). Whether this omission stems from a lack of structured methodological tools for considering such issues or from a theoretical blind spot in designers’ perspectives on instructional development is unknown and likely varies with each situation. However, in the case of the former, there are tools from other fields that can be used to inform the inclusion of beliefs in educational and interventional efforts in order to achieve more effective and holistic instructional programs and activities. Health behavior and health behavior change theories represent one such repository of tools. Within this repository, reasoned action theories, such as the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB), are one sociocognitive approach to understanding and predicting behavior. Such reasoned action theories have a substantial literature behind them. The application of such theories to instructional development appears worthwhile.

These theories have, however, seldom been used to inform the development of interventions, particularly instructional efforts, and when they have been so used, they are rarely integrated within the entire development process, from design to evaluation. Their use is usually limited to some form of summative evaluation of “attitudes” after instructional efforts. More recently, the reasoned action theories have been suggested for

use in the design stages of an intervention, and fairly specific proposals have emerged for such use. However, few studies have examined use during both design and evaluation. The use of an instructional design process to clearly delineate the stages of design and development provides a means for considering the coherent and consistent application of reasoned action theories throughout the various stages of instructional development. Furthermore, while the theories of reasoned action provide guidance regarding the psychosocial content of a change effort, the theories do not provide guidance as to how to address this content. Instructional and communications theories and strategies can provide such guidance.

Instructional theories and strategies are rooted within a framework of epistemological, learning, and behavioral theories. That is, intervention designers always carry with them a particular view of what it means to understand, how changes in understanding occur, and how changes in behavior occur. These views may not always be overtly held; however, they nonetheless provide a flavor, a tenor, to the intervention efforts that emerge. Reflectively considering, during practice, how one's views of understanding and learning affect the design of emerging interventions should serve to strengthen the theoretical foundations of those interventions. For the present effort, a constructivist epistemological stance is used as a lens for considering the process through which understanding develops and for considering the implications of this process for learning and behavior.

In order to provide a context for considering the interplay of reasoned action theory, instructional development processes, and the constructivist theoretical framework, this present effort applies these constituent theories and processes to the design and evaluation of media targeting the increase of pressure ulcer prevention behaviors among home healthcare providers.

Reasoned Action Theories:

Theory of Reasoned Action, Theory of Planned Behavior,
and the Integrative Theory of Behavioral Prediction

Social cognition models are one way to understand, predict, and modify behavior. These models consider particular behaviors as the result of sociocognitive antecedents (Conner & Norman, 1995). Knowledge, beliefs, attitudes, perceptions, and norms are the cognitive factors frequently posited to be at play in decision-making processes regarding engagement in or avoidance of target behaviors. Social cognition models consider these cognitive factors as intervening between “observable stimuli and responses in specific real world situations;” (Conner & Norman, 1995, p. 5) they are, that is, the lenses through which people make sense of the real world.

Reasoned action theories are a specific family of social cognition models that have been applied to a broad range of behaviors, including voting, occupational choices, and family planning (c.f. Ajzen & Fishbein, 1980), and continue to be applied to a wide range of behaviors today; however, the theories are presently most often associated with health behavior. In general, research that has applied reasoned action models conceptualizes health behavior, individual habits, and professional practice as occurring through a logical sequence of constructs (Fishbein, 2000). This sequence has three levels (Ajzen & Fishbein, 1980; Conner & Norman, 1995). At level 1, behavior is posited to substantially reflect behavioral intentions. At level 2, behavioral intentions are considered to be the result of attitudes, perceived norms, and perceptions of control regarding the behavior itself. Finally, at level 3, these attitudes, perceived norms, and perceptions of control are predicated upon specific beliefs regarding engagement in the behavior.

Specific beliefs, in reasoned action theories, typically are considered from an expectancy-value framework in which a belief is composed of two components: an

evaluation and an expectancy (Fishbein & Ajzen, 1975). These two components capture the sense that for beliefs to have an impact on intentions (and behavior), they not only have to have a positive or negative valence but also a likelihood of impact. That is, someone may think that a particular outcome is very bad, for example being diagnosed with brain cancer; however, they may also believe the likelihood of that outcome occurring for a particular behavior, for example, playing basketball, may be very slim. The joint impact of these factors, value and expectancy, determine the influence that specific beliefs may have for particular individuals, in particular settings, and in respect to particular behaviors.

To date, there have been three primary frameworks associated with reasoned action theories: the Theory of Reasoned Action (Ajzen & Fishbein, 1980), the Theory of Planned Behavior (Ajzen, 1991), and the integrative theory of behavioral prediction (Fishbein, 2000).

The Theory of Reasoned Action

According to the Theory of Reasoned Action, intentions, and, indirectly, behavior itself, are largely under the control of two constructs: attitude and subjective norm (Ajzen & Fishbein, 1980). Attitude toward a behavior is how an individual broadly thinks and feels about the specific target behavior(s). These behavioral attitudes are associated with specific beliefs about the behavior itself and with beliefs about the outcomes of engaging in the behavior. Subjective norm is an individual's general perception of what others think regarding the behavior. Subjective norm is grounded in normative influences—those people or organizations whose opinions are important to the individual. These opinions influence the individual's intent to engage in the behavior. Subjective norm, then, can be thought of as the social pressure to engage or not engage

in a behavior. The model for the TRA, then, is from individual beliefs, through attitude and subjective norm, through intention, to behavior, as depicted in Figure 1.

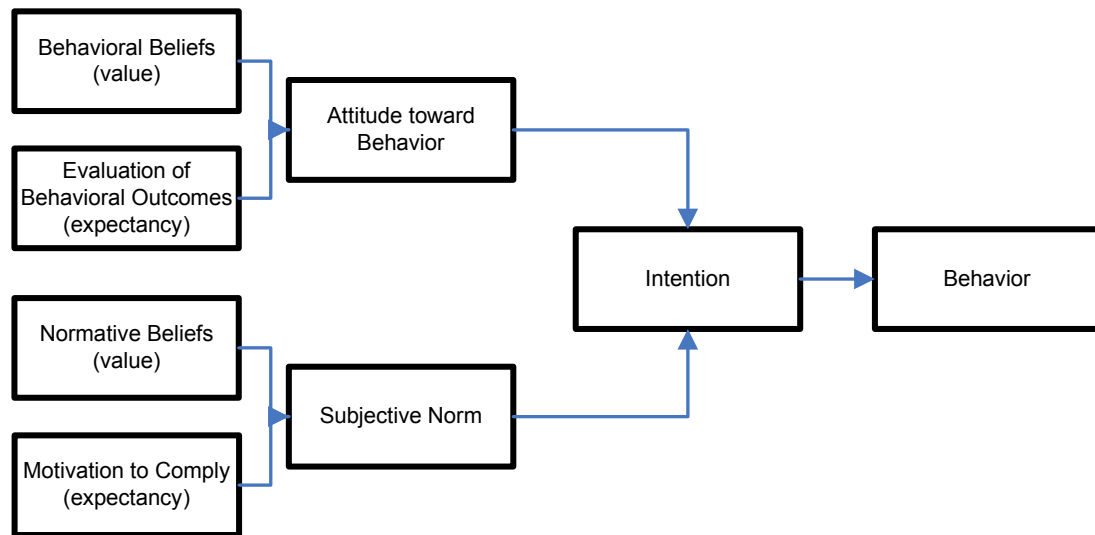


Figure 1: The Theory of Reasoned Action (Ajzen & Fishbein, 1980).

The Theory of Planned Behavior

The construct of “perceived behavioral control” (PBC) was added to the TRA by Ajzen to capture factors influencing behavior that were either omitted in applications of the TRA or were subsumed within the attitudes/behavioral beliefs constructs. This addition of PBC led to the formulation of the Theory of Planned Behavior, as distinct from the Theory of Reasoned Action. As depicted in Figure 2, perceived behavioral control, in TPB, is postulated to predict behavioral intention (and indirectly, therefore, behavior itself), as attitudes and subjective norms do; however, PBC is also posited to directly predict behavior. PBC is similar to constructs of self-efficacy in other models, e.g. social learning theory (Bandura, 1977, 1986, 1992), although differences among formulations and disagreements regarding utility and conceptualization persist in the literature. PBC is said to be determined by specific beliefs regarding one’s ability to engage in an activity, including one’s perceptions of barriers and facilitators to engaging in a particular behavior.

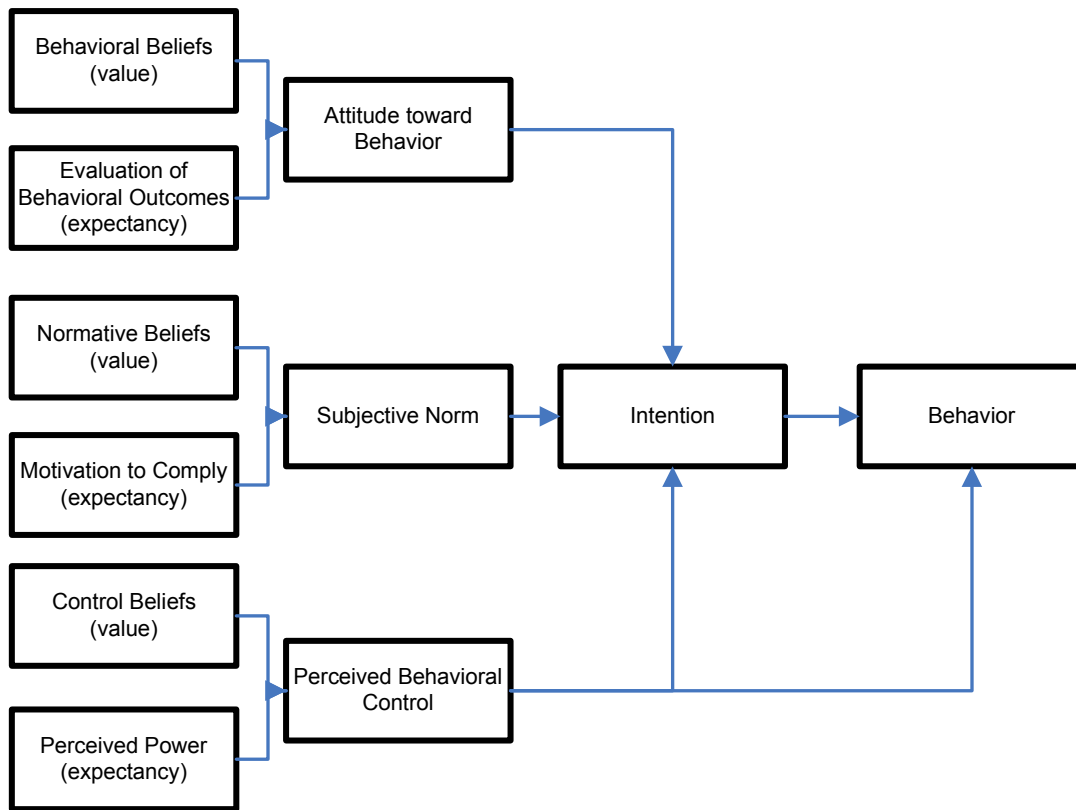


Figure 2: The Theory of Planned Behavior (Ajzen, 1991).

The Integrative Model of Behavioral Prediction

In considering applications of the TRA/TPB models to intervention development, Fishbein introduced an integrated model for predicting behavior (2000). This model subsumes and adapts the constructs from the TRA/TPB, adds two constructs at the same level as intentions (skills and actual environmental constraints) and incorporates distal variables as well. These “external” variables are posited to have potential mediatory effects on intentions and behavior through the core constructs of the model. As depicted in Figure 3, these variables include demographics, general attitudes, personality traits, and other individual differences such as prior training, prior experience, setting characteristics, culture, and media exposure. This integrative model serves as the foundation for the psychosocial aspects of the work reported herein.

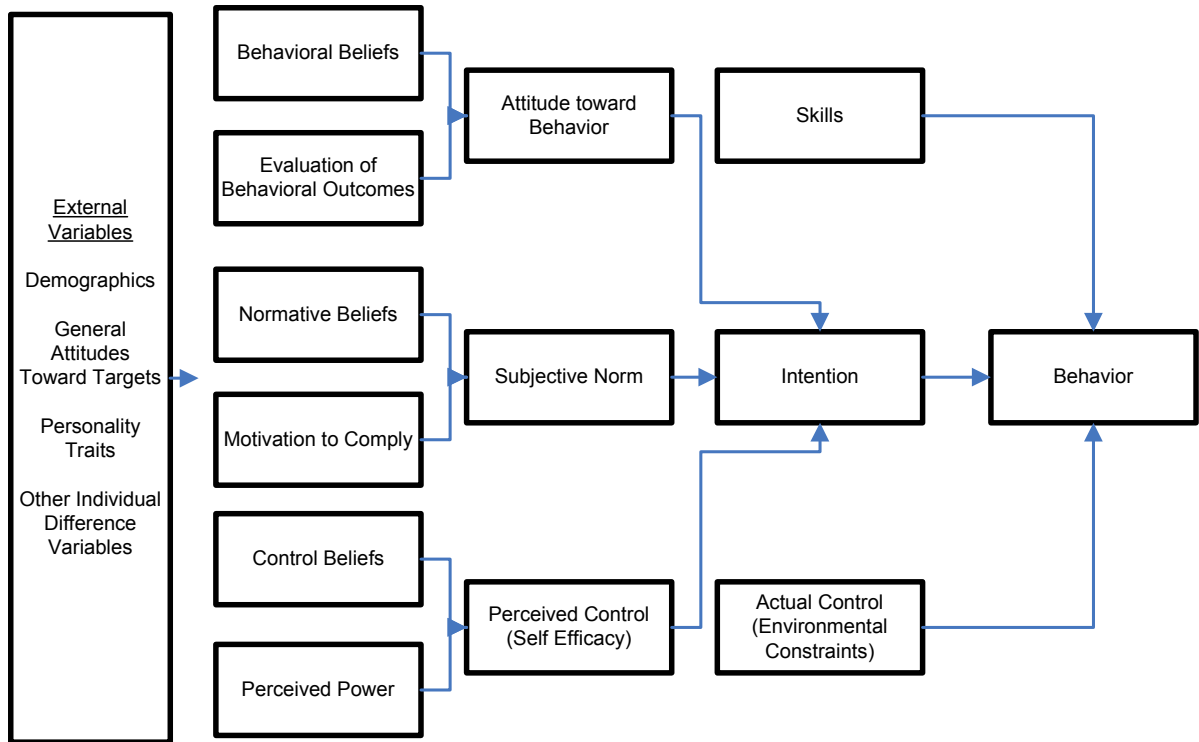


Figure 3: Fishbein's integrative theory of behavioral prediction (Fishbein, 2000).

Such extensions of the reasoned action theories are common in the literature. Researchers have proposed myriad additional constructs that augment, mediate, moderate or simply replace those in the original TRA and the TPB. Proposed constructs include past behavior (Armitage & Conner, 2001; Davis, Ajzen, Saunders, & Williams, 2002), attitudinal ambivalence (Conner, Povey, Sparks, James, & Shepherd, 2003), “continuation intentions”—the likelihood of continuing to intend to engage in a behavior in the face of success or failure (Chatzisarantis, Hagger, Smith, & Phoenix, 2004), moral extensions (Godin, Conner, & Sheeran, 2005; Kaiser, 2006), and “implementation intentions”—specific plans to engage in a behavior (Jackson et al., 2005; Koole & Spijker, 2000; Orbell, Hodgkins, & Sheeran, 1997; Webb & Sheeran, 2005). Such extensions have provided a wealth of information about the possible discriminate validity, and impact, of these additional constructs, and each of these additions may enhance the core models and future work; however, for the present effort, the core theoretical constructs, i.e.

attitude, subjective norm, perceived behavioral control, intention, and behavior, are the focus.

There are two implications of reasoned action theory that are embedded in the aforementioned discussion but merit overt recognition at this point. First, reasoned action theory explicitly shifts the focus of attention, in terms of changing behavior, from the goals or objects of the behavior (e.g. reducing underage drinking or understanding heart disease) to the behavior itself (e.g. wearing a condom or complying with diabetes management). Second, there is a principle of correspondence across the levels of investigation. To the extent that is possible within a research effort, it is important to ensure that one is examining the same behavior both within a set of measures (e.g. intentions and specific beliefs should be about the exact same behavior) and across time. That is, if the behavior of interest is the replacement of smoke detector batteries on a regular basis, then the measures of intention, psychosocial constructs, and specific beliefs should all be related to that behavior. That said, an examination of applications of reasoned action theory to behavioral prediction will help illuminate its myriad uses.

Applying the Models

Attitude, subjective norm, and perceived behavioral control can be examined both directly and indirectly. Direct examination occurs when the focus of the research is on the attitudes, subjective norms, and perceived behavioral control regarding the behavior itself, to the exclusion of (or in addition to) the individual beliefs that may predict these more encompassing psychosocial constructs related to the behavior. A hallmark of such an approach is the presence of items related to goodness or importance of a behavior. For example, “My choosing to eat healthy food is beneficial...not beneficial,” or, more telling perhaps for the example of food selection, “pleasurable...not pleasurable.”

Indirect examination of the constructs occurs through analysis of specific individual beliefs associated with each construct. These beliefs are related to the behavior but are not directly about the behavior. That is, an individual belief may concern a consequence of performing the behavior rather than how an individual feels about performing the behavior itself. Individual beliefs about consequences of performing a behavior are called behavioral beliefs. Individual beliefs about what other specific people think about the behavior are called normative beliefs. Finally, individual beliefs about things that make it easier or harder to perform a behavior are referred to as control beliefs. These are associated with, respectively, the direct measures of Attitude, Subjective Norm, and Perceived Control. An example behavioral belief is “Doing X is perceived by my clients as a waste of time.”

As noted above, and in line with value-expectancy theories (c.f. Ajzen, 1991; Eagly & Chaiken, 1993; Sutton, 1987), individual beliefs are usually examined on two dimensions: value (the perception that an object of belief has a positive/negative valence) and expectancy (the perception that the object of a belief will occur or will affect behavior). For example, for behavioral beliefs the two dimensions are: evaluation of the outcome and perceived likelihood (Ajzen & Fishbein, 1980; Conner & Sparks, 1995). Outcome evaluation is an indication of whether the object of the belief is perceived as positive or negative. That is, for a behavioral belief, is the consequence good or bad? Perceived likelihood is the evaluation of whether or not a consequence will happen if the behavior is performed. Perceived likelihood has also been termed the “belief strength” and, confusingly, “behavioral belief.”³

³ This is confusing because both the type of belief and one of the two aspects of that belief are often referred to as “behavioral belief.” Specifically, behavioral beliefs are said to be determinants of attitudes, and a behavioral belief is determined by the cross-multiplication of, in this terminology, (a) a behavioral belief and (b) an outcome evaluation. Unfortunately, this is also the terminology most commonly used. Moreover, the terms *control belief* and *normative belief* also have these dual uses. Some authors, for example, Armitage and Conner (2001), define them as: behavioral beliefs=outcome beliefs x evaluations,

For a normative belief, which is predicated on normative influences (specific people, organizations, and other sources of social influence), the two components are the normative belief and the motivation to comply. That is, does an individual think a person or organization feels positively or negatively about the behavior and is the individual inclined to behave in ways that the person or organization wants. For example, “My significant other believes I SHOULD/SHOULD NOT use a condom” would be a normative belief. The matching motivation to comply component would be “I generally do what my significant other wants me to do.” (Agree/Disagree).

Finally, control beliefs relate to barriers and facilitators to performance of the behavior. These are beliefs about things that might make it harder or easier to engage in a particular behavior. Control beliefs are comprised of a control belief and a perceived power. As with the behavioral and normative beliefs, these two elements capture the value and expectancy of the belief. The control belief captures whether the object of the belief is likely to occur. That is, is a particular condition, event, or other set of circumstances likely to occur? The perceived power of the belief is an indication of whether the object of the belief will likely facilitate or hinder the performance of the behavior. That is, will a particular set of circumstances, if they were to occur, make it more or less likely that someone would engage in the target behavior.

Application of TRA/TPB for Description/Prediction

The TRA and TPB have been applied successfully to describing and predicting a wide range of health-related and non-health-related behaviors. The theories have also been used to examine job-seeking, attraction to organizations, and teacher practices (e.g., Burak, 2002; Giles & Larmour, 2000; Highhouse, Lievens, & Sinar, 2003; Poulou & Norwich, 2002). Personal health behavior applications range from condom use and

normative beliefs=referent beliefs x motivations to comply, and control beliefs=facilitatory/inhibitory beliefs x power. While clearer, this is not the most common use, which is adopted herein.

sexually transmitted disease risk behaviors to cancer screening to breastfeeding (c.f., Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Hogben, Lawrence, Hennessy, & Eldridge, 2003; Humphreys, Thompson, & Miner, 1998; Kloblen-Tarver, Thompson, & Miner, 2002; Tolma, Reininger, Ureda, & Evans, 2003). Moreover, both theories have been applied to health care provider practices in a range of areas.

Meta-Analyses

Several meta-analyses of studies utilizing reasoned action theories have been reported. Some focus on a particular variation in the theories; some focus on the target behavior type (e.g. condom use, smoking, exercise); and yet others take a more holistic approach by examining all loosely related efforts. In general, the reasoned action theories appear to be effective for predicting behavioral intentions and actual behavior. Reported variance explained in applications of the TPB ranges from $R^2=0.21$ to $R^2=0.34$ (Armitage & Conner, 2001).

In the most recent meta-analysis of the general predictive utility of the constructs of the TPB, Armitage and Conner (2001) examined 161 articles reporting 185 independent tests of the theory. The researchers found that regression models incorporating attitude, subjective norm, and perceived behavioral control accounted for 39% of the variance in intentions. Moreover, 27% of the variance in behavior was accounted for by intentions. Both findings confirm those from previous meta-analyses. The researchers also asked whether, as might be expected, prediction of self-reported behavior would vary from prediction of objective measures of behavior. Not surprisingly, it does, and significantly, with intention better predicting self-reported than observed behavior; however, in both cases the amount of variance predicted remained substantial ($R^2=.30$ for self-reported behavior versus $R^2=.19$ for observed behavior). Finally, the researchers found that including PBC in the models (that is, testing the sufficiency of the

TRA as opposed to the TPB), increased variance explained in behavior by an average 2% and made an independent contribution to explained variance in intentions of 6%. Together, these results indicate that the TPB explains a substantial portion of the variance in intentions and behaviors, that the use of self-reported behavior may not be ideal but that it is reasonable when framed by resource needs and the considerable debate regarding such assessment in general, and that the perceived behavioral control construct is a worthwhile addition to the original TRA.

The Armitage and Conner (2001) meta-analytic review also raises several issues concerning the formation of assessment items. Intention items, for example, may capture different cognitive and emotional concepts including desires (“I want...”), intentions (“I intend...”), and self-predictions (“I will...”). Analysis of these types of items as independent contributors to prediction indicated that the type of item leads to differences in the amount of variance explained (Armitage & Conner, 2001). Specifically, “intentions and self-predictions were superior predictors of behavior than desires” (p. 486). Similarly, the authors address the longstanding debate regarding the content and nature of the perceived behavioral control construct. Azjen (1991, 1986) stated that the perceived behavioral control construct could be used more or less interchangeably with self-efficacy; however, more recent authors have questioned this isomorphism of the two constructs (Bandura, 1992; White, Terry, & Hogg, 1994), as well as the relationship between perceived control and perceived difficulty (Trafimow, Finlay, Sheeran, & Conner, 2002). Armitage and Conner indeed found that perceived behavior control (e.g. “It would be easy...difficult”), self-efficacy (“I am capable of...”), and perceived control over behavior (“It is within my control to...”) appear to differentially predict both behavior and intention.

Finally, since a core proposition of the reasoned action theories is that attitudes, subjective norms, and perceived behavioral control regarding a behavior not only predict

intention, and by extension behavior, but also that these general constructs are in turn predicated upon collections of individual beliefs, Armitage and Conner (2001) examined what support there was for the determination of top-level constructs from individual beliefs. They found that behavioral, normative, and control beliefs predicted, on average, at least 25% of their associated constructs. Prediction of intention and behavior from the individual beliefs was not examined.

A separate meta-analysis limited to applications of the reasoned action theories to condom use, Albarracín and colleagues (2001) reported findings similar to those of Armitage and Conner and concluded that the theories were highly successful when applied to condom use predictions. The authors also examined the influence of past behavior and found that retrospective inferences (self-reports of past behavior) exerted strong effects on the magnitudes of attitudes, norms, and intentions. However, the primary predicted relationships among the models' constructs remained moderate to strong. That past behavior may influence intentions and, by extension, future behavior, is not surprising, and other field-specific analyses of the reasoned action theories have similarly suggested its inclusion in the model (c.f. Hagger, Chatzisarantis, & Biddle, 2002).

Previous Studies

Goldenberg and Laschinger (1991) used the TRA to model nursing students' attitudes, normative influences, and intentions regarding provision of care for AIDS patients. Attitudes and subjective norm were assessed. Salient beliefs were not addressed. The researchers found that both attitudes and normative influences predicted intentions, and the researchers suggested, based on interview data, that fear of acquiring the disease may play a substantial role in the formation of these attitudes. This hypothesis was not, however, quantitatively investigated.

Renfro, O'Sullivan, & McGee (1990) examined nurse documentation behaviors and found that the documentation intentions were not significantly related to attitude toward documentation but that the behaviors were related to subjective norm. Nash, Edwards, & Nebauer (1993) found nurses' intentions to engage in pain assessment procedures to be independently predictable only from perceived behavioral control once covariance was parceled out among the theories' constructs. Neither of these studies examined behaviors at the level of the individual beliefs. This exclusive focus of attention to the top-level, general, constructs appears common in applications of the theories to nursing, as well as to several other areas of practice, with most studies, though certainly not all, choosing to examine general attitudes, subjective norms, and perceived behavior control regarding the behavior to the exclusion of individual specific beliefs.

One study concerning health care providers' practices that addresses the individual belief level of the theories was reported by Goldsworthy, Fortenberry, and Sayegh (2006, May). Goldsworthy and colleagues investigated intentions of pharmacists-in-training to engage in HIV/STD counseling during their professional careers. Individuals participating in advanced pharmacy education were interviewed to identify salient beliefs. These beliefs were used to create a survey of intentions, subjective norm, perceptions of control, and specific individual beliefs among the target population. Seventy-eight participants answered 39 items regarding their beliefs, attitudes, subjective norms, and perceived barriers to providing HIV/STD counseling. Forty-eight percent of the respondents indicated they did not intend ("Non-Intenders") and 62% indicated they did intend ("Intenders") to provide HIV/STD counseling. In a regression analysis, only the belief that the patient viewed counseling as unnecessary was significantly correlated with intention to engage ($r = -0.25, p < .01$). The researchers performed a cluster analysis and reported three types of pharmacists-in-training: (1) "Hesitant Counselors" who may be unlikely to provide HIV/STD counseling but are more

likely to do so if it is required; (2) "Practical Counselors" who will likely counsel if there are available resources (time and privacy), and (3) "Engaged Counselors" who appear likely to engage in HIV/STD counseling behaviors unless they perceive patient reluctance.

Similarly, Montano and Kasprzyk (2002) investigated the individual beliefs of health care providers regarding the provision of HIV/STD counseling as part of medical interviews. Specifically, the researchers examined two related but prima facie distinct behaviors or behavioral categories: (1) asking patients specific questions about their sexual history and behavioral risk for HIV/STD and (2) providing counseling or advice about HIV/STD prevention. Individual beliefs were identified separately for each of the two behaviors through an elicitation study conducted among 54 primary care providers. Positive and negative behavioral, normative, and control belief themes were formed for each behavior from the resulting qualitative data. The themes elicited for both behaviors were, for the most part, identical, although the researchers note that seven individual beliefs appeared to be associated with one behavior or the other but not both. In total, 28 behavioral beliefs about sexual history taking were identified; 22 of these beliefs were also identified for prevention counseling, along with one additional theme. Apparently normative and control beliefs fully overlapped between the two behaviors since no differences are discussed.

Based on the identified themes, the researchers created a survey predicated on the TPB. The survey was completed by approximately 720 primary care providers. In order to reduce the length of the survey in deference to the perceived needs of the target audience, the researchers did not assess both components of each behavioral and normative belief. Instead, only the behavioral belief and normative belief were assessed, assuming the weight (evaluation of the belief and motivation to comply, respectively) to be equal to the valence. This could be problematic for interpreting the results since it

assumes a value for one half of the value-expectancy formulation. The researchers do not discuss the implications of this methodological decision. Control beliefs were assessed with two items, control belief and perceived power, as specified by the TPB. The researchers do not report, and it is not clear whether they assessed, the attitude, subjective norm, and perceived behavioral control constructs directly. Self-reported engagement in the behaviors was assessed.

Across all three categories of beliefs (behavioral, normative, and control), the correlations between the individual beliefs and self-reported engagement in the behaviors were frequently significant and ranged from a positive $r=0.48$ (“Makes me feel that I am providing comprehensive care”) to a negative $r=-0.45$ (“Wastes time because I have few at-risk patients in my practice”). Behavioral beliefs included beliefs concerning patient embarrassment, patient anxiety, helping the patient address worries, reducing patient discomfort, seeing the behavior as a standard of practice, protecting the public, taking time away from other patient needs, and protection from liability. Sources of normative influence included patients, parents of minors, colleagues, professional medical organizations, health insurance companies, legislators, advocacy groups, popular media, administrators, and national or local health organizations. Control beliefs mentioned included having an established relationship with a client, stigma associated with HIV/STD, the community in which practice occurs, patient gender, cultural, religious or linguistic differences, seeing the patient without friends or family present, and knowledge or intuition that a patient may be at risk.

Examination of the individual item correlations suggests that for this behavior and this target audience, behavior may be more closely related to behavioral beliefs than to normative or control beliefs. However, descriptive statistics for the beliefs are not provided, and regression analysis is not applied to the beliefs, so covariance among the items is not controlled. Additionally, data regarding the direct constructs (attitude,

subjective norm, and perceived behavioral control) is not presented nor was an analysis of the consistency of the items assumed to be related (e.g. all the behavioral beliefs, all the control beliefs, and all the normative beliefs). Even though the reported results lack certain data that would facilitate interpretation and there are methodological concerns with the construction of the survey, the study nonetheless provides a model for the conduct of an elicitation that focuses on identifying individual beliefs. Moreover, the identified beliefs, and their correlations with self-reported clinician behavior, suggest beliefs that may be relevant to other target audiences, such as home health care providers.

While a number of studies have applied TRA/TPB to personal health care decision making and to health care provider practices, only a handful of studies utilizing reasoned action theories have examined nurse practitioners or home health care workers. Vermette and Godin (1996) applied the TPB to nurses' intentions to provide care to AIDS patients. In this study, 161 nurses providing home care services were randomly provided one of four care scenarios, with disease (leukemia or AIDS) and sexual orientation (homosexual or heterosexual) varying by scenario. The researchers found that perceived behavior control, personal normative belief (Triandis, 1977), attitude, and homophobia independently predicted intentions to provide care ($R^2=0.48$, $p<0.0001$). While the researchers included, on a theoretical basis, homophobia, social desirability, and personal normative belief, they did not elicit nor assess individual beliefs that might affect care. Therefore, no information regarding potentially relevant behavioral, normative, and control beliefs is available from the study. The results of the study do appear to confirm the results of Nash and colleagues (1993) that nurses' intentions for some behaviors may be more related to perceived control than to attitudes, a finding that the Vermette and Godin (1996) study extends to home care.

Roelands, Van Oost, Depoorter, and Verloo (2005) examined dementia counseling practices among home nurses and home health care workers in Belgium. To model psychological factors that might influence the provision of dementia counseling, the researchers conducted a survey, predicated on the TPB as a social-psychological framework, among 168 home nurses and 601 home care workers. Self-reported previous engagement, intentions, attitude, subjective norm, and self-efficacy were assessed. The study separately reports results for the nurses and the home care workers, and here only the home care worker results will be described since they are most pertinent to the present effort. In a regression analysis, attitude, subjective norm, and self-efficacy were each independent predictors of intentions among the home care workers, with the overall model accounting for 39.8% of the variance. Intentions explained roughly 38% of self-reported practice among the home care workers.

The study did not investigate specific beliefs regarding provision of counseling to family members of those affected by dementia nor, because of this, did it examine the relationships of such individual beliefs to the attitudes, intentions, and self-reported counseling provision. The study did, however, identify some potentially important individual beliefs among the home care providers. Ideally, to align with the TPB, the identified beliefs should concern: consequences of engaging in counseling of family members, sources of normative influence, and barriers and facilitators of counseling provision. The investigators did not directly inquire as to consequences of providing counseling; however, they did inquire about consequences of knowing the diagnosis. Specifically, the investigators asked two open-ended questions: “What are the advantages of knowing the diagnosis of dementia?” and “What are the disadvantages of knowing the diagnosis of dementia?” Although these questions do not inquire about the *behavior* in question, they do provide some sense of the issues about which home care

providers are most acutely aware. The researchers coded the results into themes and presented a list of positive and negative consequences.

Among the home care workers, the most frequently mentioned positive consequence was “facilitates interaction with the patient and allows anticipation” (63.9%). “Increases insight into the patient’s behavior” (21.6%), “increases quality of care” (21.0%), increases “concrete adaptations of care” (13.9%), “increases care supply and cooperation” (12.8%), and “facilitates patient monitoring” (10.9%) were themes mentioned by greater than ten percent of the home care sample. The most commonly mentioned negative consequence of knowing the diagnosis of dementia was simply “None” (55.8%). Negative consequences also included: “attitude towards the patient changes” (21.3%), expectations of negative outcomes for the patient may increase (10.9%), and “task content and interaction change” (10.2%). Unfortunately, as noted above, these are consequences of *knowing something* not consequences of *engaging in a behavior*; therefore it is problematic to extrapolate much from these results to actual care provision among the home care providers because there may be more, or quite different, perceived consequences of engaging in counseling than for knowing about the diagnosis. Nonetheless, it does appear that home care providers worry about their patients, their patient’s health, and their communication with the family, as indicated by the response patterns that target the patient and the patient’s family.

It appears, therefore, that home care providers may be more influenced by their perceptions of patient well-being and the opinions of others than by their perceptions of the impact of a dementia diagnosis on their job responsibilities. This is further supported by the notable lack of mention of any themes related to personal impact variables such as “makes my job harder” and “would be difficult for me to handle.” While this apparent focus on others may be a result of the way the questions were asked (and coded and reported), it seems plausible that home care workers place at least as much emphasis on

the well-being of others as they do upon the impact of a behavior upon themselves. No attempt was made in the study to identify normative or control beliefs. From the themes above, it may be inferred that the patients themselves and the family caregivers are likely sources of influence. No questions were asked from which any control beliefs (barriers and facilitators) might be inferred.

As illustrated in the studies above, reasoned action theories have been found to predict behavioral intentions and behavior relatively well. The theories have been usefully applied to understanding health care provider behavior. Moreover, studies have identified information that may be useful for changing behavior, although behavioral change has not been the intent of the reported efforts.

Applications of TRA/TPB to Development of Interventions

Reasoned action theories have occasionally been applied to the development of behavioral change interventions. “Development,” here, is taken as the overarching process of creating something and doing something with it. As such, development subsumes conception, design, production, and evaluation. Before considering the uses of TRA/TPB for intervention development, it will be useful to revisit the instructional design process. Development has been increasingly viewed as an iterative, multistage process.

Moreover, researchers and developers have increasingly recognized that efforts to develop messages or media without actually involving the audience tend “to ignore the very real fact that what people take away from text depends on their process of interpretation—processes which may differ from those of the document designers” (Schrive, 1997, p.162). Involving the user in the development effort has become an increasingly common strategy in engineering, message design, and usability research (Schrive, 1997; Vrendenburg, Isensee, & Righi, 2002). Sometimes referred to as

“participatory design,” such user involvement has been shown to lead to more efficient and cost-effective design processes and end products (Nielsen, 1993). Such iterative and participatory design can be perceived as “messy” in the sense that procedures do not follow a straight path from start to finish but instead loop back upon themselves as content, functionality, and implementation are concurrently refined over the course of several cycles of development and evaluation.

A review of the basic stages of design, production, and evaluation will allow a better consideration of how the reasoned action theories, and their resulting recommendations and data, may be used as part of the development of instructional behavioral change interventions.

Development Cycles

The description of development as occurring through a series of cycles is not new, especially within the instructional technology discipline. A systems approach to designing instruction is traceable to at least the early 1960s (Saettler, 1990), and as early as 1976, Branson described a model for developing instruction that noted five distinct steps: analyze, design, develop, implement, and control (c.f. Molenda, 2003). Over time, such models have come to be known by the acronym ADDIE (Analysis, Design, Development, Implementation, and Evaluation); however, the genesis of this term and the specification of the nature of each particular step is murky (Molenda, 2003). While the models were originally conceptualized as principally linear: analyze the audience, specify objectives, make instruction, test it, and adjust and restart if necessary, the process has gradually become more iterative, not only across the model but also within and between individual steps. Grafinger (1988) may have been one of the first to discuss this iterative nature of the design model, at least as specifically applied to the ADDIE approach.

At a certain point, proliferation of cycles and subcycles rose in an effort to further delineate each distinct component of the development process (c.f., Schiffman, 1995). In many ways, this proliferation parallels the addition of subcomponent processes to information processing models of cognition and, quite possibly, the addition of additional constructs to the reasoned action theories. Such increasingly complex delineation of the process may (or may not) be worthwhile. The question becomes: what is really being modeled, and is the model taking on a life of its own outside its usefulness as a tool to do some particular thing, such as make interventions or understand behavior? Rather than canvas the more complex variations of the instructional systems design model, then, we instead look at one particular version of what it means to create media and use this perspective to consider the reasoned action theories within intervention development.

Following Goldsworthy and colleagues (Goldsworthy & Kaplan, 2006; Goldsworthy & Schwartz, in press) iterative development can be considered as occurring through five broad cycles. These cycles move back and forth between generation and evaluation of the materials, messages, and media. When widespread use of the developed materials is desired, a sixth cycle also comes into play: dissemination and distribution. See Figure 4.

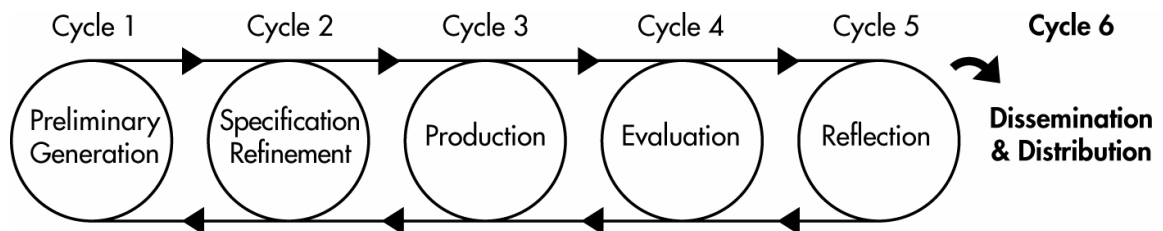


Figure 4: An iterative, six cycle development process.

Cycle 1 consists of broadly determining what to teach and how to go about teaching it. Cycle 2 refines the broad outlines and ideas from Cycle 1 and determines at a

finer level of granularity exactly what content is included, how to include it, and what mechanisms of access or delivery will be involved. Cycle 3 initiates production, with modifications made to content and functionality in response to arising issues and to early beta and usability testing. Cycle 4 moves the emerging teaching and learning materials into more structured evaluation trials, often in the field. Finally, Cycle 5 reflects on the findings from the Cycle 4 trials and determines the most appropriate next steps for the effort, which may involve further work within the five development cycles or movement into the sixth cycle: distribution and dissemination, wherein the product is moved toward wide spread adoption and use.

As mentioned earlier, such iterative and participatory efforts can be messy, or at least hard to report. This messiness results because projects can iterate in Cycle 3 for an extended period of time. It is also possible for projects to iterate between Cycles 4 and 5, moving from trials to refinement and back. And, of course, depending on the results of the trials and the availability of resources, it may be worthwhile to move all the way back to Cycle 1 from Cycle 5. Usually this latter is avoided, however, through careful attention to end-user input within Cycle 3.

Although no clear articulation of what constitutes a constructivist design process—a series of steps that are somehow different, from a constructivist epistemological perspective, than a series of steps that might align with another perspective—exists to date, the six cycle model does in fact align with a constructivist epistemological perspective regarding education. If understanding is constructed, then involving end-users in all stages of the development process is an important component of discerning how such understanding is already constructed among the audience, how it may be differently constructed through interaction with the intended instruction, and how the user's interaction with the instruction is itself an always ongoing construction. Moreover, iteration is itself a response to the recognition that instruction does not occur

in a closed-system in which responses are known, but rather in an open one in which end-user input and repeated re-design are not only useful but essential. That is, development is organic and fluid, open as opposed to closed, reactive and participatory, as opposed to traditional efforts which are more expert derived and directed.

The Role of Reasoned Action Theories

So, with design stages in mind, where do reasoned action theories fit? It would appear that the primary role reasoned action theories play in intervention development is the provision of psychosocial, “affective,” content, especially as part of specification refinement in Cycle 2. The theories provide a framework for understanding behavior and its precursors and a methodology for quantifying relationships among these factors. These specifications can then be used to guide the design activities in Cycle 3. Moreover, this articulation of beliefs and intentions may then inform the evaluation activities in Cycle 4. It seems evident, then, that steps involved in using reasoned action theories in the development of interventions include (1) identification of target behaviors, a step that includes goal and task analysis; (2) identification of factors that may affect adoption of the target behaviors, a step that includes an elicitation study; (3) quantification of those factors, a step that includes surveying the target audience; (4) development of an audience belief and intention model, a step that includes recommendations for beliefs to target within interventions; (5) design of the intervention, a step that includes integrating the identified beliefs within the developing program, both directly and indirectly; and (6) evaluation of the results, a step that includes assessing changes in the constructs and individual beliefs.

Previous Studies

A broad search of the literature for examples of studies that apply reasoned action theories to some form of behavioral change yields a wide range of efforts that at least mention the TRA or the TPB as part of either a development or an evaluation effort, or both. A recent narrative review (Hardeman et al., 2002) of the application of the TPB to intervention development and evaluation found that of 24 distinct interventions reported in 30 published articles, half of the studies reported changes in intentions and two-thirds reported changes in behaviors. For the few studies for which effect sizes could be calculated, they ranged from small to large (Cohen, 1988). In general, the authors found that the application of the TPB to intervention design was not well specified: the original authors often failed to note how the constructs were measured and whether the theories were used in the design of the intervention, in the evaluation, or both.

Hardeman et al.'s observation was reiterated by Michie and Abraham (2004) in relation to reports of behavioral interventions in general: they noted that lack of information regarding the psychosocial models used to evaluate (and develop) interventions made it problematic to determine: (1) does the intervention work? and (2) how well does it work? and impossible to determine (3) how does it work (through what psychological constructs)? Without the theoretical framework, how can one interpret whether and how well something is effective?

These issues, taken together with the previous discussion of reasoned action theories and their role in development, seem to indicate that two issues are important. First, how is the theory used? That is, is reasoned action theory used to inform design or solely as part of evaluation of an intervention? Second, how true to the reasoned action theoretical framework is the integration of the theory within the intervention development? This latter question raises subordinate issues: are all of the core theoretical constructs (i.e. attitude, subjective norm, perceived behavioral control,

intention, and behavior) of the theory integrated or just some subset, and does this integration adhere to methodologies and item formulations recommended by the theories? Moreover, the question of theoretical fidelity also raises the issue of whether or not any particular use of reasoned action theory for intervention development focuses solely on the core psychological constructs of the theory or whether it also includes the purported determinants of such constructs, the individual beliefs themselves.

According to Hardeman and colleagues (2002), few studies implemented the reasoned action theories fully and throughout the design and evaluation process. The majority of the 30 studies surveyed utilized the constructs of the theories primarily for process or outcome evaluation as opposed to integrating them as part of the development effort. That is, the studies typically used measures of the theoretical constructs to determine whether changes in those constructs had occurred, e.g. “Have intentions to engage in our target behavior changed?” rather than to inform how the intervention should be designed to engender such change. Moreover, the studies focused solely upon the direct assessments of constructs of the models, such as general attitudes or intentions toward a behavior, without reference to individual salient beliefs that may underlie those constructs. According to reasoned action theories, however, these individual beliefs are the most useful tools for predicting and changing behavior, and to ignore them in favor of more general attitudes and intentions shortchanges the theoretical underpinning. That is, reasoned action theories postulate that specific beliefs determine people’s attitudes, perceived norms, and perceived control and that these in turn determine intentions and behavior. From this perspective, addressing specific beliefs rather than (or in addition to) more general attitudes, norms, and perceived control, should lead to change in the more general theoretical constructs and, therefore, to more effective interventions.

Although the application of the theories to intervention development has been somewhat disappointing to date, there is evidence, as described earlier, that the reasoned action theoretical constructs (attitudes, perceived norms, and perceptions of control) and specific beliefs do, in fact, predict intentions and that those intentions, in turn, predict behavior reasonably well (Ajzen, 1991; Armitage & Conner, 2001). Additionally, there is some evidence that changing beliefs and, in particular, behavioral intentions, can lead to changes in behavior (Webb & Sheeran, 2006). Therefore, it remains reasonable that a coherent approach to integrating reasoned action theory within an intervention should be more effective at changing behavior than approaches that do not so integrate the theories, despite the somewhat underdeveloped results reported to date.

Fishbein (2000) provided one of the first attempts to set forth a coherent application of a reasoned action theory to intervention development by proposing a revised reasoned action model, as noted above (see Figure 3, p. 18 above). Perhaps more important than introducing a modified model, Fishbein explicated the implications of the model components for behavioral change efforts. For example, if a person has generally formed an intention to engage in a behavior but is not acting on it, then either skills building or removal of environmental constraints are likely to be more effective than interventions targeting psychosocial change. Moreover, he emphasizes that only by analyzing the audience before intervention development can an intervention designer hope to understand, and potentially affect, the behaviors of the population. That is, the “models require one to understand the behavior from the perspective of the population being considered” (Fishbein, 2000, p. 274). From a reasoned action perspective, an early step is to determine under which of the primary constructs a behavior appears to be controlled for a particular population. That is, are intentions most closely associated with attitude, subjective norm, perceived control, or some combination of these? Once an

association is known, then the individual beliefs can and should be examined for each of these (Fishbein, 2000).

Reports of two interventions based on this methodology indicate significant behavioral change. In one, small media materials, including role-model stories, were used to encourage adoption of five risk reduction behaviors (Centers for Disease Control and Prevention et al., 1996). The trial resulted in significant differences in condom use behavior with both main and non-main partners as compared to those in nonparticipating communities. In the second intervention, theory-based HIV/STD prevention counseling was found to lead to increased self-reported 100% condom use and decreased incidence of STD (Kamb et al., 1998).

Von Haefton, Fishbein, and colleagues (2001) extended previous work by presenting a specific framework for analyzing data from reasoned action theories in order to provide target objectives for interventions. Although the authors applied this analytical framework to a revised integrative behavioral prediction model which was specific to condom use behaviors, the analytical framework is certainly applicable to other behaviors as well. The framework consists of five analyses. First, a correlation analysis allows intervention developers to assess whether attitudes, subjective norm, or perceived behavioral control are significantly related to intention and also to examine the relationships between attitudes, subjective norms, perceived behavioral control, and their associated beliefs. Second, a “direct determinant” regression analysis investigates the independent contribution of each construct to the prediction of intentions. This analysis helps determine where change efforts should be focused. Third, an “individual indicator analysis” is conducted in which the individual behavioral, normative, and control beliefs (associated with the attitude, subjective norm, and perceived behavioral control constructs) are, separately, examined in a correlation analysis with intention. Fourth, the significant belief items associated with each construct are entered into

separate stepwise multiple regression analyses against intention. Finally, in step five, all of the items which independently contributed to the prediction of intention are entered into a final stepwise regression. Applying this analytical approach to condom use among a particular population, the authors identified five target beliefs for integration within an intervention: “My regular partner thinks I should” (a normative belief), using condoms “makes you feel more relaxed” and “cleaner,” (behavioral beliefs) and “my partner is open to the idea” and “condoms [are] available” (control beliefs). While such an approach may provide a sufficient analytical framework, the authors note that it does not preclude using additional data. Specifically,

although stepwise regression allows one to identify beliefs (or determinants) that independently contribute to our understanding of why people do or do not hold a given intention, it ignores [however] other beliefs (or determinants) that may be almost as important, but are highly correlated with the identified beliefs (or determinants) (von Haeften et al., 2001, p. 160).

Sayeed, Fishbein, Hornik, Capella, and Ahern (2005) applied the analytical framework described above to planning anti-marijuana use public campaigns. Through the application of both Pearson’s bivariate correlation and hierarchical linear regression, the authors used the integrated model of behavior prediction from Fishbein (2000) along with the procedures from von Haeften and colleagues (2001) to consider issues of audience segmentation, prioritization of intervention emphases, and the selection of specific messages for inclusion in public awareness efforts. The reported research effort prioritized campaign messages based on data from the analytic framework and three criteria for choosing target beliefs, drawn from Hornik and Woolf (1999):

1. the belief, as currently present in the population, should have room for change. That is, a substantial number of individuals within the population of interest should not already hold the belief,

2. the belief should be strongly associated with the outcome of interest, specifically the particular related construct, *and* with intention. That is, the belief should be related to the behavior one wishes to change.
3. the belief should be amenable to change. That is, the nature and content of the belief should be such that it could reasonably be altered, considered both pragmatically (is it possible?) and ecologically (if it is possible, what are likely corollary effects?).

The researchers proceeded to examine the data using these criteria and provided suggestions for prioritizing messages based on whether beliefs could be changed (i.e. how skewed and invariable the beliefs are based on the audience survey); whether beliefs were strongly associated with attitudes and intentions, e.g., for their study, beliefs with $r > .3$ were considered a priority while others “could not be eliminated out of hand”; and, finally, the reasonableness of changing a belief, e.g. if people who have tried marijuana believe it leads to positive outcomes (based on their experience), it may not be possible to attempt to change those experience-based beliefs.

Although intervention developers could reasonably disagree with at least the first two of Hornik and Woolfe’s (1999) criteria,⁴ the resulting recommendations from Sayeed, et al. are nonetheless strongly theory- and data-driven. As with the frameworks’ application to condom use by von Haefton and colleagues (2001), actual media design and development, and resulting evaluations of efficacy, are not reported.

This analytical framework provides a methodological structure for considering the use of data from reasoned action theories for intervention development. Such data is

⁴ For example, in terms of the actual behavior, there needs to be room for change; however, in terms of the individual constructs and beliefs, such room need not be necessary. Specific normative, or perhaps better, behavioral, beliefs may be quite high, yet their association with attitude and intention may not be. That is, the room for change may be inherent in the relationships among beliefs and not necessarily in the weights of those beliefs. This observation clearly impacts the second criteria as well. A belief that is unrelated to attitude and intention may become a target for intervention if it is reasonable to believe that that relationship may be changed. Such an approach is related to priming theory (c.f., Fishbein & Yzer, 2003)

a significant contribution to the development process; however, nothing in the framework provides guidance as to *how* to address (change, reinforce, vitiate, capitalize upon), the underlying intentions and beliefs. Moreover, the reasoned action models themselves, regardless of their particular construction (TRA, TPB, integrative behavioral prediction model) do not provide such guidance. Interestingly, Fishbein (2000) well captures the problem in describing other theories:

At this point I would like to suggest that community participation and community mobilization are not “theories of behavioural change”, but instead are best viewed as strategies for change—while we do need theories to help us understand how to mobilize communities and get increased participation, these types of theory are very different to theories of behavioral prediction and behaviour change. More specifically, these types of theory do not help us identify the determinants of behaviour or behavioral change. Indeed, I think it’s now safe to say that by helping us identify the determinants of specific behaviours, our current theories of behaviour and behaviour change have given us the tools we need to change behaviour (p. 277).

Clearly this is a reaction to the confusion among different types of theories, strategies, and other conceptual constructs. Certainly, some tools for changing behavior have been (mis)labeled as theories of behavioral change. Such strategies, regardless of their complexity, are usually tools for use within the context of other theories, not holistic theories of change unto themselves. Such tools become theory-laden only when used in a specific context and within a specific theoretical framework. Does Fishbein’s (2000) model provide such a theoretical framework? Arguably, no. The integrative behavioral prediction model provides a means for identifying targets for behavioral change; it does not tell how to change those targets. Although Sayeed and colleagues (2005) refer to their application of the theory as “an integrated model of behavior *change*” (emphasis added), it, and all reasoned action theories to date, are theories of behavior, not theories of behavioral change. Nonetheless, as Fishbein argues so strongly (2000), these theories do appear to excel at identifying the determinants of specific

behaviors and, in doing so, they provide intervention designers with necessary, but not sufficient, tools for designing and evaluating effective interventions.

Framing Theories

So, what is a behavioral change theory as opposed to a behavioral theory? To consider this question, it is useful to think about interventions in general and instructional interventions in particular. These efforts seek to change behaviors and do so by drawing from a number of theories including epistemologies, theories of learning, theories of instruction, theories of behavior, and theories of behavior change. Each of these theories may influence the development effort at various stages and each, while interrelated, addresses a distinct concern. Epistemologies describe how understanding occurs. Theories of learning describe how understanding changes. Theories of instruction describe how such changes in understanding may be facilitated under various conditions. Similarly, theories of behavior posit why behavior occurs while theories of behavior change suggest how changes in behaviors may be brought about. The relationship of several of these theories is hierarchical, with epistemologies being superordinate to theories of learning, which themselves encompass theories and strategies of instruction. Theories of behavior and behavior change are, mostly, parallel to those of learning and instruction, and are similarly subordinate to epistemology. Obviously the lines between types of theories are not well demarcated. Because they are often hierarchical, assumptions of subordinate theories have implications for the, often unstated, superordinate ones as well as, of course, for their own subordinate ones. A theory of behavior has implications for theories of behavioral change and, moreover, usually also suggests something about the tacit or explicit epistemology.

While it is certainly possible to pick and choose from various theories of learning, instruction, behavior, and behavior change, without regard to overarching

epistemological considerations, it has been forcefully argued that such eclectic selection from a diverse toolkit, without overt awareness of an encompassing theory of understanding, strips the selected perspectives and strategies of their meaning (Bednar, Cunningham, Duffy, & Perry, 1992). In this spirit, constructivism will be examined as an epistemological framework that leads to suggestions concerning how learning occurs and how such learning may be facilitated.

Constructivism

Constructivism is one epistemological perspective. From this perspective, understanding occurs through a process of making sense of experience. This meaning making is a constructive, rather than a representative, activity through which the individual actively interprets his or her experiences (Barab & Duffy, 2000; Bruner, 1961, 1996; Duffy & Jonassen, 1992; Heidegger, 1962; Piaget & Inhelder, 1969). Constructions are based not only on immediate sensory experience—that is, what is heard, felt, and seen—but also upon the aggregate of previous interpretations that have occurred within the life of that individual. Moreover, the activity of making sense of new experience within the framework of previous interpretations may also change those previous interpretations. One's own story, one's history if you will, is itself a construction, and, as such, it is malleable, subject to ongoing (re)interpretation. Moreover, constructivists are "committed to the general view that (1) learning is an active process of constructing rather than acquiring knowledge, and (2) instruction is a process of supporting that construction rather than communicating knowledge" (Duffy & Cunningham, 1996, p. 171).

There are a wide range of strategies and concepts that are commonly integrated as part of learning environments predicated upon a constructivist epistemology. These include problem-based learning (Savery & Duffy, 1996), cognitive apprenticeship

(Collins, Brown, & Newman, 1989), and anchored instruction (Cognition and Technology Group at Vanderbilt University (CTGV), 1990, 1993). For the purposes of this effort, three concepts will be drawn from the constructivist perspective to inform the design of behavior change efforts: narrative mode, authenticity, and scaffolding.

Narrative Mode

Understanding is the outcome of organizing and contextualizing essentially contestable, incompletely verifiable propositions in a disciplined way. One of our principal means for doing so is through narrative: by telling a story of what something is 'about.' But as Kierkegaard had made clear many years before, telling stories in order to understand is no mere enrichment of the mind: without them we are, to use his phrase, reduced to fear and trembling (Bruner, 1996, p. 90).

Bruner (1985, 1990) has used the metaphor of story crafting to describe the ongoing bi-directional interpretive activity of meaning making: learning is the ongoing process of maintaining a coherent story in our minds. The drive to learn is the drive to get the story right. As one engages in new experiences, “trouble” may arise: times when the experiences do not fit our current story, our current understanding. Bruner's use of the term “trouble” derives from Burke's pentadic analysis of stories; however, in different terms, “trouble” is also Savery and Duffy's (1996) “puzzlement” or, as applied more broadly to cultural changes, Kuhn's (1962) “anomalies” and crises in scientific inquiry. Whatever the name, the experience is one of dissonance which the learner may address, to draw on two of Piaget's (1969) terms but with a more social bent, by re-crafting the story so that it *accommodates* the new experience or by re-envisioning the experience such that it is more readily *assimilated* within the story. From this position, a goal for learning, and for behavioral change, is to help people get their stories right, where “right” means that they have stories which are viable (Von Glasersfeld, 1989, 1993, 1995) and which allow them to act effectively in the world.

For an instructional effort to be effective, from this perspective, it must offer opportunities for individuals to engage stories, others and their own, in ways that enable them to re-frame their own story to be more viable, more coherent than that which was previously told, and more effective for engaging in activities of relevance to the individual. Instructional environments generally and mentors specifically, or in Bruner's phrase, "provisional amanuenses," serve as helpful editors: they question the learners' stories, help them find potential avenues of exploration, and guide them away from less viable storylines. In designing instructional interventions, developers, as would be assistant story editors, should try to understand the stories of those for whom the interventions are destined. To the extent possible, such editors should strive to be, to use Freire's (1970) gravid term, *cointentional* with members of the target audience in order to consider where points of trouble may occur, how stories might be perturbed to cohere with the broader communities of practice within which individuals participate, and also to consider how the individual's story might make sense and enrich the broader community.⁵

Green and Brock (2000) describe the extent to which an individual engages in these stories as their level of "transportation" into the world of the story. They suggest that such transportation may lead to belief change through several mechanisms and that these mechanisms may differ qualitatively from cognitive thought processes such as evaluation of messages. Specifically,

Transportation may reduce negative cognitive responding. Transported readers may be less likely to disbelieve or counterargue story claims, and thus their beliefs may be influenced. Next, transportation may make narrative experience seem more like real experience. Direct experience can be a powerful means of forming attitudes (Fazio & Zanna, 1981), and to the extent that narratives

⁵ This latter purpose points to the interactive nature of the intervention designer-target audience-community of practice triad. Although the interaction between the designer and audience members, particularly in the sense of what can be done to change the audience, is the primary focus here, the modulation of the designer and community through this interaction is also important and raises interesting questions.

enable mimicry of experience, they may have greater impact than nonnarrative modes. Finally, transportation is likely to create strong feelings toward story characters; the experiences or beliefs of those characters may then have an enhanced influence on reader's beliefs. (Green & Brock, 2000, p.702).

While there are myriad implications to be drawn from the narrative perspective on constructive meaning making, two will be considered in relation to stories and instructional efforts: authenticity and scaffolding, the latter of which subsumes mentoring and modeling.

Authenticity

Stories, according to Bruner, “are judged on the basis of their verisimilitude or ‘lifelikeness’” (1996, p. 122). The concept of authenticity, central to some types of stories, and certainly to many constructivist learning and instructional theories and strategies, may play an important role in engagement, learning, and transfer (c.f. Barab & Duffy, 2000; Brown, Collins, & Duguid, 1989; Grabinger, 1996; Honebein, Duffy, & Fishman, 1993; Resnick, 1987; Winn, 1990). Authenticity is generally ill-defined in the literature, often simply referenced as the need for activities from the “real world” (Resnick, 1987) or anchorage in “real uses” (Barab & Duffy, 2000), and, in the end, what it means to be authentic is as context-derived as any other construction (Petraglia, 1998).

“Authenticity” for the purpose of this effort is conceived of as the degree of similarity between a portrayal of a particular person, place, or event and the actual referent being so portrayed. This type of authenticity is in the eye of the beholder: the condition of authenticity is determined by the individual experiencing the portrayal.

Within a constructivist framework, such definitions, because of their close relation to such problematic concepts as the “real” and the “true,” if pushed too hard, usually devolve to self-reference or tautology. However, if a bit of lax language may be forgiven, a portrayal is authentic if it is perceived as real and true within the knowledge

structure, the story if you will, of those taking part in, or observing, the portrayal. That is, authenticity is “a judgment, a decision made on the part of the learner constrained by the sociocultural matrix within which he or she operates” (Petraglia, 1998). This type of authenticity, then, can be enhanced by involving members of the target audience, both novice and experienced, in the content generation and design phases of development; this criterion can be formatively and summatively tested by asking individuals how realistic a portrayal is, whether the problems are similar to those they experience or expect to experience, and so forth.⁶

Following this line of logic, a second criterion for authenticity might be the individual’s ability to interpret new, “real world,” experiences using perspectives, information, and skills that he or she previously encountered with vicarious experiences. This latter criterion for authenticity is closely related to transfer or, less accurately, generalizability. Are the vicarious experiences in an instructional effort similar enough to the conditions in the target environment to enable performance? This second criterion is akin to Petraglia’s (and most instructional designers) use of the term to describe the similarity between what happens in educational environments, particularly schools, and some representative “real world” (1998). It is also the criterion most commonly called upon by situativity theorists⁷ and constructivists (and, of course, others) when criticizing typical educational settings (e.g. Brown et al., 1989; Honebein et al., 1993; Resnick,

⁶ It should be noted that sometimes an intended learner cannot know whether certain aspects of a situation are authentic. They often have no basis for such a determination, and, in such cases, any formative results would need to be interpreted cautiously. A “newcomer” to a particular community of practice, to use Lave and Wenger’s (1991) terminology, ipso facto as a newcomer, cannot know what is authentic (in some situations). They do not (yet) share the story of nor have similar lived experiences as those who are “old timers.”

⁷ Situativity theory draws on much the same philosophical and theoretical strand as constructivism, weaving back through Bruner (1990), Wittgenstein (1972), Whitehead (1929), and Dewey (1938) and has close ties to activity theory, the sociological tradition of interactionism, and the psychological tradition of ecological theory and research. Similar to the shift in unit of analysis inherent in Ladd and Crick (1989) toward social exchange, situativity theorists move the unit of analysis fully to the interstices of learner-activity-environment as embedded in a cultural milieu (Derry, 1992). In essence, all cognition is situation-specific and knowledge, as a theoretical construct, is not something that is acquired and stored in a database but rather is created on-the-fly as a learner engages in a situation (See further: Armitage & Conner, 2001).

1987). This criterion is formatively testable by having those actually involved in real world performance gauge the verisimilitude of the vicarious experiences. The criterion may also be tested through in situ performance observation and debriefing of learners as they move toward real world performance.

Scaffolding

In housing development, scaffolding involves temporarily erecting a platform so that builders are able to reach portions of the building that they could not reach without such support. Scaffolds are used, for example, to build above-ground floors, enabling the craftsperson to construct second, third, fourth stories and beyond when there is no “floor” upon which to stand in order to complete such construction. Construction scaffolding is also used by brick layers to continue to set mortar and brick at heights above their heads. Simply put, without scaffolding, some construction tasks could not be done. The notion of scaffolding from construction has been co-opted by cognitive psychologists and instructional designers and serves as a metaphor for learning strategies that in one manner or another enable an individual to learn something, to perform some task, which he or she could not have done without such support.

Although Greenfield (1984) provides the most extended discussion to date of scaffolding as it relates to the construction industry, the term “scaffolding” was apparently first used for learning by Bruner and colleagues (Fazio & Zanna, 1981; Wood, Bruner, & Ross, 1976) to describe the transactional support that occurs when an adult interacts with a child as part of language acquisition and development. Scaffolding is closely related to Vygotsky’s (1978) notion of the zone of proximal development. This zone, sometimes referred to as the “ZPD” or “Zo-PeD,” is the difference between what a learner can do unassisted and what she or he is able to do with assistance. Specifically, Vygotsky described the ZPD as “the distance between the actual developmental level as

determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (1978, p. 86). Learning is supported by more competent others who serve as tutors. As Bruner (1986) puts it when describing the tutor/student role in reference to the ZPD, “what the tutor *did* was what the child could *not* do. For the rest, she [the tutor] made things such that the child could do *with* her what he plainly could not do *without* her” (p.76, emphasis in the original). The tools and strategies a tutor may engage in order to achieve this are scaffolds.

Learning is supported, then, by providing scaffolding (Salomon, Globerson, & Guterman, 1989) to allow the learner to perform within his or her zone of proximal development. Although this scaffolding was originally linked closely with tutoring and many references to scaffolds still maintain this person-to-person interactional sense (Collins et al., 1989; Palincsar, 1986; Palincsar & Brown, 1984), the scope of what constitutes a “scaffold” has broadened to include any tool, strategy, or guide that helps learners reach a higher level of understanding than they could otherwise attain on their own (e.g. Brush & Saye, 2001), including the integration of such tools within interactive technology based learning environments (e.g. Brush & Saye, 2001; Guzdial, 1994; Linn, 2000).

Scaffolding, as noted in the examples from the building industry, typically is temporary: it is removed as the conditions that required the scaffolding change. In construction, the removal of scaffolding occurs when a floor is built and the contractor no longer needs the scaffold to handle the next part of the task. In fact, when scaffolding is no longer useful, leaving it up can become problematic: the scaffold gets in the way and is unsightly as well.

At this point, the construction metaphor is stretched to the breaking point because contractors are never able to perform certain tasks without their scaffolds,

regardless of how skilled they may be. Interestingly, in this sense, scaffolding for contractors is more of a performance support tool than a learning strategy. Performance support tools remain in place to achieve a goal and are removed when no longer needed, only to be brought back out when a similar goal is targeted. Moreover, the removal of construction scaffolding is rapid whereas in the case of learning, removal should be gradual, occurring as the learner becomes more and more able to perform tasks without the scaffolding (c.f. Guzdial, 1994). Gradual removal aligns with “relinquishing strategies,” gradually shifting control of learning and performance from external influences to internal ones, promoting self-direction and self-regulation (Díaz, Neal, & Amaya-Williams, 1992).

For instruction, then, “scaffolding” is more similar to the apprentice-master relationship in construction trades than to a performance support tool. Indeed, scaffolding has sometimes been equated with cognitive apprenticeship (Collins et al., 1989; Rogoff, 1990), with the master supporting the apprentice until s/he is able to perform the task alone. This link to apprenticeship is hardly surprising given that Bruner’s original use, as described above in reference to tutoring, and the Vygotskian notions upon which it is predicated, was deeply embedded in mentor/mentee relationships (Bruner, 1986).

The line between something being a “scaffold” to support learners in the performance of a task until they are able to perform that task alone or the “scaffold” being a performance support tool that enables learners to perform a task each and every time, is blurry. This line may not matter when the learner/performer is in charge of the learning (or interactively directs learning in cooperation with a more advanced performer/a teacher); however, when designers attempt to specify the placement or removal of the scaffold, then there are both difficult questions and potentially disastrous consequences. When do you remove the “scaffold”? How can you tell, as an instructional

designer, that the scaffold will no longer be necessary? Is there a way to categorize scaffolds as removable and non-removable (always needed, i.e. performance support tools)? What happens to the learner/performer if we answer these questions incorrectly?

These questions disappear if we consider the performance/learning environment as individual-centered and allow the learner to, in essence, “self-tailor” the environment (in regards to interface and interactive program development, c.f. Goldsworthy, 2000). Such self-tailoring occurs automatically in language-based mentor/mentee relationships such as those Bruner describes; however, when the questions are applied to other instructional environments, particularly environments that attempt to “force” the emergence of interactional properties, then self-tailoring becomes problematic, if not impossible, because the environment has been constructed to meet pre-defined needs. If instructional environments are embedded with tools and strategies that assist some learners to achieve a goal or task that they could not otherwise achieve and, in so doing, the learner is enabled to reach that goal without those tools in the future, then those tools and strategies will be perceived and used as “scaffolds.” If the tools and strategies are used to achieve a goal each and every time achievement of that goal is sought, then those tools and strategies are perceived and used as performance support tools. It is likely irrelevant, or at least always contextually bound, whether something is *perceived* as a scaffold or not; the important issue for instruction is that such support tools be available, and perceived as available, to those in need.

Beyond the broad definition of supporting learners to do something that they are not able to do on their own (until such time as they are able to do so), what are some specific proposed functions of “scaffolds”? Wood, Bruner, and Ross (1976) suggest several functions, drawing on their analysis of tutoring interactions. Tutors, specifically, and scaffolds in general, engage learners by making what is learned important to the learner or by making what is learned more immediately meaningful and engaging to the

learner. Although the former focuses on changing learner perceptions and attitudes and the latter upon changing that which is perceived, these are, of course, not mutually exclusive, especially since both are emergent properties of the learner-in-activity. Wood and colleagues refer to this as recruitment of interest, and it is, of course, closely related to another function they mention: maintenance of focus. Tutors maintain engagement through repeated appeal to relevance or interest as initially fostered, or through the use of various extrinsic rewards.

Scaffolding also involves reduction in degrees of freedom and marking of critical features (Wood et al., 1976). That is, scaffolding a learning environment may involve narrowing the available strategies a learner has at his or her disposal as well as highlighting important information. Set free to solve a problem or perform a task, a learner may be unable to function in the sea of incoming information and possible strategies, and as a result lose interest and give up. However, with the support of a scaffold which reduces the available strategies, provides guidance, and marks important information, the learner may be able to handle the learning task at hand. A related function of scaffolds is to control and redirect frustration that may emerge during the learning process.

Wood and colleagues also noted that scaffolding occurs through the skilled modeling of activity (1976). Along these lines, Tharp (1993) delineated seven types of assistances that emerge through dialogue in the tutor/tutee relationship: task structuring (chunking and sequencing), cognitive structuring (organizing learning and providing for the emergence of explanatory frameworks), instructing, questioning, contingency management (reinforcement and punishment), feedback provision, and, modeling. This final type of assistance, modeling, is the demonstration of behavior. When a learner watches someone do a task, the learner is more likely to be able to do that task at a later date than if the learner had not viewed the model (Bandura, 1986). This modeled

performance is sometimes accompanied by a running narrative, or “thinking aloud,” delivered by the model (c.f., Schoenfeld, 1996). Moreover, if learners view a model, they are not only more likely to be able to perform the task in the future, but they may also be more likely to actually engage in the behavior. Vicarious reinforcement is the mechanism generally ascribed with bringing about this increase in behavior. From a social learning perspective, this means that people are more likely to engage in behaviors if they witness someone receiving a reward for engaging in that behavior; moreover, to the extent that such viewing may lead people to positively reassess their ability to perform the behavior, then self-efficacy is implicated as well (Bandura, 1977, 1986, 1992).

Buckley and Malouf (2005) used a brief video to examine the effect of modeling on attitudes toward mental health service seeking. The authors explicitly predicated the videos on Bandura’s social learning theory (1986), incorporating a modeled behavior, modeled attitudes, and modeled reinforcement of those behaviors and attitudes. The authors suggest, however they do not provide a strong rationale, that characteristics of the model should include similarity to the viewer, likeability, and prestige. The video depicts three first-person accounts of having received psychotherapy. One account depicts a man telling the story of his crises and the experiences that led him to seek counseling. A second “story” is similar but depicts a woman. A third story shows a therapist telling stories, “anecdotes,” about the therapeutic experience. Change in attitude was assessed in a controlled design with pre and post-assessment. Attitude was assessed using the Attitude Toward Seeking Professional Psychological Help Scale-ATSPPH (Fischer & Turner, 1970). The scale is comprised of four factors: recognition of need, tolerance of stigma, interpersonal openness, and confidence in mental health professionals. The experimental (video) group showed statistically significant increases in overall attitude as compared to the control group; moreover, the effect size for this change, $\eta^2=.24$, was large, using Cohen’s definition of .14 (Cohen, 1988). Post hoc

analyses of the individual factors indicated significant differences in all factors except “recognition of need,” which is not surprising given the purpose and nature of the videos, which focused on the experience of seeking and receiving care, not on recognizing the need for care. Despite strong results, or perhaps in light of them, it merits noting that although the intention was to predicate the videos on social learning theory, Buckley and Malouf do not, strictly speaking, present models of the intended behaviors and attitudes. What is presented are stories *about* the behaviors and attitudes, presented by people who tell those stories in ways that highlight the intended behaviors and attitudes.

Such first person accounts are stories told directly by others, and videotaping a first person account is essentially a story of a story. In fact, this particular study may be as supportive, if not more so, of the use of stories, little vignettes about experience, as it is of the researchers’ purported theoretical foundation: observational learning and its corollary, vicarious reinforcement. Since observational learning and vicarious reinforcement have considerable support in the literature, this finding for story telling is actually a somewhat unique contribution by the authors, although it is not explicitly recognized as such (and is contrary to the title of their article). Such a use for stories is also strongly suggested by Vitz (1990). Drawing on Bruner, Spence, and Tulving, he argues forcefully and cogently for the integration of narrative in the area of moral development to foster empathy, caring, and personal interaction.

Modeling is closely related to mentoring, as noted in the earlier discussion of mentors as the providers of scaffolding. Mentoring occurs when someone more competent than another helps the other do something that he or she could not do without the mentor or coach. “The coach provides the scaffold for the learner,” (Duffy & Cunningham, 1996, p. 186). The idea of coaching captures the essence of the apprentice-master relationship. Mentors ask questions, provide feedback, and deliver positive and negative reinforcement; they often push learners to strive for further movement through

their zone of proximal development. Mentors are both scaffolds in and of themselves, and they provide scaffolding. The former occurs as the mentor engages in activities that serve as models for the learner; the latter occurs when the mentor facilitates mentee performance through support, including simplification of tasks, pre-organization of information and procedures, modeling of individual task components, and provision of just-in-time assistance. Eventually the physical presence of mentors fades into the past, but the effects of the mentor, of being coached, continue on in the lived experience of the individuals mentored.

Summary

Taken together, reasoned action theories and constructivism provide a framework for identifying beliefs to target as part of behavioral change efforts and suggest approaches to creating interventions to achieve such change. Through the identification of relevant intentions and beliefs, reasoned action theories help identify and narrow the content and audiences for such interventions. Constructivism provides a perspective on understanding, learning, and behavior, and, from that perspective, a series of strategies that may be useful for changing behavior. These strategies include using narrative to frame efforts and scaffolding behavior change through a variety of tools, including modeling and mentoring. With these theories in mind, a video to increase pressure ulcer prevention care among home health aides was developed, with an emphasis on individual level cognitive change. Chapter 3 describes an investigation of intentions, attitudes, perceived norms, perceptions of control, and specific individual beliefs in order to inform affective, psychosocial content, and chapter 4 discusses the design and development of the video.

CHAPTER 3

THE DELINEATION OF CONTENT:

FACTUAL, PROCEDURAL, AND PSYCHOSOCIAL OBJECTIVES

Despite significant achievements in pressure ulcer care and prevention over the past decade, the incidence and prevalence rates remain high in specific populations and environments, with an overall incidence among recipients of in-home care reported as high as 17% (National Pressure Ulcer Advisory Panel Board of Directors, 2001). Clark and Kadhome (1988) reported a 20% incidence of stage 2 and above pressure ulcers in bed or chair bound patients receiving home health services. Ferrell, et. al., (2000) estimated nearly one out of every three patients entering home care are at risk for the development of a pressure ulcer. With approximately 8 million people receiving medical care at home in 1996, these rates represent a significant number of potentially affected individuals (Manangan, Pearson, Tokars, Miller, & Jarvis, 2002), and some advocates maintain that neglecting pressure ulcer prevention is tantamount to patient abuse and is not acceptable (Moore & Price, 2004).

Preventing pressure ulcers is a multi-faceted problem. In an effort to address this problem, the NPUAP (1989) called for a number of improvements to pressure ulcer prevention. The suggested improvements include national databases and reporting standards, standardized terminology, and educational programs. The educational programs need to be structured, organized, comprehensive, and directed at anyone who cares for a patient at risk for developing a pressure ulcer. With more and more patients receiving health care in home settings rather than in nursing home or other institutional venues (Brega et al., 2002) and care provision in the home setting shifting from professional nursing services to paraprofessional home health aides, home health aides have a unique opportunity to affect this problem. Home health aides therefore represent an important target for pressure ulcer prevention training efforts.

Cycle 1: Preliminary Generation

To develop a pressure ulcer prevention instructional program for home health aides, an iterative, six stage process was followed (See Figure 4, Chapter 2). As described on page 33, the first stage of the process, Cycle 1, examines what it is, broadly, that is to be taught and how, generally, to go about teaching it. Important tools for Cycle 1 include reviewing the literature, working with experts in the field of interest, and conducting interviews and focus groups with members of the relevant target audiences. The goal of this cycle is to narrow the design space to a set of loosely defined goals, a set of possible activities, and a vision, or use-case (Cockburn, 2000) of the intended delivery mechanisms.

For the present effort, the researchers began with the overarching goal of reducing pressure ulcer incidence and associated sequelae by increasing performance of pressure ulcer monitoring and prevention activities among home health aides. Preliminary, unstructured interviews were conducted with individual subject matter experts and members of the target audience in order to better understand pressure ulcer prevention care in the home health setting. These interviews sought to determine how care was handled, whether it was a priority, what might deter care, how professional training was handled, and what might support such care and training.

Drawing on these interviews, several decisions were made. First, although many methods of addressing the issue are available, including sociotechnical change, legislative regulation, and standards delineation and promulgation, the focus of this effort would be on individual level change through instructional activities. Second, the effort would concentrate on three content areas: pressure ulcers and their significance, risk factors associated with pressure ulcers, and key steps to prevention of pressure ulcers. Third, because engagement in pressure ulcer prevention is as much about choosing to act as it is about knowing how to act, the educational materials would focus

considerable attention on intentions and beliefs regarding pressure ulcer preventive care. Fourth, the instruction would be delivered as a linear video and available on DVD. This video would be able to be viewed in a single session lasting no more than 45 minutes.

Several factors influenced the choice of technology for the effort: in early discussions with home health care agencies, the widespread availability of DVD players in aides' homes, as well as in agencies for general training, became apparent; research with a similar lay health care population (foster care providers) found strong preferences for video (and paper-based) presentation of training information; the resources available for both development and evaluation precluded more time consuming (to design and implement) interactive media; and, finally, the instructional strategies planned for the effort – information provision, skills modeling, and persuasion – are reasonably well-supported, at least at an introductory level, by linear video.

Cycle 2: Specification Refinement

Once the target audience, overarching goals, and proposed structure and format are finalized, designers begin to determine specific content to be addressed and the specific format of that content. Design and content documents are produced during this cycle. For the effort reported here, two mutually supportive activities were conducted: the first focused on determining factual and procedural content while the second focused on affective content. Factual, procedural, and affective content address the three areas that make *prima facie* sense when considering why, in the absence of external barriers, people choose to behave in the ways that they do. That is, in general, people will engage in an activity when they know what to do, know how to do it, and, in fact, want to do it.⁸

⁸ It should be noted that there is some theoretical and empirical support for this three part perspective. The Information-Motivation-Behavioral Skills (IMB) model, for example, has been used in HIV prevention

Although discussed separately below, it is worth noting that determination of factual, procedural, and affective content mutually affect one another and, moreover, such determination is not atheoretical. First, the focus of the factual and procedural information is influenced by the affective issues one wishes to address. For example, some home health aides may believe that their clients are rarely at risk. From this they may believe that regardless of whether or not they monitor for and take steps to prevent pressure ulcers, it is unlikely that a client would develop pressure ulcers; so, in essence, why bother? If such beliefs were held by some aides, then factual information could be used to directly address this belief by targeting the factual basis of the belief, by presenting information which contradicts the perception that pressure ulcers occur infrequently; by targeting the belief itself, by addressing the perception that if something occurs infrequently, then it is not something to be concerned about; or by addressing both of these components.

Second, reasoned action theories also have several implications for the types of factual and procedural information integrated within an instructional intervention, over and above the selection of such content to address specific beliefs to be changed. Specifically, reasoned action theories generally posit that content, whether factual, procedural, or psychosocial, about an issue is not as relevant to behavioral change as content about the behavior itself. For example, information about HIV *as a disease* generally has been found to be unrelated to behavioral change whereas information about *HIV preventive behaviors* appears to be more strongly related to behavioral change (c.f. Fisher & Fisher, 2002). Similarly, research involving the reasoned action theories frequently notes, as described in chapter 2, that beliefs about a disease are less informative in terms of behavioral prediction than beliefs about specific behaviors

(Fisher & Fisher, 1992, 2000). It specifically draws on previously identified HIV prevention information and behavioral skills as well as motivational elements drawn from reasoned action theories.

related to disease prevention. That is, for example, how someone feels about motorcycle helmets is likely to be less informative concerning his or her intentions and actual helmet wearing behaviors than how he or she feels about wearing a motorcycle helmet under specific conditions, in a specific social milieu, and with specific barriers and facilitators. Therefore, for the behavior of “looking for and taking steps to prevent pressure ulcers,” factual, procedural, and affective content emerged in parallel and were integrated within the overall, constructivist influenced, design.

To identify factual and procedural information, “Know What” and “Know How,” the researchers interviewed home healthcare agency owners and supervisors as well as persons involved in state and national training and certification initiatives. At the same time, a primary subject matter expert worked with the research team to develop an initial content outline for a preventive care course. This outline addressed (1) awareness, (2) risk factors, and (3) prevention steps. After several iterations among the core team, the content outline was examined by a focus group of end-users and modifications were made based on their feedback.

In parallel to the effort to generate and specify factual and procedural content, the principal investigator led an effort to identify beliefs associated with pressure ulcer practices among the home health care audience. Reasoned action theory was used to understand the influences on home healthcare aides’ engagement in pressure ulcer prevention behaviors. As explicated in Chapter 2, this theoretical basis posits that healthcare aides have specific beliefs associated with pressure ulcer monitoring and prevention, and that these beliefs form the foundation of their attitudes, subjective norms, and perceived behavioral control regarding monitoring for and taking steps to prevent pressure ulcers. These latter constructs in turn influence intention to monitor for or to prevent pressure ulcers, and this intention determines, in part, whether the individual actually monitors for or takes steps to prevent pressure ulcers. Additionally,

certain distal variables, including prior experience with pressure ulcers, years on the job, and job satisfaction, are posited to affect the relationships among the variables. The overarching model used in the present effort is depicted in Figure 5. This reasoned action approach is similar to the integrated behavioral prediction model, as presented in Chapter 2. It recognizes the potential importance of the distal variables. Additionally, the definition of perceived behavioral control, or simply perceived control, in the present study is similar to Fishbein’s (2000) use of “self-efficacy.” The relationships among the items, variables, and constructs, and the operations generally used when moving among them, are depicted in Figure 6. For simplicity of reference, the “Theory of Planned Behavior” is used as short-hand for the underlying health behavioral model.

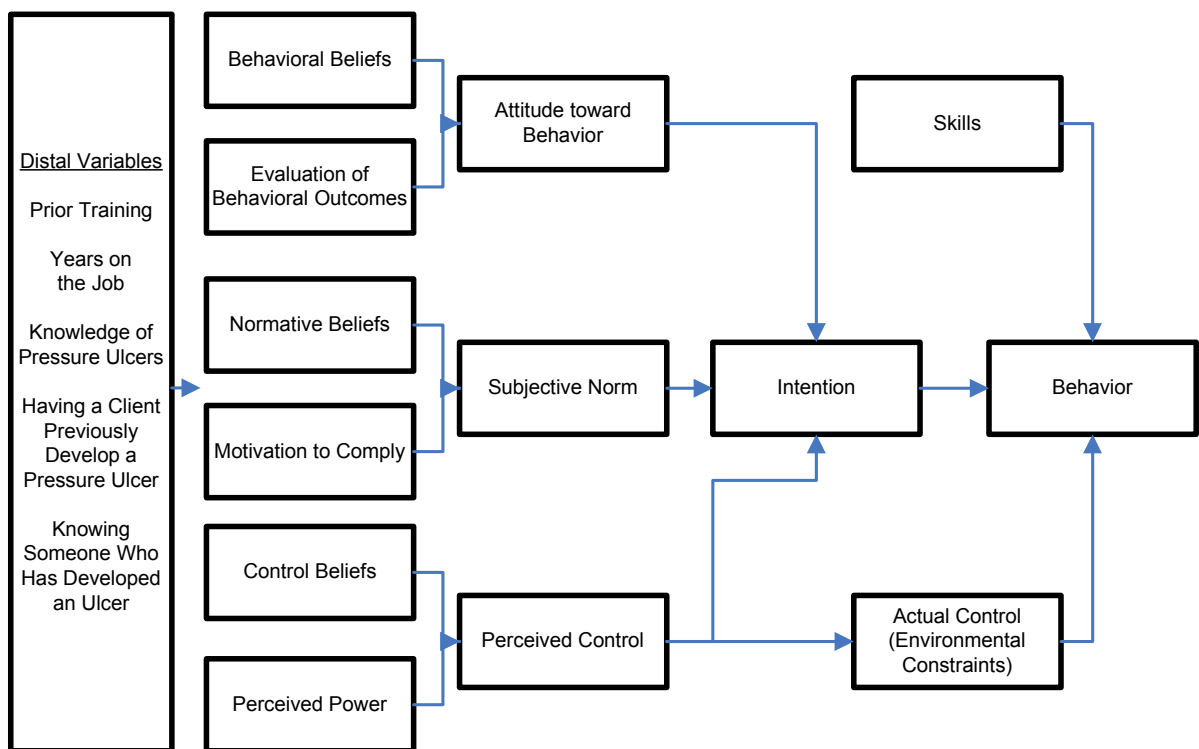


Figure 5: Reasoned action theory applied to present project

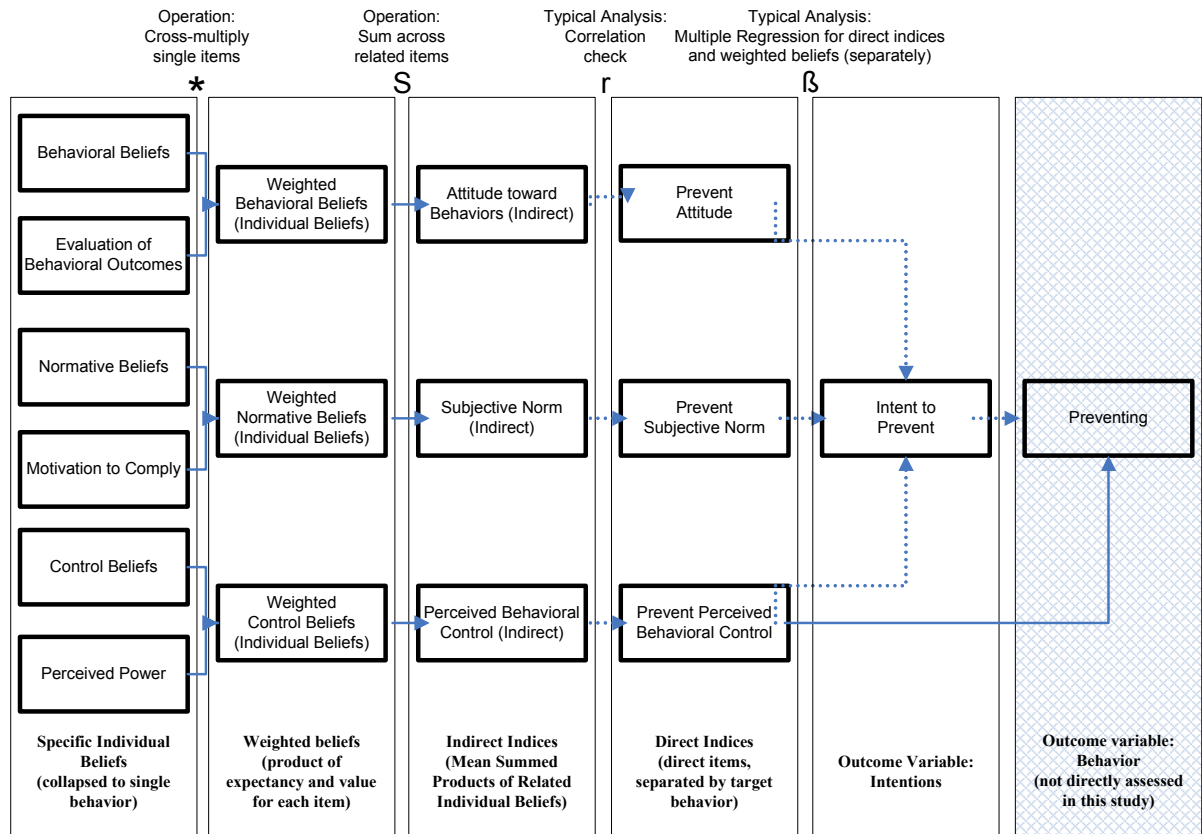


Figure 6: Health behavioral model as applied to home health aides' pressure ulcer prevention attitudes, subjective norm, perceived control, specific beliefs, and intentions. Target behavior: Looking for and taking steps to prevent pressure ulcers.

To describe psychosocial factors related to pressure ulcer prevention practices among home healthcare providers, a two stage procedure was implemented. First, beliefs related to pressure ulcer prevention practices were elicited through structured interviews conducted with a representative sample of the target audience (n=20). Second, a survey instrument was developed and home health aides were surveyed (n=80) to determine which beliefs were most associated with intentions to engage in pressure ulcer prevention. This instrument also assessed attitudes, perceived norm (subjective norm), and perceptions of control.

This two stage procedure differed from suggestions provided by Fishbein (2000), von Haefton, et al. (2001), Azjen (2002, September) and others in two respects, both of which arise from considerations regarding the use of reasoned action theories for

informing design and development efforts. This reconsideration frames educational interventions not as solely targeting those beliefs that are modal (i.e. accessible by a significant portion of the population, c.f. Conner & Sparks, 1995) but as also addressing beliefs regarding the target behaviors that could become salient among the target audience but that have been left unsaid for a variety of reasons, including a lack of immediate awareness of the beliefs (e.g. a consequence that an aide has not thought of but which, when mentioned, resonates with the aide), or an assumption of entailment of one belief to another (e.g. a specific barrier might not be mentioned if the aides consider the barrier to be a part of a belief already specifically stated).

As change efforts, educational endeavors not only have the potential to change particular beliefs, they also have the potential to change the salience of and relationships among beliefs, whether initially salient or not. For example, an effort may provide information and persuasive messages in order to reinforce the related beliefs that conducting pressure ulcer prevention is a part of comprehensive care and that providing comprehensive care is a good thing. Such an effort targets the mean values for two parts of the belief: the belief that the behavior is associated with the outcome (that pressure ulcer care is a part of comprehensive care) and the evaluation of the outcome (that comprehensive care is a good thing).

The importance of the beliefs for intentions and behavior lies not only in whether the beliefs can be modified but also in whether the beliefs are related to intentions and to behavior, and to what extent. Affecting a non-salient belief in the manner suggested above would only be useful if the instructional activity also affects the relationship of that belief to intention. Such efforts to change the association of beliefs with intentions are related to the media priming theory, or the use of interventions for “changing the association between a predictor and its outcome, even while the means for the predictor remains the same” (Fishbein & Yzer, 2003, p. 175).

Instructional efforts, therefore, may focus on (1) initially salient beliefs, especially those with a significant association with target intentions. This is the strategy typically suggested in regards to the application of the reasoned action theories. Instructional efforts may also focus on (2) increasing the association of salient beliefs with overall target objectives. That is, instructional materials may seek to “prime,” or more closely link, beliefs that are already salient among the audience with intentions to engage, and actual engagement, in pressure ulcer prevention. Finally, (3) these two strategies may be applied to beliefs which are initially non-salient among the target audience.

During an elicitation, the goal is usually to generate a list of potentially related beliefs by interviewing members of the target audience, to organize the list by frequency count, and then to select for inclusion in follow up survey work those beliefs with a relatively high rate of occurrence (salience). This is a reasonable approach for the development of survey instruments intended to predict performance of a behavior, especially when efficiency, defined as the most accurate prediction with the fewest items, is desired. Such an approach also provides important information for selecting target beliefs for interventions and educational efforts. The approach is reasonable because the beliefs selected should show a relatively high correlation with the targeted outcomes (i.e. intention to engage in a behavior and actual engagement in that behavior). Such beliefs, therefore, are good candidates for reinforcement or change.

This approach, however, is potentially incomplete. To effect change, instruction may need to address not only the beliefs that are salient, or ready-to-mind, among the target audience, but also beliefs that may not be immediately accessible and that may play a complimentary (or contrasting) role to the beliefs identified through direct inquiry of target audience members. These non-salient beliefs can be identified through interviews with experts and stakeholders involved with, but not directly engaged in, the behavior. Moreover, literature from studies in related areas may provide beliefs that have

prima facie validity for the population and behavior under study. For example, a study of beliefs regarding the provision of HIV/STD counseling care by health care providers might provide beliefs that could reasonably be mapped to provision of pressure ulcer preventive care. Although the topic matter, HIV/STD counseling, may be different, and the type of care provider may not be the same, the attitudes, perceived norms, and perceived control beliefs regarding provision of health care, particularly health care that may or may not be well-received by patients, may have relevance from one situation to another. Clearly not all such beliefs will occur in both settings; however, some may, and some occurring in one setting may be meaningfully associated with care provision in the other setting.

For example, Montano and Kasprzyk (2002) found the belief that HIV/STD counseling “is viewed by patients as intrusive or an invasion of privacy” was significantly correlated with intentions to engage in counseling ($r=.30$). Invasion of privacy seems to have prima facie validity as a belief likely to be associated with care provision in any setting in which patient personal care is involved. In the case of HIV/STD counseling, the care is personal and private as it relates to the types of questions asked as part of assessment, treatment, and prevention efforts. Pressure ulcer care is personal in that the patient’s body must be closely examined for signs of pressure ulcer development. If invasion of privacy does not emerge as a distinct issue during the elicitation phase, then inclusion of the belief in further work would be justified based on its prima facie validity versus its directly derived salience. These beliefs could be presented in a survey to ascertain their relevance⁹ among the audience.

⁹ This chain of reasoning could be further explored by examining whether items that were not mentioned by target audience members in the elicitation stage are rated as important when presented in a survey. These two forms of inquiry appear to directly address distinctions between beliefs that are immediately subject to recall and those which are not ready to mind but which, when directly presented, are recognized as important/relevant/beneficial. “Oh, I didn’t think of that but yes...” It should be noted, however, that even if salience for such items is not found in a survey, they may still be useful for instruction: see the previous discussion of fostering salience among initially non-salient items.

The customary method for analyzing survey data is to conduct a series of validating correlation analyses to check that the theoretical constructs relate to each other in expected ways. These checks are followed with regression analyses in order to identify the constructs and beliefs that are most associated with the outcome variable(s) once interitem covariance is parceled out. The approach provides a parsimonious set of constructs upon which to focus and a weighting of individual beliefs that predict the outcomes. This data is quite useful for prediction as well as for informing design. The analyses parcel out covariance among beliefs and yield the fewest targets for intervention: addressing this limited set of target constructs and beliefs is likely to have some effect on intentions and behaviors. However, as previously discussed in regard to elicitation studies, this approach to analyzing survey data, while useful, may be incomplete. It may be incomplete for two related reasons.

First, it assumes a static overall model of behavior. That is, if a particular model of a behavior (i.e. the relationships among the theoretical constructs and the relationships of the individual beliefs to those constructs) is demonstrated among a target audience, it focuses on changing or reinforcing the identified beliefs and constructs. This focus neglects the other beliefs and constructs and, in doing so, essentially assumes that this observed model itself is not amenable to change, at least in so far as the *relationships* among the attitudes, perceived norms, and perceived control beliefs are concerned.¹⁰

A second reason the traditional analysis strategy is inadequate for change research is that the correlations that are parceled out in a regression analysis may be important to the design and evaluation of interventions. That is, the correlated beliefs which are “lost” in a regression analyses may be unique contributors but

¹⁰ It should be noted there is nothing inherent to the model that leads to this perspective. The issue can arise, however, when the theoretical perspective is applied to a particular problem. If one uses the data from the methodology, *and only that data*, then one is deciding to focus on the existing belief structure. This is a reasonable approach; however, the decision to do so should be made explicit as part of the research effort.

multicollinearity may be too high (or power insufficient) to detect differences. Moreover, if several items simply are highly intercorrelated, then they may serve as multiple points of influence for the same underlying belief structure; however, the regression analysis does not take these into account. Therefore, from an educational or behavioral change perspective, descriptive and bivariate correlation analyses seem an equally reasonable source of information, one which results in a rich pool of overlapping, often redundant, target behavioral, normative, and control beliefs. In fact, such an approach is evident in recent intervention development work by Sayeed and colleagues (2005) and Fishbein and Cappella (2006).

As a result of these framing considerations, the present study modified the suggested procedure in the following ways. First, beliefs were elicited not only from the target audience, but also from literature reports of similar studies and interviews with subject matter experts. Second, the beliefs included in the survey stage were not based purely on frequency count among the elicited responses but also on relationships among similar beliefs and prima facie validity, on subject matter expert interviews, and on literature review. Third, in addition to examining survey data using the analytical framework suggested by von Haefton, et al., (2001) and Fishbein (2000), descriptive and bivariate correlation analyses were used to inform the selection of beliefs to be addressed in the instructional effort. The specific procedures employed in the elicitation and survey stages for the current effort are explained below.

Elicitation Stage: Identification of Beliefs

Open-ended interviews were conducted with target audience members (home health aides) to identify factors that might influence the likelihood of engaging (or choosing not to engage) in two pressure ulcer care behaviors: looking for signs of pressure ulcers (monitoring) and taking steps to prevent pressure ulcers (preventing).

Participants

Administrators and owners of home healthcare agencies and medical organizations providing home healthcare throughout the country were contacted and asked to distribute a study information sheet to individuals working within their organizations who might be interested in participating in the research. Across all stages of the present research effort, there were 139 agencies contacted. The list was generated from Carepathways.com, an independent web site dedicated to providing information regarding home care providers to families in need. The site maintains a database of professional home care agencies, organized by state and certification. Thirty-eight agencies contacted by the researchers agreed to help within the time frame specified. Of those 38 agencies, 29 provided at least one aide for at least one stage of the research. Individuals who expressed an interest were contacted via telephone to schedule their participation in structured interviews.

A total of 20 participants from 15 agencies located in 8 states participated in the elicitation stage of the research participants. Mean experience in the field was 8.68 years, with 10% having less than 1 year of experience, 40% having 1-5 years, 30% having 6-15 years, and 20% having more than 15 years of experience in the field. Ninety percent of the participants were female, which closely mirrors the population. Age of respondents was diverse, although it was skewed somewhat young (25-34, 35%; 35-44, 45%; 45-54, 15%; and 55 and above, 5 %).

Measures

A structured elicitation interview guide predicated on reasoned action theory was used by trained interviewers to gather information from participants. The guide consists of demographic questions and a set of open-ended questions designed to elicit factors that influence the participants' likelihood to engage in two pressure ulcer related

behaviors: looking for signs of pressure ulcer formation and taking steps to prevent pressure ulcers. All elicitation questions were asked separately for each of the two behaviors. The open-ended questions asked participants whether, how, and under what circumstances they perform the target behaviors. Positive and negative beliefs related to the three primary constructs of the Theory of Planned Behavior (behavioral beliefs, normative influences, and control beliefs) were also elicited through additional open-ended questions.

Behavioral beliefs.

Behavioral beliefs are beliefs about outcomes associated with performing the behavior. For example, perceptions that an activity violates someone's privacy and that performing the behavior would be appreciated by the patient are both examples of behavioral beliefs. To obtain behavioral beliefs, items ask participants to describe any plusses, advantages, or positive outcomes associated with the behaviors. This is followed by items that ask participants to describe minuses, disadvantages, or negative outcomes.

Normative influences.

Normative influences are sources of social pressure to engage or not engage in a particular behavior. For example, home health aides might believe that supervisors want them to engage in pressure ulcer prevention yet also believe that patients do not want them to engage in this behavior. Normative influences are elicited through items asking participants to describe any people, groups, or organizations that support or discourage engaging in the behaviors.

Control beliefs.

Control beliefs are beliefs about conditions which may affect engagement in a particular behavior. Control beliefs may be thought of as barriers and facilitators to

performance. For example, for pressure ulcer prevention, beliefs about time, patient understanding, and specific resources might affect performance. Control beliefs specific to performance of the two pressure ulcer activities were elicited by items asking participants to describe factors that make it harder or easier to engage in the behaviors.

Procedures

Interviews were conducted over the telephone. The interview lasted between 30 and 45 minutes. Trained interviewers asked participants the demographic and belief-related questions described above. After completion of 20 interviews, the responses began to saturate the topic, indicating that an adequate cross-section of the target audience had been achieved. Participants were paid a stipend of \$25 for their involvement.

Analysis

Similar to Montano & Kasprzyk (2002), summary analyses were conducted in order to place all statements into the following lists for each of the two behaviors: positive and negative beliefs related to behaviors (behavioral beliefs), people or groups that encourage or discourage the taking of the actions (normative influences), and factors or situations that make it easier or more difficult to engage in the behaviors (control beliefs). Two researchers independently examined the lists to identify patterns. Items closely related in meaning were grouped to form themes. The resulting two sets of themes were examined by four researchers, including the two who generated the lists, in order to produce one integrated theme set for each behavior. Differences in the two schemes, which were minor, were discussed in order to build consensus. For example, one researcher initially collapsed statements related to “making the aide/agency look good” and “making the aide/agency feel good or proud” to a single theme whereas the

other distinguished the two themes. Through discussion, the four researchers decided that appearance (look good) and emotional response (feel good) may be closely related but for this effort would be treated separately since they may potentially be different, e.g. they may be outward and inward looking beliefs. Other differences between the two schemes were similarly resolved through negotiation. In general, when the grouping of statements might lead to either multiple different themes or to a single more unified theme, the multiple themed interpretation was selected in order to increase the diversity of themes. There were no theme groupings over which agreement could not be reached. Because there were few differences in the themes identified for each behavior, the responses were pooled to create a single set of themes for both behaviors.¹¹

Results

Frequency counts for the themes are presented in Table 1, Table 2, and Table 3. Behavioral, normative, and control beliefs each had several themes mentioned by at least a quarter of the sample. Some themes were mentioned by more than half of the participants.

For behavioral beliefs (Table 1), that the behavior would prevent pressure ulcers (89.5%), would make the aide look good (68.4%), would make the aide feel good or proud (63.2%), would relieve or avoid client pain (57.9%), would show concern or compassion (52.6%), and would prevent overall deterioration of the client's condition (52.6%) were all mentioned by more than one half of the sample. Four other themes were mentioned by at least a quarter of the sample. No negative outcomes were mentioned by more than half of the sample. In fact, 89.5% of the sample explicitly said

¹¹ Although the two behaviors (looking for and taking steps to prevent pressure ulcers) may be different in some ways, in general the target audience conceived of them similarly and the differences were unlikely to lead to significant differences in beliefs, intentions, and behavior for each target behavior. In light of this, as well as resource limitations and future participant burden, the decision was made to collapse the behaviors.

“none,” indicating there may be few negative outcomes associated by the majority of care providers with the provision of pressure ulcer prevention care. However, a sizeable minority of respondents (>25%) mentioned patient fear (42.1%), patient refusal (36.8%), patient discomfort (36.8%), and patient embarrassment (31.6%) as potentially negative outcomes of looking for and/or taking steps to prevent pressure ulcers.

Table 1

Themes Related to Attitudes and Behavioral Beliefs

<u>Positive Themes</u>	<u>#</u>	<u>%*</u>
Prevention Of Pressure Ulcer/ Bed Sore	17	89.5%
Makes The Aide/Agency Look Good	13	68.4%
Makes The Aide/Agency Feel Good/Proud	12	63.2%
Relieve/Avoid Pain	11	57.9%
Shows Concern/Compassion	10	52.6%
Patient/Client Overall Condition Will Not Worsen	10	52.6%
Avoids Problems/Legal Problems For The Agency	9	47.4%
Better Health In General	8	42.1%
Providing Good/Expected Care	7	36.8%
Builds Referrals/Good Reputation For The Agency	5	26.3%
Life-Saving Measure	4	21.1%
Client/Patient Appreciation/Satisfaction	4	21.1%
Avoid Out Of Home Placement	3	15.8%
Keeps Costs Down	3	15.8%
Increased/Improved Circulation	1	5.3%
<u>Negative Themes</u>		
None	17	89.5%
Patient Fear	8	42.1%
Patient Refuses Care/Uncooperative/ Noncompliant	7	36.8%
Uncomfortable/Painful For The Patient	7	36.8%
Embarrassing/Awkward For Patient	6	31.6%
Uncooperative Family Members/ Family Concerns	4	21.1%
HHA Is The Only One Looking For Pressure Ulcers	4	21.1%
The Need For Managers/Nurse To Be Involved	3	15.8%

n=20 * Percentage of respondents with one or more statements coded to the theme.

In considering sources of social influence, as presented in Table 2, the only positive theme mentioned by more than half of the sample was family members (52.6%), while nurses (47.4%), doctors (36.8%), supervisors (26.3%), and “no one” (26.3%) were mentioned by at least a quarter of the sample. The majority of the aides appear not to perceive anyone as a source of negative influence, with 63.2% of the sample indicating

that “no one” or “nobody” influences them to *not* engage in the behavior. Nearly 50% of the aides, however, did mention family members (47.4%) and the clients themselves (26.3%) as a source of negative social pressure regarding pressure ulcer prevention.

Table 2

Themes Related to Subjective Norm and Normative Influences

<u>Positive Themes</u>	<u>#</u>	<u>%*</u>
Family Members	10	52.6%
Nurses	9	47.4%
Doctors	7	36.8%
Supervisors	5	26.3%
No one	5	26.3%
Patients/Clients	4	21.1%
Physical Therapist	4	21.1%
Co-workers	3	15.8%
Agency	3	15.8%
Regulatory Agencies	2	10.6%
Schools/training programs	2	10.5%
Ministers	1	5.3%
Attorneys	1	5.3%
Case Manager	1	5.3%
Websites	1	5.3%
Patients who have had pressure ulcers in the past	1	5.3%
<u>Negative Themes</u>	<u>#</u>	<u>%</u>
No one/Nobody	12	63.2%
Family Members	9	47.4%
Patients/Clients	5	26.3%
Owners of the Agencies	1	5.3%
Other Team Members	1	5.3%

n=20 * Percentage of respondents with one or more statements coded to the theme.

For control beliefs, as shown in Table 3, none of the positive or negative themes identified were mentioned by more than half of the sample. For positive themes, a range of beliefs regarding things that might facilitate pressure ulcer prevention were mentioned. Positive control beliefs mentioned by at least a quarter of the sample were having a clean or uncluttered environment (47.4%), having the patient in a bath or bathroom (31.6%), and working in a safe and/or familiar environment (26.3%). Other facilitators mentioned less frequently were related to resource availability and characteristics of the setting of care. A range of beliefs related to things that might hinder

performance of pressure ulcer prevention activities were also mentioned. The most common negative control belief was None or Nothing. That is, 36.8% of the sample explicitly stated that they could not think of anything that would make it harder to engage in pressure ulcer preventive care. Only one negative control belief was mentioned by more than a quarter of participants: family or patient friends being in the way (31.6%). A cluttered or unclean environment, an obese or overweight patient, and lack of space were mentioned by more than a fifth of the respondents. Other potential barriers to care provision mentioned less frequently were related to the lack of specific resources or supplies, having an unsafe or inadequate environment, clients being in pain or uncooperative, and not seeing a client frequently enough.

Table 3

Themes Related to Perceived Control and Control Beliefs

<u>Positive Themes</u>	<u>#</u>	<u>%*</u>
Clean/Uncluttered Environment	9	47.4%
Having Patient In Bath/Bathroom	6	31.6%
Safe/Familiar Environment	5	26.3%
Having Patient In Bed/Bedroom	4	21.1%
Having Needed Supplies	4	21.1%
Hospital Bed Present	3	15.8%
Good Lighting	3	15.8%
Having Enough Room	3	15.8%
Privacy	2	10.5%
Patient Cooperation	2	10.5%
Supportive Family Members	2	10.5%
Mechanical Lifts Present	1	5.3%
Familiar With Patient	1	5.3%
Visiting in Home versus Institution Setting	1	5.3%
<u>Negative Themes</u>	<u>#</u>	<u>%</u>
None/Nothing	7	36.8%
Family/Friends In The Way	6	31.6%
Unclean/ Cluttered Environment	4	21.1%
Obese/Overweight Patient	4	21.1%
Not Having Enough Room/Set Up Of The Room	4	21.1%
Improper Bed	3	15.8
Not Having Proper Lifts/Equipment	3	15.8%
Uncooperative/Combative Patient	2	10.5%
Not Having Needed Supplies	2	10.5%
Unsafe Environment	2	10.5%
Lack Of Privacy	1	5.3%
Client In A Place That Is Difficult To Move Them (e.g., Chair)	1	5.3%
Poor Lighting	1	5.3%
Client Is In Pain/It Is Painful For The Client To Move	1	5.3%
Not Seeing A Patient Frequently Enough	1	5.3%
Institutional Setting	1	5.3%

n=20 * Percentage of respondents with one or more statements coded to the theme.

All themes from the elicitation study were included in the survey items; however, the themes were translated into survey items in three different ways: as a one-to-one mapping, a many-to-one mapping (combination), and a one-to-many mapping (separation). In one-to-one mapping, a single belief from the elicitation was, with slight modification, included directly as an item in the survey. For example, “shows concern/compassion” was a behavioral belief theme mentioned by 52.6% of respondents in the elicitation (Table 1). This theme was included in the comprehensive belief list as

“shows compassion” (Table 4). This belief then served as the basis for the survey item: “Looking for and taking steps to prevent pressure ulcers shows compassion,” the results of which are presented in Table 6. Many-to-one mapping occurred by combining elicitation items that were similar. For example, nurses, supervisors, and case managers, from Table 2 were combined to form a single group—supervisors—for the comprehensive table (Table 4) because upon examination of the actual coded responses, and in discussions with a subject matter expert, it was apparent that these were all “individuals who supervise my provision of care.” For the survey, the item was constructed as “my supervisor/case manager/nursing manager” (Table 7) to capture the holistic sense of supervisor while also ensuring that a general sense of the types of supervisors was noted. Finally, one-to-many mapping occurred when multiple distinct concepts were embedded within a single theme, even though those concepts were generally uttered together by respondents during the elicitation. For example, providing expected care (Table 1), a theme noted by 36.8% of the respondents, served as the source of two items: “is a standard of practice/is required for my job” and “would make me feel I am providing comprehensive health care” (in Table 4 and Table 6). The decision to distinguish these concepts rested on both an internal/external perspective inherent in the two concepts (i.e. a standard of practice is an organizational goal to be met whereas a feeling of providing good care is a personal objective to be sought) and the presence of these as distinct items in a study of health care professionals’ provision of HIV/STD counseling (Montano et al., 2002).

As noted earlier, beliefs included in the survey came not only from the target audience elicitation study, but also from related literature and input from subject matter experts. For example, the beliefs “opportunity to change behavior” and “opportunity to educate” were derived from a study on health care providers’ provision of HIV/STD counseling (Montano et al., 2002). The control belief “established procedures” was

added to the list when a subject matter expert noted that it seemed unusual that the aides did not mention the establishment of a routine or common rules regarding care in the elicitation results. The expert noted that in her practice she had observed that the aides liked such routines and that established procedures provided structure and repetition to the aides' activities, making it easier for them to perform their tasks regularly. From this discussion, the researchers decided to include a control belief regarding the existence of established rules and procedures.¹² The final list of beliefs is presented in Table 4.

¹² Interestingly, although not the focus of the present report, this item, while not mentioned in the elicitation, was one of the control beliefs most highly correlated with intention in the survey stage of the research. Moreover, it was one of the few significant predictors when intention was regressed upon the control beliefs.

Table 4

Comprehensive List of Beliefs for Survey Development

Behavioral Beliefs

1. Appreciated By Patient
2. Appreciated By Patient's Family
3. Awkward And Uncomfortable
4. Could Lead To Complaints
5. Compliments And Referrals
6. Part of Comprehensive Healthcare
7. Reduces Employer Liability
8. Family Anxiety
9. Good Relationship
10. Increases Risk Of Infection
11. Reduces Liability
12. Makes Me Look Good to Employer
13. Makes Me Feel Good
14. More Paperwork
15. No Compensation
16. Opportunity To Change Behavior
17. Opportunity To Educate
18. Patients Don't Want To Discuss
19. Patient Feels Embarrassed
20. Patient Thinks Intrusive
21. Patient Worried
22. Reduces Workload
23. Reduces Long-Term Consequences
24. Shows Compassion
25. Something I Am Competent To Do
26. Standard Practice
27. Time & Resources
28. Time Discussing Increases
29. Time Discussing With Family
30. Avoids Trouble With State
31. Perceived Unnecessary By Employer
32. Perceived Unnecessary By Family
33. Perceived Unnecessary By Patient
34. Wastes Time

Normative Beliefs

1. Advocacy Groups
2. Coworkers
3. Employer
4. Experts
5. Families
6. Guardian
7. Health Insurance Companies
8. National/Local Organization
9. Nurses Aides
10. Patients
11. Professional Organization
12. School Professional
13. State Inspectors
14. Supervisor
15. Websites

Control Beliefs

1. Able To Convince Family
2. Able To Convince Patient
3. Clean Environment
4. Cluttered Environment
5. Dirty Environment
6. Established Procedures
7. Established Relationship
8. Family Follows Instructions
9. Family Resistance
10. Family Support
11. Family Understands
12. Knowledge/Intuition Of Risk
13. Neat Environment
14. New Patient
15. Not Sharing Responsibilities
16. Opposite Sex Patient
17. Overweight Patient
18. Patient Different from Self
19. Patient Feels Shame
20. Patient Follows Instructions
21. Patient Immobile
22. Patient Mentally Ill
23. Patient Understands
24. Patient Wants To Die
25. Privacy Available
26. Space Available
27. Supplies Available
28. Time Available
29. Uncooperative Family
30. Uncooperative Patient
31. Unsafe Environment
32. Visit At Home
33. Visit At Institution
34. Visit Without Family/Friends

Survey Stage: Beliefs and Attitudes Survey

Once lists of beliefs potentially related to pressure ulcer practice were identified, a survey instrument was created following guidelines set forth by Ajzen & Fishbein (1980), Conner & Sparks (1995), and Ajzen (2002, September). The complete survey instrument is in Appendix A. The survey was completed by home health aides to gather quantitative data regarding psychosocial aspects of pressure ulcer preventive care.

Participants

Home healthcare agencies in the United States were contacted between December 2004 and March 2005 and asked to distribute project information to home health aides within their organizations. Individuals who responded to the distributed information were screened to ensure they were currently working in the field of home healthcare and providing “hands-on” personal care for homebound patients. Individuals meeting the screening criteria were invited to participate in the study. Steps were taken to ensure a representative cross-section of the population by ethnicity, years of experience in the field, type of and specific organization of employment, and geographic location. These steps included the selection of recruitment locations likely to yield higher proportions of minority involvement. Qualifying home health aides were given the choice of completing a paper survey or being interviewed over the telephone. A \$20.00 cash incentive was offered for participation. Agencies that referred at least one qualified aide for the project were promised a site license of any educational materials developed based on the results of the research. Eighty respondents representing 34 agencies from 14 states participated in the survey stage of the project. Participants were primarily female (98.8%). The sample included Caucasian (55%), African American (35%), Hispanic (13.8%), and other (3.8 %) including Native American Indian and Asian participants.

Race/ethnicity numbers add to more than 100% as a result of multiple responses.

Participant reported ages were well-distributed: 18-24, 3.8%; 25-34, 20%; 35-44, 23.8%; 45-54, 31.2%; 55-54, 11.2%; and 65+, 10%. The majority (98.8%) of respondents provided “hands-on care,” such as bathing or personal hygiene. In terms of job titles, respondents identified themselves as Home Health Aides/Certified Home Health Aides (55%), Certified Nurse’s Assistant/Technician (31.2%), Home Care Aide (3.8%) and other (26.2%), including Home Healthcare Aide, Community Aid, and Patient Caretaker. The participants averaged 9.94 years of experience in the field with 12.5% less than 2 years, 27.5% having 2-5 years, 23.8% having 6-11 years, 28.8% having 11-20 years, and 7.5% having more than 20 years of experience.

Measures

As guided by reasoned action theory, intention, attitude, subjective norm, and perceived control were assessed with one or more questions. Within reasoned action theory there are three main levels of assessment:

1. direct assessment of the constructs: intention, attitude, subjective norm, and perceived control,
2. direct assessment of individual beliefs: behavioral beliefs, normative beliefs, and control beliefs, and
3. indirect assessment of the constructs: scale scores created from the mean of the individual beliefs associated with each of the main constructs.

Direct assessment of each construct occurs through one or more items that inquire about the participants’ attitudes or beliefs directly related to the specific behavior being considered. For example, for the prevention behavior of “taking steps to prevent pressure ulcers,” a direct assessment of attitude (ATTD) includes questions such as: “My taking steps to prevent pressure ulcers is....Very Important...Not Very Important” or

“Very Beneficial...Not Very Beneficial.” Attitude regarding the monitoring behavior of “looking for signs of pressure ulcers” is assessed with the same types of items.

Individual beliefs are specific beliefs associated with the target behavior itself. An example of such a belief is “My taking steps to prevent pressure ulcers...would be considered an invasion of privacy by my clients.” Individual beliefs are assessed through two matched items. The first item generally assesses the presence of the belief, that is, whether someone agrees with the belief or believes a condition underlying a belief is likely. The second item assesses the valence of the belief, that is, whether the belief has a positive or negative impact regarding the target behavior in question. Multiplying these two items yields a *weighted behavioral belief*, a variable that represents both the likelihood/presence of a belief and the likely impact of that belief on performance.

Indirect assessment of attitudes, subjective norm, and perceived control occurs through the creation of a scale from the weighted behavioral beliefs. An indirect measure of Attitude (ATTI), for example, is created from the mean of the associated weighted behavioral beliefs. There is no indirect measure of Intention.

When conducting a reasoned action theory based survey that includes all three levels of assessment (direct construct, direct individual belief, and indirect construct), there are potentially a considerable number of questions involved. If multiple behaviors are of interest, then the entire set of questions would, ideally, be specific to each behavior. Therefore, for each behavior added to the instrument, the number of items in the survey effectively doubles. Therefore, when the number of individual beliefs included in the instrument is high, the survey may become too lengthy to be practically implemented when multiple behaviors are of interest. To reduce the total number of items to a practical level, the two target behaviors of interest herein (“looking for signs of pressure ulcers” and “taking steps to prevent pressure ulcers”) were collapsed to a single behavior (“looking for and taking steps to prevent pressure ulcers”) at the individual

belief level. That is, for an individual belief, such as “protection from liability,” the participants responded singly to questions such as “Looking for signs of pressure ulcers and taking steps to prevent them....would protect me from liability.” However, as discussed below, for the direct items, such as attitude or intent, the participant responded for each behavior separately.

Direct Attitude.

Direct attitudes of respondents regarding monitoring and regarding prevention were each measured with 2 items. Monitoring attitude was assessed with “My looking for signs of a pressure ulcer on my patients is...Extremely Good—Extremely Bad” and “...is Extremely Important—Extremely Unimportant.” Similarly, prevention attitude was assessed with “My taking steps to prevent pressure ulcers on my patients is... Extremely Good—Extremely Bad” and “...is Extremely Important—Extremely Unimportant.” Responses were 7-point scales, with higher scores having a positive connotation of Importance or Goodness.

Behavioral beliefs.

Behavioral beliefs were related to awkwardness, competence, liability, patient needs, patient embarrassment, feeling good, and looking good to one’s employer. An example of such a belief is “Looking for signs of pressure ulcers and taking steps to prevent them would cause the patient’s family anxiety.” Thirty-four individual behavioral beliefs were assessed with two matched questions each, yielding a total of 68 items for the behavioral beliefs. The first of the matched pair of questions, the behavioral belief (Bb), examined the extent to which the participants agreed or disagreed with specific beliefs. Response categories for these items were on a 7-point scale, from Strongly Agree to Strongly Disagree. The second of the matched pair of questions, the belief evaluation

(Be), examined whether the participants considered the concepts underlying these beliefs to be either good or bad. The evaluative responses were also on a 7-point type scale with responses from Extremely Good to Extremely Bad. Higher scores on the scales indicate stronger agreement on the beliefs scales and a greater indication of “goodness” on the evaluative scales.

Direct Subjective Norm.

Direct Subjective Norms were assessed with 1 item for each behavior. For monitoring, the item was “Most people who are important to me think I should look for signs of pressure ulcers on my patients.” For prevention, the item was “Most people who are important to me think I should look for and take steps to prevent pressure ulcers on my patients.” Both items were on a 7 point scale (Strongly Agree—Strongly Disagree). High scores indicate a subjective norm that significant others expect pressure ulcer preventive care to be performed.

Normative beliefs.

Normative beliefs were assessed by 15 pairs of questions that measured individual normative beliefs (Nb) and the associated motivation to comply (Mc) with each source of influence, for a total of 30 items. For example, participants responded to whether “Experts think or tell me I should look for signs of pressure ulcers and take steps to prevent them” (7-point, Strongly Agree—Strongly Disagree) and “I want to do what experts think I should do” (7-point, Strongly Agree—Strongly Disagree). Higher scores indicate that the respondent believes the normative influence would want them to engage in the behavior and that the respondent in fact wants to do what that normative influence thinks she or he should do. The influences included: Coworkers, Employers, Patients, Families, Guardians, Experts, Advocacy Groups, Professional Organizations,

Websites, Health Insurance Companies, State Inspectors, National/Local Organizations, Supervisors, School Professionals and Nurses Aides.

Direct Perceived Control.

Direct Perceived Control for each behavior was assessed with two items specific to each of the behaviors. The first item assessed perception of control, e.g. “My taking steps...is,” (Absolutely Up to Me—Not at All Up to Me). The second item assessed perceptions of ease or difficulty of the behavior, e.g. “My taking steps...is” (Extremely Easy—Extremely Difficult). Again, responses were on 7 point scales, with higher scores indicating the behavior was up to the participant and/or easy for them to do.

Control beliefs.

Control beliefs were assessed by thirty-four pairs of items. These control beliefs are associated with barriers or facilitators to engagement in a target behavior. The potential barriers and facilitators included time, space, compliance of family and patient, and environmental conditions. Each individual control belief was assessed by two items: control beliefs (Cb) and perceived power (Pp) related to the behaviors. For example, “Encounter a patient of the opposite sex” was rated for control/perceived likelihood (7-point, Extremely Likely—Extremely Unlikely) and perceived power/impact (7-point, A Lot Easier—A Lot Harder). Responses with higher scores indicate greater likelihood of encountering the condition and/or of the condition inhibiting or facilitating the behavior.

Intention.

Intention to engage in each of the target behaviors was assessed separately, each with a single item. Specifically, these items were “I intend to look for signs of a pressure ulcer on my patients” (7-point, Strongly Agree—Strongly Disagree) and “I intend to take

steps to prevent pressure ulcers from forming on my patients” (7-point, Strongly Agree—Strongly Disagree). Responses with higher scores indicate stronger intention to engage in the behavior.

Scale Construction

The original scales for all of the variables ranged from 1 to 7, with higher scores indicating higher levels of concurrence with the statement or more positive ratings of the beliefs (e.g. more positive, more likely, easier). Unipolar scaling (1-7) was maintained for motivation to comply and perceived power. Behavioral beliefs, behavioral evaluation, normative beliefs, and control beliefs were rescaled to +3 to -3 in order to capture the general positive and negative sense of the individual ratings associated with these beliefs. Low probabilities and unfavorable evaluations would then be represented by negative numbers and high probabilities and favorable evaluations by positive numbers (Ajzen, 1991).

Once items were scaled, direct indices for attitude, subjective norm, and perceived control were created, and weighted beliefs were generated. From these weighted beliefs, indirect indices for attitude, subjective norm, and perceived control were constructed.

Direct indices.

Direct indices for attitude, subjective norm, and perceived behavioral control were generated for the monitoring and the preventing behavior as the mean of the associated direct items as described in the direct attitude, direct subjective norm, and direct perceived control sections above. For example, the direct attitude index for “looking for signs of pressure ulcers” (ATTDmon) is comprised of two items “My looking for signs of a pressure ulcer on my patients is...Extremely Good—Extremely Bad” and

“...is Extremely Important—Extremely Unimportant.” The other 5 direct indices (ATTDprevent, SNDmon, SNDprevent, PBCmon, PBCprevent) were similarly constructed.

Weighted beliefs.

Weighted beliefs were created by multiplying the behavioral belief and corresponding belief evaluation for each item. For example, for the behavioral belief “Looking for and taking steps to prevent pressure ulcers...would reduce my personal liability,” agreement with the statement (+3 to -3, Strongly Agree—Strongly Disagree) was multiplied by evaluation of the outcome (+3 to -3, Extremely Good—Extremely Bad), yielding a weighted prevention of liability belief ranging from +9 to -9 which captures not only perceptions of likelihood of the outcome (agree/disagree) but also the valence (good/bad) of the outcome. Weighted beliefs were calculated for all 34 behavioral beliefs, 15 normative influences, and 34 control beliefs.

Indirect indices.

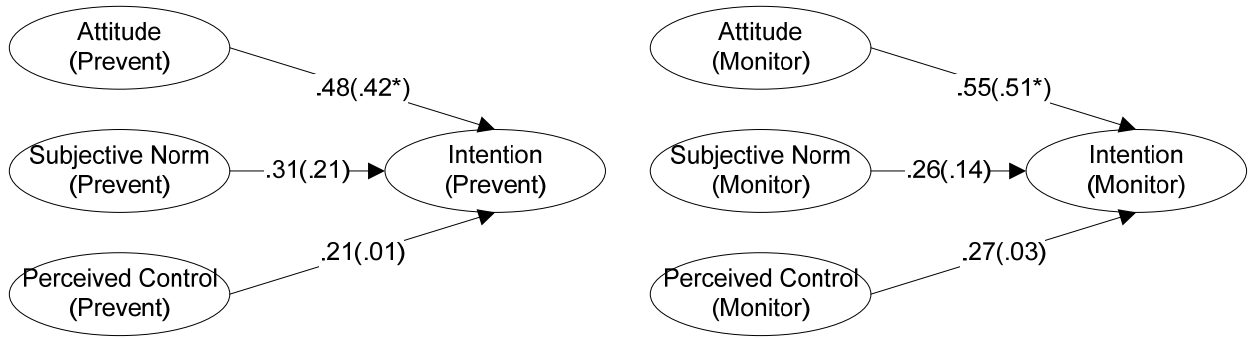
Indirect indices were constructed as the mean of the weighted beliefs associated with a particular construct (i.e. attitude, subjective norm, perceived control). As a specific example of the construction of these indirect indices, consider the case of the 34 behavioral beliefs: using the formula $(\Sigma(BbBe)/N)$, the scores for behavioral beliefs were multiplied by the corresponding measures of evaluation of the behavior. Those scores were summed across all behavioral beliefs and then divided by the number of beliefs included in the index. This yielded an indirect measure of attitude (ATTI). An identical procedure was followed to generate the indirect variables for subjective norm (SNI) (15 weighted normative influences) and perceived behavioral control (PBCI) (34 weighted

control beliefs). This construction was repeated for both target behaviors (monitoring and prevention).

Analysis and Results

Examination of the data indicated that several individual beliefs varied by target behavior. That is, some beliefs were stronger or more highly correlated with intent to *look for* (monitor) signs of pressure ulcers compared to *taking steps to prevent* pressure ulcers, and vice versa. Independent analysis of each behavior, by regressing the respective intentions upon their associated attitude, subjective norm, and perceived control constructs, led to models with similar structures. Figure 7 illustrates that although the amount of variance and the specific beta weights associated with the relationships differed somewhat, essentially the analyses yielded models with similar relationships. Specifically, the analyses indicated that attitude toward the respective behavior was the sole significant predictor of intention to engage in the specific behavior. Given this finding, and considering the substantial increase in time and effort due to increased complexity of analysis if continuing to treat those behaviors as distinct, the decision was made to collapse the two behaviors. The collapsed variables were generated as the mean of the related variables, e.g. $ATTD = (ATTD_{\text{monitor}} + ATTD_{\text{prevent}}) / 2$. Chronbach's alpha for the resulting direct items indicates marginally acceptable internal consistency for the constructs (ATTD, 3 items, $r = .558$; PBC, 2 items, $r = .665$)¹³.

¹³ Subjective norm was assessed with a single item per behavior. Note, that when the affective item in the attitude index is deleted, $\alpha = .783$. This result coincides with other research regarding the attitude construct that indicates that attitude may have a two-factor solution: evaluative and affective. Similarly, the perceived control results also align with existing research indicating that perceived control of a behavior may be different from self-efficacy regarding the behavior (perceptions of ability) (Aizen, 2002, September).



*p<.05;

Using the enter method, Prevent ($F_{3,76}=9.279, p < 0.05, \text{Adjusted } R^2 = .24$) and monitor ($F_{3,76}=12.164, p < 0.05, \text{Adjusted } R^2 = .30$).

Figure 7: Independent models of prevent and monitor behaviors

Descriptive statistics for the collapsed variables are provided in Table 5. The analysis of the collapsed variables followed a set of steps and procedures suggested by von Haefton, et al. (2001) for the identification of beliefs for inclusion within instruction and behavior change materials. These steps include three types of analysis: (1) a correlation analysis among constructs of the model, (2) a ‘direct determinant’ regression analysis of intention (INTENTD) on the direct variables attitude (ATTD), subjective norm (SND), and perceived control (PBCD), and (3) a separate stepwise regression analysis of intention on each of the three sets of individual beliefs (behavioral, normative, and control). In addition, descriptive and bivariate statistics were examined.

Table 5

Descriptive Statistics (M, SD)

for Collapsed Psychosocial Constructs at Survey

<u>Construct</u>	<u>M</u>	<u>SD</u>
Intentions*	2.63	.95
Attitudes*	2.19	.59
Subject Norm*	2.25	1.08
Perceived Control**	5.93	1.15

* 3 to -3, ** 1 to 7

Correlation analysis.

The correlation analysis examined whether and how direct and indirect measures of the psychosocial constructs of the model are related to each other and to participants' intentions to engage in the behaviors of interest. The goals of this analysis are two-fold: (1) to determine whether the direct variables are associated with each other, and specifically whether ATTD, SND, and PBCD are associated with INTENTD; and (2) to determine whether the indirect variables are associated with the direct variables (i.e. ATTD and ATTI; SND and SNI; and PBCD and PBCI).

Direct Attitude ($r=.560$), Indirect Attitude ($r=.394$), Direct Subjective Norm ($r=.295$), Indirect Subjective Norm ($r=.345$), and Direct Perceived Behavioral Control ($r=.264$) were all significantly correlated with Intent ($p<.05$). Indirect Perceived Behavioral Control (PBCI) was not significantly correlated with intent ($r=.006$, $p>.05$). Moreover, as expected by reasoned action theory, the direct measure of Attitude (ATTD) was significantly correlated with the indirect measure (ATTI) ($r=.285$, $p<.01$), the direct measure of subjective norm (SND) was significantly correlated with the indirect measure (SNI) ($r=.397$, $p<.001$), and the direct measure of perceived control (PBCD) was significantly correlated with the indirect measure (PBCI) ($r=.467$, $p<.001$).¹⁴

Direct determinant regression analysis.

A 'direct determinant,' or construct, regression analysis examines how much of people's intentions can be explained by the various constructs. That is, when controlling for the other variables, is intention more or less related to people's overall beliefs about the action, their beliefs about what other people think about it, or their perceptions of things that make it easier or harder to do the action. Stepwise regression (F-to-enter

¹⁴ Note that the indirect to direct correlations, while significant, are lower than would be typically expected within reasoned action models. This is perhaps in part a result of the inclusion of non-modal (and non-salient) items in the specific behavioral, normative, and control belief sets.

<=.05; F-to-remove >= .10) of Intention on ATTD, SND, and PBCD left the direct measure of Attitude as the only significant predictor ($B=.560$, $p<.001$), with the resulting model having $R^2=.304$. All beta values reported are standardized coefficients. An alternative stepwise analysis was conducted by entering all direct (ATTD, SND, PBCD) and indirect (ATTI, SNI, PBCI) variables and regressing intention upon them. This analysis yielded a model ($R^2=.408$) with three significant predictors. In this analysis, ATTD was again the strongest predictor ($B=.544$, $p<.001$); however, the indirect indices of Attitude (ATTI) and of Perceived Control (PBCI) were also significant (ATTI: $B=.266$, $p<.01$; PBCI: $B=-.197$, $p<.05$).

Individual belief regression.

A stepwise regression determines which specific beliefs associated with each psychosocial construct make the greatest individual contribution to predicting intention. At this stage, intention is regressed on each set of individual belief items, separately. Since the direct determinant analysis indicated that intention was most related to attitude, the behavioral belief items are of primary interest. For behavioral beliefs, the regression yielded a model ($R^2=.244$, $p<.001$) with two predictors: (1) that the behavior shows compassion ($B=.326$, $p<.01$), and (2) that it is a part of comprehensive care ($B=.259$, $p<.05$).

Although the direct determinant regression removed subjective norm and perceived control from the overall model, analysis of the individual items within these constructs may be useful for determining content to include in instruction. Such an analysis does not discard or otherwise ignore the underlying reasoned action theories; rather it recognizes that the typical analytical procedures provide a baseline, a necessary, but perhaps insufficient, set of data for informing instructional design. As such, while the direct construct of subjective norm may not be significantly related to intention, the

individual normative beliefs may be so related, and such information can be useful for informing aspects of design. Moreover, while conducting additional analysis within sections of the data for which overarching significance is not demonstrated is anathema to evaluatory research, wherein the risk of inflating Type I errors is high and the consequences significant, here, for providing input to design, the issue is not whether the most parsimonious and statistically robust model is developed but rather whether the most opportunities to bring about change have been capitalized upon. It is therefore arguably valuable and reasonable to examine the specific beliefs regardless of the results of the correlation and/or regression analyses of the related direct and indirect constructs.¹⁵

Specifically, although subjective norm and perceived behavioral control (and, by extension, their associated behavioral and control beliefs) are not significant predictors in the direct determinant regression analysis, instruction could (a) change the overall model of the learner such that these constructs and beliefs could become significant predictors after an instructional event and (b) regardless of whether such change is a target for, and outcome of, instruction, the relationships of the individual beliefs associated with subjective norm and perceived control may provide useful information for informing aspects of the design of instruction. For example, sources of social influence (people and organizations) could be integrated in the instruction and barriers or facilitators could be addressed.

The regression of the indirect subjective norm items on intent yielded a model ($R^2=.294$) with two predictors: the employer ($B=.331$, $p<.01$) and my supervisor/case manager/nursing manager ($B=.269$, $p<.01$). Finally, regressing the individual indirect perceived control items on intention yielded a model ($R^2=.323$) with two predictors: (1)

¹⁵ Of course, there may be times, such as the selection of targets for mass media campaigns, especially broadcast media, where time and other resource limitations are paramount and the most parsimonious set of targets is most useful.

having established rules in the workplace ($B=.509, p<.001$) and (2) encountering family resistance ($B=-.235, p<.05$).

Descriptive and bivariate analyses.

Taken together, the regression analyses yield a model of home health aides' attitudes, perceived norms, and perceived control beliefs related to pressure ulcer preventive care and suggest beliefs to include in instructional modules either as direct objects of reinforcement and change, or to inform design and development decisions such as who to cast and in what roles. The direct determinant and individual belief regression analyses provide the most parsimonious set of target beliefs for inclusion in behavioral change efforts. However, as noted earlier, regression partials out the correlation among the regressed items when determining the most associated items in a model, and such correlations may in fact be quite valuable for educational interventions. That is, if several items are all highly correlated, and correlated with a target variable (in this case, intent), then those items may act as mutual reinforcers. An educational intervention could incorporate many of these, often as stand-ins for one another, and reasonably expect an effect on the related items.¹⁶

Moreover, from an educational perspective it is worthwhile to consider the descriptive statistics for all individual beliefs and examine their simple bivariate correlations with intent. The beliefs that appear strongly associated with intent can be capitalized upon to enrich the overall design of an intervention, despite their lack of significance in regression models. Relying on the regression models to inform instruction might be the most efficient allocation of resources, but it may also be too conservative, yielding a limited (sparse, perhaps) set of core beliefs and ignoring the rich

¹⁶ Of course, a factor analysis, prior to regression analyses, would allow one to identify the related beliefs, and then the identified factors could be used in the regression analysis. From there, individual items from the factors could be used in place of one another. This approach was not, however, used in the present effort.

field of additional beliefs which, while apparently correlated with each other and the target variable(s), nonetheless remain non-significant in regression analyses. Taking this into consideration, the results of the descriptive (means, SD) and bivariate analyses for the behavioral beliefs, normative influences, and perceived control beliefs are presented in Table 6, Table 7, and Table 8 respectively. For each of the three types of beliefs, individual beliefs that are statistically significantly correlated with intentions to engage in pressure ulcer prevention were identified, with significant correlations ranging from “small” ($<.3$) to “large” ($>.5$) (Cohen, 1988). For behavioral and control beliefs there were both positive and negative correlations with intention to engage in care.

For behavioral beliefs, those beliefs concerning outcomes associated with performing the behavior, the significantly correlated beliefs were all positively associated with intentions; no behavioral beliefs negatively correlated with intentions were statistically significant. As shown in Table 6, the home health aides believe that looking for and taking steps to prevent pressure ulcers: shows compassion ($M=6.95$, $r=0.453$), reduces long-term consequences ($M=7.06$, $r=0.439$), would be perceived as a standard of practice ($M=6.25$, $r=0.396$), would make the caregiver feel s/he is providing comprehensive care ($M=7.18$, $r=0.395$), would be appreciated by the family ($M=6.13$, $r=0.380$), would be an opportunity to educate patients ($M=6.04$, $r=0.348$), and would be appreciated by the patients ($M=5.98$, $r=0.314$). These beliefs are all moderately correlated with intent to engage in pressure ulcer prevention. Several other beliefs are correlated with intentions to engage in pressure ulcer care, although at relatively low levels ($.2 < r < .3$). These include such care being perceived as an opportunity to change patient behavior, to avoid trouble with the state, and to reduce employer liability. Although several other beliefs had relatively large mean values, no others were significantly correlated with intentions to engage in pressure ulcer prevention, quite

likely as a result of the large response variation among participants, as indicated by the standard deviations, which ranged from 3.66 to 5.77 on the 18 point scale.

Table 6

Correlations for Behavioral Beliefs with Intent

<u>Behavioral Beliefs</u>	<u>M</u>	<u>SD</u>	<u>r</u>	<u>p</u>	
Shows compassion	6.95	3.66	0.453	0.000	**
Reduces long-term consequences	7.06	3.34	0.439	0.000	**
Is a standard of practice/is required for my job	6.25	3.88	0.396	0.000	**
Would make me feel that I am providing comprehensive health care	7.18	3.10	0.395	0.000	**
Is appreciated by the patient's family	6.13	3.70	0.380	0.001	**
Is something that I feel competent and knowledgeable enough to do	5.61	4.54	0.357	0.001	**
Is an opportunity to provide reliable information and to educate patients	6.04	3.92	0.348	0.002	**
Is appreciated by the patient	5.98	4.03	0.314	0.005	**
Would provide an opportunity to change patient behavior and reduce their risk	4.69	4.54	0.248	0.027	*
Would avoid trouble with state and/or regulatory agencies	4.88	4.62	0.247	0.027	*
Would protect my employer from liability	4.34	5.14	0.238	0.033	*
Would take time and resources away from other patient needs	2.83	5.26	0.219	0.051	
Would protect me from liability	3.39	5.33	0.192	0.088	
Would lead me to spend more time on pressure ulcers and discussing them with patients	2.35	4.43	0.145	0.198	
Would lead me to spend more time on pressure ulcers and discussing them with the patient's family	2.48	4.68	0.144	0.202	
Makes me look good to my employer	4.26	4.34	0.136	0.230	
Makes me feel good	5.31	4.96	0.131	0.248	
Would increase compliments and positive referrals	2.96	5.38	0.128	0.257	
Would cause my patients to feel embarrassed or uncomfortable	2.36	5.15	0.107	0.346	
Is a topic patients do not want to discuss	2.31	4.37	0.085	0.455	
Would help develop a good relationship with patients	4.48	5.30	0.081	0.476	
Would cause patients to feel worried and anxious	0.98	4.80	0.068	0.546	
Would lead to complaints from the patient because of inconvenience of the treatment	0.94	4.53	0.063	0.577	
Could increase my risk of an infection	2.51	5.95	0.061	0.590	
Would reduce my overall workload	0.45	4.43	0.060	0.598	
Would cause the patient's family anxiety	1.96	4.53	0.029	0.799	
Would require additional paperwork and documentation	1.28	4.09	0.017	0.881	
Is viewed by my employer as unnecessary	2.36	5.40	0.014	0.899	
Would cause me to feel uncomfortable and awkward	1.59	4.82	0.002	0.988	
Is viewed by patients as intrusive or an invasion of privacy	1.95	4.80	-0.010	0.932	
Would be a service that I will not be compensated or reimbursed for	-0.95	5.00	-0.021	0.851	
Would be viewed by patients as unnecessary because they feel they are NOT at risk for pressure ulcers	0.64	4.27	-0.026	0.819	
Is viewed by my patient's family as unnecessary	1.59	4.67	-0.051	0.657	
Would waste time because I have few patients at risk for ulcers	-1.43	5.77	-0.054	0.637	

Scale: -9 to 9

* p<.05, ** p<0.01

For normative beliefs, those beliefs concerning what other people and organizations believe about pressure ulcer prevention, there were eight positively and significantly correlated sources of normative influence. As shown in Table 7, the aides' employer (M=16.75, r=0.50), supervisor (M=17.550, r=0.48), professional training (M=16.350), state inspectors (M=9.087, r=0.33), and experts (M=15.750, r=.33) were all moderately to strongly correlated with intentions to engage in the behavior. Professional organizations, coworkers, and health organizations showed low to moderate (.2>r>.3) correlations with intentions to engage in the behavior. These results suggest that aides are most responsive to those in positions of authority and that the normative influences, such as employers and supervisors or nursing managers, may be effective sources of influence. These influences may serve as useful sources of information (i.e. may be cast in a positive role) in instructional media.

Table 7

Correlations for Normative Influences with Intent

<u>Normative Influence</u>	<u>M</u>	<u>SD</u>	<u>r</u>	<u>p</u>	
My employer	16.750	7.732	0.50	0.00	**
My supervisor/case manager/nursing manager	17.550	6.527	0.48	0.00	**
School/Professional training	16.350	7.138	0.37	0.00	**
State inspectors	13.537	9.087	0.33	0.05	*
Experts	15.750	8.002	0.33	0.00	**
Professional organizations in my field	15.112	8.874	0.29	0.01	**
My co-workers	9.450	8.189	0.27	0.02	*
National or local health organizations	13.575	8.763	0.26	0.02	*
Aides/Nurses who have worked previously with a patient	13.325	7.418	0.22	0.05	
Advocacy groups	10.287	9.428	0.21	0.06	
Health insurance companies	10.837	9.584	0.17	0.13	
My patients' families	10.500	9.563	0.12	0.30	
My patients' guardian	10.450	9.696	0.11	0.32	
My patients	9.125	11.105	0.07	0.56	
Websites on health care	8.862	9.168	0.05	0.69	

Scale: -21 to 21

* p<.05, ** p<0.01

Interestingly, there seems to be a group of normative influences whose opinions the aides appear to care about but whose opinions appear to have little bearing on intentions to engage in performance. For example, the mean for the beliefs regarding patients, their families, and their guardians are all relatively high (>10 on the -21 to 21 scale), yet the correlations of these beliefs is low ($r < .12$), and the variance among responses is higher than with most other items, especially for the patients themselves. This may indicate that although the aides care about what their clients (and the clients' families) think about the care, their behavior is unlikely to be strongly affected by their clients' actual beliefs. Such an interpretation would indicate that aides are perhaps empathetic to client beliefs but not necessarily responsive to them in relationship to whether pressure ulcer preventive care is provided.

Before turning to the control beliefs, it is worth noting that there are no negative normative influences. That is, as indicated by the presence of all positive means and correlations, the aides do not appear to view anyone or any organization as believing that they should not engage in pressure ulcer prevention nor do they appear less likely to perform pressure ulcer prevention activities based on the beliefs of any organization or type of individual. As such, no negative beliefs regarding normative influences need to be addressed in instructional media (although see control belief results below for a discussion pertaining to patients and families).

Finally, for control beliefs, as presented in Table 8, there were both positive and negative beliefs that had large means and moderate to strong correlations with intentions to engage in pressure ulcer preventive care. That is, the aides perceive both barriers and facilitators to looking for and taking steps to prevent pressure ulcers. Among the facilitators, those things that might make providing preventive care easier, four beliefs were moderately to strongly correlated with intentions: having established

rules and procedures (M=16.04, r=0.518)¹⁷, having ample space in the room (M=15.55, r=0.337), having resources available (M=15.85, r=0.336), and having privacy (M=16.24, r=0.309). Time (M=15.70, r=0.292), family understanding (M=15.68, r=0.289), and patient understanding (M=16.31, r=0.278) were each also significantly correlated with intent. The results indicate that there were eight barriers to performance that were significantly related to intentions to engage in pressure ulcer prevention. These barriers were: having a patient family that does not follow instructions *between visits*, having a patient that does not follow instructions between visits, encountering a dirty environment, having a patient that is mentally altered, encountering family resistance, encountering an uncooperative family, encountering a cluttered environment, and encountering a patient that wants to die.

Control beliefs can be addressed by changing or reinforcing participants' perceptions of the facilitators and barriers; by providing skills to enable learners to arrange and capitalize on facilitators (or overcome barriers); or by changing conditions external to the learner in order to remove barriers and establish facilitators. As change efforts move from the former to the latter of these strategies, the intervention shifts from instructional activities to performance support and sociotechnical changes outside the learner. For the present instructional effort, the facilitators noted above may be incorporated by heightening learners' awareness of the facilitators and enabling them to establish conditions that capitalize on them. Such integration should lead to more effective instructional materials. Similarly, learners may be assisted to conceive of barriers to performance differently or to overcome them with skills. Moving beyond beliefs and skills, barriers, just as facilitators, can be addressed through tools

¹⁷ This item was neither modal nor salient among the target audience during the elicitation stage; in fact, it was suggested by a subject matter expert. Yet, as the results indicate, it demonstrated a high mean and strong correlation with intention when included in the survey stage as a control belief.

(performance support) and organizational change. These strategies are beyond the scope of the present effort.

Examined together, it appears that instructional materials that address family and patient cooperation and that address environmental conditions of care would be effective for improving pressure ulcer prevention among the home health aides.

Table 8

Correlations for Perceived Control Beliefs with Intent

<u>Perceived Control Beliefs</u>	<u>M</u>	<u>SD</u>	<u>r</u>	<u>p</u>	
Having established rules and procedures regarding pressure ulcers in your workplace	16.04	6.58	0.518	0.000	**
Having ample space in a room	15.55	6.07	0.337	0.002	**
Having tools/supplies/equipment available	15.85	6.74	0.336	0.001	**
Having privacy when working with a patient	16.24	6.88	0.309	0.005	**
Having the time available to work with a patient	15.70	7.61	0.292	0.009	**
Being able to help a family understand what you are doing	15.68	6.71	0.289	0.009	**
Being able to help a patient understand what you are doing	16.31	5.89	0.278	0.013	*
Being able to convince a patient to accept what you are doing	15.14	7.22	0.205	0.068	
Being able to convince a family to accept what you are doing	13.61	8.92	0.191	0.089	
Having knowledge or intuition that a given patient is at risk	12.85	9.73	0.177	0.115	
Encountering family support	14.53	7.13	0.175	0.121	
Having an established relationship with a patient	15.64	7.55	0.173	0.124	
Seeing a patient without family or friends present	7.78	8.87	0.163	0.149	
Encountering a clean environment	14.73	8.25	0.120	0.291	
Visiting the patient in their home	14.39	8.47	0.120	0.289	
Visiting the patient in an institution or other non-home setting	6.60	10.04	0.116	0.304	
Encountering a new patient	9.88	9.86	0.099	0.381	
Encountering a neat environment	13.96	8.51	0.040	0.722	
Encountering patients with significant cultural, religious, or linguistic differences from your own	1.46	9.89	0.027	0.814	
Encountering a patient who is significantly overweight	-1.74	0.13	0.015	0.892	
Encountering a patient of the opposite sex	4.13	8.42	-0.004	0.975	
Being exclusively responsible for a patient's care/not sharing care responsibilities with others	1.99	10.48	-0.070	0.536	
Feeling at-risk/unsafe at a patient's location	-3.30	8.59	-0.097	0.394	
Encountering a patient who is quad/paraplegic or immobile	-2.73	10.56	-0.119	0.293	
Encountering shame or embarrassment related to pressure ulcers	0.13	7.59	-0.185	0.100	
Encountering an uncooperative patient during a visit	-5.86	11.61	-0.198	0.078	
Encountering a patient that wants to die	-5.80	9.72	-0.227	0.043	*
Encountering a cluttered environment	-7.25	10.68	-0.227	0.042	*
Encountering an uncooperative family during a visit	-5.81	10.49	-0.228	0.042	*
Encountering family resistance	-1.05	10.30	-0.263	0.018	*
Having a patient who is mentally altered (Alzheimer's, dementia, forgetful)	-5.78	11.50	-0.263	0.018	*
Encountering a dirty environment	-7.56	10.35	-0.298	0.007	**
Having a patient who does not follow your instructions during the time between visits	-8.36	9.84	-0.338	0.002	**
Having a patient family that does not follow your instructions during the time between visits	-8.53	9.46	-0.354	0.001	**

Scale: -21 to 21

* p<.05, ** p<0.01

Discussion

Home health care providers' attitudes, perceived norms, and perceived control beliefs related to pressure ulcer prevention are diverse. In general, providers strongly intend to engage in pressure ulcer prevention ($M=2.625$, $SD=0.95$). Two regression models based on theoretical psychosocial constructs from reasoned action theory were constructed. The first model included only the direct constructs; the second model added the indirect constructs. Each analysis regressed intention to engage in pressure ulcer preventive care upon the other psychosocial constructs. In both models, intention was most closely associated with direct attitudes about the behavior: that is, how home health aides feel about the behavior itself has the greatest predictive power in terms of their intentions to engage in that behavior. If they think pressure ulcers prevention is an important and beneficial thing to do, they likely intend to do it. In the second model, perceived control, as measured by beliefs related to facilitators and barriers to practice, was also a significant predictor of intention. Neither direct nor indirect subjective norm was a significant independent predictor of intentions to engage in pressure ulcer prevention.

These findings suggest that home health aides generally intend to engage in pressure ulcer prevention. The results suggest that to reinforce such engagement, to instill this sense of engagement in those new to the field, or to engage those who are not so engaged at the present time, instruction should emphasize the importance of pressure ulcer prevention as an activity (i.e. the direct attitudes). Additional emphasis should be placed on reinforcing or instilling positive beliefs and on addressing negative beliefs, as drawn from the beliefs making up the indirect index of attitudes (ATTI). Specifically, the stepwise regression of intentions onto behavioral beliefs indicates that perceiving pressure ulcer preventive care as an act of compassion or as a part of comprehensive care, may be the most efficient targets for reinforcing or changing behavior. Moreover,

the results suggest that addressing perceptions of control, by reducing perceived barriers and capitalizing upon perceived facilitators, is worthwhile. Specifically, the results of the stepwise regression suggest that having established rules and procedures in place and being able to overcome family resistance are efficient targets for change.

In addition to the regression analyses, an analysis of the bivariate correlations suggests other targets for educational efforts. Efforts that address the positive effect on and reception by the patient and the family; avoidance of regulatory, state, and liability issues; the ability of care providers to provide prevention care; and the importance of such care as a standard practice, are likely to be more effective than those that do not address them.

With respect to normative influences, home health aides report being most responsive to those in positions of authority over their care provision, especially employers and supervisors. Interestingly, home health aides' intentions to engage in prevention do not appear related to the perspectives of patients and families. That is, whether or not patients and their families believe pressure ulcer preventive care is something the aide should do is not highly correlated with intentions to provide such care. This is important because it suggests that even though aides care about the patients, as indicated by the behavioral beliefs, and some patients and families may have negative perceptions of the care, the actual provision of care is relatively unaffected by these negative perceptions. That is, patients and their families may be a target of home health aide concern, but they are not a strong source of normative influence. Despite this finding in respect to normative influences, the cooperation and understanding of patients and families are important factors in respect to home health providers' behavioral and control beliefs.

Finally, in respect to control beliefs, a wide range of barriers and facilitators are associated with whether care is provided. While the regression analysis indicated that

having established procedures facilitates care and encountering family resistance hinders such provision, the correlation statistics indicate that resource availability, environmental conditions, and family and patient understanding and acceptance are also implicated in care provision.

Conclusion

Based on the regression analyses, intention to engage in pressure ulcer prevention behavior is related to direct attitudes, indirect perceived control, and to a collection of associated behavioral and control beliefs. Correlation analyses identified additional behavioral, normative, and control beliefs that may be valuable to address. Many of these beliefs can be addressed through educational interventions that directly target home health aides. If an instructional intervention fosters an increase in beliefs and their associated attitudes, subjective norm, and perceived control, that is, if it increases the observed means, then the instruction should also increase intention as a result of the moderate correlations between attitudes, subjective norm, perceived control and intentions.¹⁸ Moreover, instructional activities might also increase intentions by increasing the correlation among behavioral, normative, and control beliefs and the intention to engage in pressure ulcer preventive care. This would be particularly valuable if a belief were already strong, or could be influenced to be strong, and could be made to be associated with intention, as suggested by priming theory (Cappella, Fishbein, Hornik, Ahern, & Sayeed, 2001). Finally, using sources of normative influence to deliver important messages is likely to affect intentions through the association of those positively viewed influences with the messages being communicated, potentially increasing the attention to, salience of, and acceptance of the messages.

¹⁸ Of course, an instructional effort would also address intentions (and behavior) directly.

While many of these beliefs can be addressed through instructional materials and activities, others may be only partially addressed through education efforts and further addressed through performance support (tools) and sociotechnical change (policy making, organizational change, mandates). A few beliefs are perhaps best addressed primarily through sociotechnical change. The next chapter discusses the implications of a constructivist epistemological framework for the design of a training video that incorporates the factual, procedural, and affective information identified in this chapter.

CHAPTER 4

DESIGN AND PRODUCTION OF THE VIDEO

Introduction

Pressure ulcers have been identified as a significant public health problem in the United States, and reduction of their incidence and sequelae has been targeted as a health objective in the Healthy People 2010 initiative (U.S. Department of Health and Human Services, 2000, November). National organizations have proposed guidelines for pressure ulcer prevention activities (National Pressure Ulcer Advisory Panel Board of Directors, 2001). These recommendations include standardized terminology and practices, national databases of incidence, and the development of educational materials.

Pressure ulcers result when pressure, friction, or shear are applied to an area of the body for an uninterrupted period of time. As little as 15 minutes of uninterrupted application of these forces can lead to tissue damage. Pressure ulcers are most prevalent in health care situations in which patients are fully or partially immobile. As care of the elderly and others who are partially or fully immobile increasingly shifts to personal homes, pressure ulcer monitoring and prevention activities are increasingly warranted in home health care (Brega et al., 2002). In this environment, provision of long term care is shifting from nurses to paraprofessionals, such as home health aides. Home healthcare providers therefore are an important part of any effort to reduce pressure ulcer incidence, prevalence, and sequelae.

To date, few educational or support programs exist that target pressure ulcer prevention by home health aides. Of the materials that exist, most are manuals or other paper-based guides that provide information about ulcer formation and prevention. One 14 minute video exists that targets pressure ulcer prevention in the home healthcare setting. Although the skill of patient turning is demonstrated, the video provides limited

information, is purely didactic, and does not address all three components of behavioral change: information, skill, and motivation. The present effort seeks to address all three aspects of behavioral change, to do so through multiple media, and to provide a comprehensive set of support tools for providers, patients, and patient families. The initial effort, reported here, focuses on theory-driven development of an instructional video on pressure ulcer prevention.

As noted in Chapter 2, development of instructional materials consists of six interrelated activities: determination of overarching objectives and approaches; specification of objectives, content, and the design of the instructional intervention; production of the intervention; evaluation of the intervention; revision of the instructional intervention; and dissemination of the intervention. This chapter focuses on components of the second and third activities: design and production of the instructional intervention: a video about pressure ulcer prevention by home health aides.

Identification of Content Objectives

As reported in Chapter Three, the core factual and procedural objectives that emerged were to increase (1) understanding of pressure ulcer development (location, stages, and causes), severity, and prevalence, (2) knowledge of risk factors associated with pressure ulcer formation, and (3) skills for monitoring pressure ulcer formation and engaging in prevention practices. In addition to the factual and procedural objectives, attitudinal objectives were identified through the application of theoretical constructs and methodological processes consistent with reasoned action theory. Engagement in pressure ulcer care was found to be most closely associated with:

1. attitudes regarding the importance and benefit of such care, as well as specific beliefs that such care will be perceived as an act of compassion or is a part of comprehensive care

2. specific beliefs regarding facilitators and barriers to performing such care, with the establishment of rules and procedures and the ability to overcome family resistance being particularly implicated
3. a series of individual behavioral beliefs: specifically, that engaging in the behavior would make the caregiver feel s/he is providing comprehensive care, would be appreciated by the family, would be appreciated by the patients, and would an opportunity to educate patients, to change patient behavior, to avoid trouble with the state, and to reduce employer liability
4. a series of positive control beliefs (facilitators): specifically, that having ample space in the room, resources available, family and patient understanding, privacy, and time make it easier to provide pressure ulcer prevention care
5. a series of negative control beliefs (barriers): specifically, that having a patient family that does not follow instructions between visits, having a patient that does not follow instructions between visits, encountering a dirty environment, having a patient that is mentally altered, encountering family resistance, encountering an uncooperative family, encountering a cluttered environment, and encountering a patient that wants to die makes it more difficult to provide pressure ulcer prevention care

Finally, it appears that although care providers are concerned about the perspectives of the individuals for whom they provide care, such as whether their client perceives such care as an invasion of privacy, that empathy does not carry over as a normative influence. Instead, care providers are most responsive to the influence of their employers, supervisors, experts, and professional organizations.

The Design of Pressure Ulcer Prevention Instructional Materials

With factual, procedural, and attitudinal content identified, the next questions are: what are the instructional materials going to look like? How should they be organized? How should the overall structure look and feel? What instructional and communications strategies are likely to be effective, and how should such strategies be integrated with the content at both the macro and micro levels? These questions are the providence of design and production.

External Influences

Design of instructional materials is influenced by external prescriptions, policy, technological capabilities of the developers, and technology availability among the intended audience. For the present effort, the implementation of an instructional approach (as opposed to performance support, organizational, or policy-making approaches) to be delivered via a stand-alone video was predetermined by audience technological availability and by the objectives of a larger research effort funded by the National Institutes of Health, of which the current project is a part. These external considerations, as well as the usual limitations in resources, framed the opportunities available to the designers.

Theoretical Influences

The present effort draws upon constructivism as an epistemological perspective. Conceiving of understanding as an ongoing effort to make sense of the world through the stories we tell ourselves and each other, an effort that occurs through language and involves an always already acculturated social negotiation of meaning, has considerable implications for the ways in which theories of learning, instruction, behavior, and

behavior change inform design of instruction – in this case, design of a linear instructional video.

It is worth noting that the act of viewing the video will, itself, be an act of active construction: the video will be interpreted as part of participants' overall understandings. As such, whether the instructional experience leads to changes in understanding by perturbing any particular participant's existing story or whether the experience is instead interpreted in such a way as to align with and reinforce these existing stories, or something in between these extremes, is always partially, if not primarily, outside the hands of the designer once instructional materials are released. This is especially so when static media is involved and the separation between designer and learner is great.

The issue of differential interpretation of instructional events is not, of course, caused by the use of theories and principles aligned with a constructivist epistemological perspective. That is, the problem of differing constructions is not related to whether one's pedagogy happens to be constructivist: the learning activities grounded in constructivist approaches do not somehow create these problems *de novo* where no problem would occur otherwise. Rather, if one views understanding as emergent and contextualized, the interpreted nature of all activity affects all instructional efforts regardless of the pedagogical theories and strategies that happen to be used.

While the interpretive outcome of the interaction of the participant with the instructional intervention is made problematic by the constructive nature of such an interaction, designers may be able to increase the likelihood that the constructions that emerge are in fact those deemed valuable by the designers.¹⁹ Concepts from the

¹⁹ Considered this way, it seems evident that *all* instruction is about valuing, and valuing is first and foremost an affective, psychosocial activity.

constructivist perspective that informed design of the video for this intervention are narrative mode and vicarious experience, authenticity, and scaffolding.

Narrative Mode: Understanding through Story (re)Construction

First and foremost, Bruner's metaphor of the individual as a crafter of stories strongly influenced the overall design of the effort. If meaning making is about individuals constantly (re)developing their own idiosyncratic stories that work, where "work" means they are adaptive for an individual in the social situation in which the individual acts, then the more instruction is able to tap into participants' existing stories, align with them, and perturb them, the more effective it will likely be.²⁰ Furthermore, just as stories have an overarching plot and individual events, so too does instruction have an overarching experience that ties together the individual opportunities for learning. This perspective led to the decision to use a narrative mode for the instructional video rather than a more formal presentational mode. The overall video is framed as a story, and the instructional objectives are embedded throughout that story. The genre of the video, therefore, is not simply didactic but instead represents a dramatic narrative, one in which the main character, a newcomer to home health care, learns about pressure ulcer prevention through interaction with both equal and more advanced peers as well as through mentorship with experts.

Vicarious Experience: Framing Instruction from Story Arc to Plot Events

Stories provide a means for fostering vicarious experiences. Such experiences have been shown to be effective for instruction and behavioral change (Bandura, 1977, 1986; Bruner, 1986; Strange & Leung, 1999; Wheeler, Green, & Brock, 1999). Green and colleagues (Green, 2006; Green & Brock, 2000) have suggested "transportation" as a

²⁰ Reasoned action theory, in this way, is simply another tool for tapping into participants stories.

measure of the extent to which a story engages the viewer: “to the extent that individuals are absorbed into a story or transported into a narrative world, they may show effects of the story on their real-world beliefs” (Green & Brock, 2000, p. 701). When participants are transported into a story-driven world, the viewed experiences may become vicarious experiences, and these may occur at the macro (overarching plot) or micro (individual story event) levels. At the macro level, the instruction is framed by an overarching story arc.

Story arc.

In the story developed for this effort, the primary character is new to home health care provision. Early in the story, this character expresses concern about her lack of knowledge concerning pressure ulcers and her lack of confidence in her ability to engage appropriately in pressure ulcer prevention. These doubts are sharpened by her planned near-term visit to a client whom she thinks might be at risk for pressure ulcer. She really isn't sure what to do about it. The story unfolds as she embarks on a quest to learn more about pressure ulcer preventive care.

The character is supported in her quest with the presentation of background information designed to provide a common language and a common understanding of pressure ulcer formation and risk. Pressure ulcer prevention activities are modeled for her by more advanced peers as she continues to ask questions about her learning and summarize her understanding. Such modeling, by equal and more advanced peers as well as by more senior individuals, has been found to be an effective strategy from the social learning theory perspective (Bandura, 1986; Bruner, 1990).

In addition to the more apparent opportunities to imbue pressure ulcer information provision and skills modeling instructional activities with meaning by embedding them within a cohesive story, the overall story affords several important

opportunities for modeling more general learning and information seeking skills. For example, as noted previously, the character is portrayed asking questions, seeking out experts and more advanced peers, and visiting clients in the company of these more skilled individuals.

For this effort, the particular experts and more advanced peers were selected as models based on the results of normative influence research among home health aides. This research showed that home health aides are most likely to be responsive to employers, supervisors, and experts; thus, each of these archetypal individuals plays a role in the video. The primary character was placed within a cohort of similar and slightly more advanced peers in order to depict collaborative learning, make available additional sources of information, and, to some extent, to provide comic relief.

Plot events.

At the micro level, several important and different types of plot events are used. First, informative plot events provide factual information about pressure ulcers and pressure ulcer preventive care. This information is usually set up by an expert, often reinforced with animations or illustrations, and then summarized by the lead character as she solidifies her learning. Second, modeling plot events are used to depict the standard practices, the “how to” of pressure ulcer prevention. These plot events usually involve the main character and one or more peers going on a “field trip” to watch other colleagues engage in the practices. Skills are modeled and appropriate behaviors are reinforced. Such reinforcement of skill utilization is one of the factors that sets vicarious experience apart from simple skill modeling (Bandura, 1977): the learner views not only correct use of skills but sees positive outcomes associated with engagement in those skills. This depiction of positive reinforcement leads to the third type of plot event utilized in designing the instructional materials: psychosocial plot events.

Psychosocial plot events address target belief objectives by having characters directly discuss their beliefs, by reinforcing positive beliefs, and by redressing negative beliefs. Such incorporation occurs in two ways: first, some beliefs are directly targeted by what we call “belief testimonials.” These testimonials occur outside the main story line. They are presented at the beginning of modules and directly address one or more beliefs. They are very short, consisting of a few sentences delivered by a client, care provider, or supervisor from the main story. Three example testimonials are:

SARAH

I tell all my aides that preventing pressure ulcers is a standard practice, a part of our comprehensive care.

- - -

MICHAEL

Having an uncooperative patient, or family for that matter, ah, that makes it really hard—or so I thought. Turns out that in most cases I just need to explain why it’s so important. Sometimes it takes a little extra effort but I’m pretty good at helping them understand.

- - -

BERNICE

My last aide—she was new—and she was all nervous, you could tell. She didn’t want to check things out. I think she thought she might be “invading my privacy”—hah, no way, I just wanted to stay healthy!

The scripts for these testimonials are available in Appendix B: Testimonial Scripts. The second way beliefs and attitudes are addressed is by incorporating them throughout the main narrative, with characters raising, reinforcing, and addressing them throughout the story line. The beliefs integrated in the present effort, identified through the application of reasoned action theory, include avoiding trouble with the state, reducing long term consequences, showing compassion, and fostering the perception that the aid is providing comprehensive care.

Overall, then, the story arc and the individual plot events ground the instructional objectives and strategies within a cohesive and meaningful framework. This use of narrative media appears to align well with perspectives that conceive of understanding as a dynamic constructive activity and individuals as active interpreters of their own past and present experiences. For instructional media in particular, care must be given to the construction of the story. A story may make for a terrific read, which is, perhaps, important in and of itself; however, whether an individual is transported within the story, resonates to a story, identifies themselves in that story, or sees situations similar to their own in that story, may be just as important, if not more so, in terms of learning, skills transfer, and belief change.

Authenticity: How can the stories be made reasonably similar to the lived experience of the participants and the expected context of performance?

“Authenticity,” for the purpose of this effort, is conceived of as the degree of similarity between a portrayal of a particular person, place, or event and the actual referent being so portrayed. For our purposes, authenticity has two criteria: (1) perceived verisimilitude from the perspective of those taking part in, or observing, the portrayal; and (2) the similarity of a depiction to an actual event, as determined by the ability of those having viewed the portrayal to apply perspectives, information, and skills that they encountered in the portrayal to the “real world.” Using both of these criteria, the design effort sought to be authentic in the portrayal of characters, the depiction of tasks, and the representation of environments.

Authentic portrayal of characters.

The authentic portrayal of characters is comprised of at least two factors: (1) the extent to which the characters portrayed act in ways that the viewers expect them to act,

given the viewers' understanding of the situations in which the portrayed actions are taking place, and (2) the extent to which the viewers are able to see themselves in the characteristics and actions of the portrayed character(s). These criteria for character authenticity may facilitate learning: the first through suspension of disbelief and acceptance of the portrayed situations, and the second through identification with a character or character(s): "they act like me." On the other hand, disruptions in these can also be learning moments. If a character generally acts in ways the viewer expects that character to act, then when that character acts in ways other than expected, the viewer will be surprised or troubled. This perturbation can take one of two directions: either the disruption leads to changes in expectations about how characters "like me" respond in specific situations or the disruption leads one to decide that the character really isn't "like me," and identification with the character is lessened. Both of these are learning outcomes, but the former is about changing one's conceptions about "me and my role in the world," while the latter is about changing one's interpretation of what is immediately being experienced. Either can be useful; however, in general, the former, the re-conception of self, is arguably what is sought through most instruction. A potential third criterion for authentic portrayal of characters that is specific to instructional goals, as opposed to stories in general, is (3) the extent to which the characters behave in ways that are similar to (3a) the ways novices would act in real world situations related to the portrayed activities and (3b) the ways experts would so act.

The present project focused on ensuring that the characters were authentic in terms of (1) their personal characteristics: do characters appear similar to the target audience members, (2) their beliefs: do characters exhibit the types of beliefs that target audience members and more advanced peers and experts exhibit, and (3) their general activities: do characters behave in ways that target audience members and experts perceive as authentic. These characteristics, beliefs, and activities were informed by

interviews with target audience members and experts, research on beliefs, and formative evaluation of early scripts and casting.

Characters included a narrator, who is portrayed as an expert and whose role is to frame the entire story; a protagonist, whose role is to learn about pressure ulcers and who is depicted as a typical newcomer to home health care; a cohort of peers of relatively the same competence as the protagonist but who vary by characteristics and attitudes; a set of more advanced peers, typically cast as supervisory nurses and more experienced aides, who model skills; and a primary expert whose role is to serve as the main mentor in the protagonist's quest for understanding. For this latter role, the script relied primarily on the highest correlated normative influence, a supervisor. All characters were scripted and cast for verisimilitude to home health and pressure ulcer preventive care situations.

Authentic depiction of tasks.

The authentic depiction of tasks is also comprised of at least two factors: (1) are the tasks portrayed similar to tasks that viewers would expect to occur in the lives of those depicted, and (2) could target audience members see themselves participating in the tasks. The first criterion is indicative of a story's internal consistency as considered from the perspective of the learner. The second criterion is indicative of the degree to which a learner identifies with the activities in the story. Again, a third criterion also exists: (3) the extent to which the tasks portrayed are similar to those that a learner would be expected to perform in the setting of actual performance.

For the present project, task authenticity was informed by target audience member and expert interviews and by formative evaluation of the emerging tasks and their associated scripts. The tasks included both learning/information gathering tasks, such as presentations, group learning efforts, and one on one mentoring, and pressure

ulcer prevention tasks, such as examining client skin for signs of pressure ulcer formation in a variety of settings or properly placing and turning diverse clients in different settings.

Authentic representation of environments.

The authentic representation of environments has criterion similar to the other two types of authenticity. First, there is the internal consistency criterion: from the perspective of the learner, is the setting in which characters interact and events occur consistent with settings in which the learner would expect such people and events to be located? Second, an external consistency criterion: is the environment portrayed consistent with the environmental in which the learner operates. Similar to character inconsistencies, environmental inconsistencies can be dismissed as unrealistic or can become learning moments. For example, resources portrayed in the media environment that are not available in the lived-experiences of the learners, may be sought and incorporated into the real life environment. Again, there is a third criterion: consistency, from the perspective of practitioners, of the portrayed environment with the actual environment of intended performance.

Environmental authenticity was informed by site visits, interviews, and evaluation of the proposed environments and locations by target audience members and advanced practitioners. Several locations were selected, both for their authenticity to the types of settings in which pressure ulcer prevention education and actual performance occurs and for the variation in those settings. As such, scenes are depicted in presentation rooms, conference rooms, around lunch tables, in hospitals, and in homes.

Scaffolding: How can we help the participants get from point A to point B?

Can the learning experience be scaffolded when the instructional intervention is a linear video? The division of processes or conceptual information into subcomponents, the simplification of tasks, the modeling of tasks, and the presence of a mentor are scaffolding strategies that can, to some extent, be embedded in the design of a video. For this effort, content is carefully delineated and organized; tasks are divided into their component parts; skills are demonstrated, and information seeking and mentoring are modeled. Because the instructional event is a linear video, these activities can only be depicted and thus lose the richness of actual engagement with others. However, to the extent that the target audience identifies with the portrayed situations, these situations have the potential to become vicarious experiences and the mentoring or modeling portrayed will be, in a real albeit limited sense, experienced by the audience members. It is likely this sense of vicarious experience, noted above in relation to authenticity, that enables observed reinforcement to serve as actual reinforcement in social learning theory (Bandura, 1977). Organization, modeling, and mentoring scaffolds are employed throughout the story. They are present in the organization of the entire arc of the story as well as in the individual plot events.

Organization.

The “chunking” of learning goals and information into units appropriate to an audience’s level of understanding and the organization of these goals and information into a coherent framework are two common scaffolding strategies. As noted above, the arc of the story begins with a newcomer to home health care who knows very little about pressure ulcers. She begins her education by learning factual information about pressure ulcers: what they are, what their prevalence is, why they are important, how they form, and where they form. She next learns about risk factors, and then about how to prevent

pressure ulcers. This presentation assumes an order, from background information to task performance. It addresses the why before the how, and then the how is demonstrated.

Modeling.

Skills such as how to move a patient, how to look for an ulcer, how to document care, and how to adjust a bed are modeled throughout the story. Importantly, these skills are portrayed in authentic situations, and the environment is one of active learning: the protagonist is seeking to perform her job better. Emotions and attitudes, including worry and relief, are part of the protagonist's learning experience. Information is sought. Example performances are sought. Interactions occur with peers and with more advanced practitioners. The latter often serve as mentors to the protagonist.

Mentoring.

In the video, mentors ask questions, provide feedback, and deliver positive and negative reinforcement; they often push learners to strive for further movement through their zone of proximal development. Mentors are both scaffolds in and of themselves, and they provide scaffolding. The former occurs as the mentor engages in activities that serve as models for the learner; the latter occurs when the mentor facilitates mentee performance through support, including simplification of tasks, pre-organization of information and procedures, modeling of individual task components, and provision of just-in-time assistance.

While the learner is not directly mentored by viewing the instructional video, the mentor/mentee relationship is in fact capitalized upon in the story. Throughout the arc of the story and within the individual plot events, the protagonist interacts with more advanced peers, one of whom clearly serves in a mentoring capacity. In this relationship,

the mentor character, an expert in pressure ulcer prevention and the protagonist's supervisor, answers the protagonist's questions, asks the protagonist questions of her own, provides feedback on performance, gives positive reinforcement, and models important behaviors and beliefs. In addition, other more advanced peers also serve less central mentor roles, providing information, modeling skills, and reinforcing the protagonist. Having multiple and varied mentors available at different times is similar to many mentorship relationships in the "real world" in which access and expertise vary by situation. From a purely aesthetic perspective, such casting is also useful for breaking up the monotony of having a single person lead someone through an entire instructional program.

Other Design Considerations

Additional educational and health communication strategies informed the design effort. These included signposting, visualization, multiple channel delivery, repetition, summarization, and commitment elicitation. Signposting is the use of advanced organizers to forecast events to come. Signposting guides learner's construction of instructional materials by directing the learner's focus in specific directions with particular expectations. Visualization and multiple channel delivery involve the use of graphics, animation, visual cues, video, and audio to more richly portray information and procedures and to direct attention to specific portrayals through recurrence and reinforcement via those multiple channels. Similarly, repetition and summarization guide the learners' attention to elements considered important by the designers and facilitate retention by highlighting those items. Finally, commitment elicitation is the act of asking the learner to do something. While a static media cannot elicit a physical response, the inclusion of a specific request for action at the end of a learning event may increase the likelihood of the action being performed.

Final Product

The final prototype is a DVD-video entitled “Every Square Inch: Pressure Ulcer Prevention.” The 45 minute DVD consists of two modules. The first module is on pressure ulcer causes and risk factors. The second module is on the “Big Ten Steps to Pressure Ulcer Prevention.” Each module has an introduction to provide signposts for the learning, a main content section that provides information and models behaviors, and a summary to reinforce learning. In addition to the two main modules, the DVD also contains nine belief testimonials. Delivered by home health aids, patients, and employers depicted in the main modules, these brief segments, a few sentences in length, address and/or reinforce key beliefs associated with pressure ulcer preventive care. The content and approximate running time of all segments of the DVD are presented in Table 9. Labeling and packaging are of commercial caliber so as not to detract from perceptions of quality. Evaluation of the video is the focus of Chapter 5. Discussion of the overall research and development effort and its implications for other similar projects is the subject of Chapter 6.

Table 9

Sequence for Preventing Pressure Ulcers Video (Running Time in Parentheses)

Presentation Intro with Testimonials (00:55)

Testimonials Set I (in disc introduction):

- Impact on family
- Standard practice/comprehensive care.
- Opportunity to educate/change behavior
- Not invasion of client privacy

Module 1

Module 1: Welcome (01:10)

Module 1, Ch. 1: Introduction (04:00)

Module 1, Ch. 2: Causes & Formation (08:15)

- Healthy Skin animation (01:30)
- Pressure, Friction & Sheer anim. (01:15)
- Locations animation (01:30)
- Stages animation (00:45)

Module 1, Ch. 3: Risk Factors (09:05)

- Primary Risk Factor: Immobility (00:12)
- Risk Factors You Can Control (02:35)
 - Unrelieved Pressure (00:26)
 - Friction (00:14)
 - Shear (00:20)
 - Maceration (00:30)
 - Poor Nutrition (00:20)
 - Dehydration (00:16)
- Factors You Cannot Control (05:00)
 - Advanced Age (00:16)
 - Obesity (00:22)
 - Underweight (00:08)
 - Prescription Medications (00:20)
 - Mental Health Issues (00:34)
 - Loss of Sensation (00:17)
 - Chronic Conditions (00:27)
 - Incontinence (00:24)
 - Terminal Illness (00:35)

Module 1, Ch. 4: Summary (01:30)

Closes with commitment elicitation

Testimonials Set II:

- Waste of time/Severity/Rapidity
- Complaints/Liability

Module 2

Testimonials Set III:

- Self-confidence/Capability
- Routine makes it easier
- Addressing uncooperative client

Module 2, Ch. 1: Introduction (01:45)

Module 2, Ch. 2: "The Big Ten," Steps 1-3 (14:50)

1. Clear workspace and establish routine. (02:00)
2. Relieve localized pressure and shear. (05:00)
3. Reduce pressure and friction. (06:00)

Module 2, Ch. 3: "The Big Ten," Steps 4-6 (10:12)

4. Inspect pressure relieving devices. (01:30)
5. Monitor for skin changes. (02:30)
6. Practice good skin care. (05:10)

Module 2, Ch. 4: "The Big Ten," Steps 7-10 (07:00)

7. Encourage nutrition and exercise. (02:30)
8. Follow the patient care plan. (00:30)
9. Monitor and mitigate risk factors. (01:45)
10. Document, document, document. (00:30)

Module 2, Ch. 5: "Wrap Up" (02:30)

Module 2, Ch. 6: Summary (01:15)

Exit

- Credits
- AEI Splash
- Funding Recognition

CHAPTER 5

EVALUATION OF THE IMPACT OF THE VIDEO

Formal evaluation of the instructional video is important because no amount of background research can assure that the content is actually learned. To determine change in understanding, the factual, procedural, and affective information conveyed in the video must be assessed. If the intervention is successful, knowledge and the multivariate composite of the psychosocial variables (intentions, attitude, subjective norm, and perceived control) should increase. Specifically, knowledge is expected to increase among those viewing the video, but not among those who do not. Attitude, Perceived Control, and Intentions are also expected to increase as a result of exposure to the intervention. Because Subjective Norm is capitalized on but not targeted for change within the video, it is not expected to differ between groups nor to change as a result of the intervention (although it is certainly possible that capitalizing upon normative influences will serve to reinforce those influences and lead to increases in associated means, decreases in variability, or both). Individual behavioral and control beliefs that were targeted in the video are expected to exhibit positive changes among those viewing the video; normative beliefs are not expected to change because, as with subjective norm, the normative influences were integrated within the video in order to capitalize on them, not to change the beliefs themselves (although, again, they may be reinforced, thus increasing their means, or such beliefs may be spread to other participants, thereby decreasing the variability of scores, or both).

It is also expected that the outcomes may vary as a result of: knowing someone who has developed a pressure ulcer or having had one or more clients develop pressure ulcers, years of experience on the job, and satisfaction with the job. Although the effect of these factors is ambiguous, it is expected that those who have more experience with pressure ulcers (directly through having one's own clients develop one, or indirectly,

through knowing someone who has had one develop), those with more years on the job, and those who enjoy their jobs, will have higher levels of knowledge, psychosocial constructs (intentions, attitudes, perceived norms, and perceptions of control) and beliefs at pre-test and, as a result, demonstrate less change in these outcome measures when exposed to the video.

The video was evaluated by home health aides in a controlled field trial with data collected pre and post intervention. The protocols and instruments were approved by the institutional review boards of Indiana University and the Academic Edge, Inc. (FWA#0000439). Participants (target n=63) were recruited through nationally distributed home health care agencies and randomly assigned to an experimental (video) or control condition. For both groups, knowledge, psychosocial constructs, and belief data were gathered before and after the intervention. For the experimental group, usability data were gathered post intervention. A series of multivariate and univariate analyses examined differences in outcomes across group, occasion, and group by occasion. Univariate analyses examined the post-only, experimental group usability data.

Research Questions

The present study sought to determine the efficacy of a brief intervention for increasing knowledge and changing negative or reinforcing positive beliefs. The target audience was home healthcare providers. The targeted health outcome was a reduction in pressure ulcer incidence through monitoring and proactive steps to prevent pressure ulcers. As described in Chapter 4, a video was produced using established instructional design methodologies. Development of the video was informed by reasoned action theory and the epistemological framework of constructivism. The purpose of the video was to increase understanding of pressure ulcers and their prevention as well as to increase positive attitudes toward and intentions to engage in pressure ulcer preventive

behaviors. Outcome measures for the effort are knowledge of and beliefs toward taking steps to prevent pressure ulcers. The affective aspects of the study are represented by the four primary psychosocial constructs of reasoned action theory: Intention (INT), Attitude (ATT), Subjective Norm (SN), and Perceived Behavioral Control (PBC). Participant ratings of usability and usefulness also inform the outcome evaluation.

The specific research questions are:

- RQ1. Is there a significant difference between groups in participants' growth in knowledge of pressure ulcers and pressure ulcer care (Knowledge) when controlling for previous experience with pressure ulcer formation, years on the job, and job satisfaction?
- RQ2. Are there significant differences in learning between groups on a multivariate composite of direct indices of attitude (ATTD), subjective norm (SND), perceived control (PCD), and intention (INTEND) when controlling for previous experience with pressure ulcer formation, years on the job, and job satisfaction?
 - RQ2.1. If so, are there significant differences in the individual components of the multivariate composite of the direct indices between groups?
 - RQ2.1.1. If so, are there significant differences between groups on individual weighted beliefs that make up the indirect constructs?
- RQ3. Do members of the experimental group rate the intervention highly on measures of consumer satisfaction? How can the intervention be improved?

Research Design

The research effort is a between-within participants design. The between participants independent variable is Group (2 levels: Control and Experimental) and the within participants independent variable is Occasion (2 levels: Before intervention and After intervention). There are five dependent variables (Knowledge, Intentions, Attitudes, Subjective Norm, and Perceived Control). This design represents a 2 (group) x 2 (occasion) mixed controlled design with random assignment of participants to conditions. Job satisfaction, years on the job, experience of having a pressure ulcer form

on one or more clients, and knowing someone who has had a pressure ulcer are treated as covariates in analyses of covariance.

Participants

Recruitment was conducted in partnership with The Matrix Group, a market research firm located in Lexington, Ky. The Matrix Group specializes in large and small scale focus groups and product evaluations. Directors, owners, or other top-level managers of agencies and institutions that provide home health care in the United States were contacted and asked to assist in recruiting home healthcare workers within their organization to participate in a research project regarding pressure ulcer prevention. The nature of the study itself and the participation of the managers and their aides were described, including procedures and compensation.

If the manager was willing to assist with recruitment, information about the study was mailed for distribution to home healthcare workers within the agency. These information sheets described the study, participation, compensation, and rights as participants. The sheets also provided a toll-free number to call in order to participate. A \$40 incentive was offered for participating in the study. Both the information delivered to the managers and the information sheets provided to the potential participants stressed that the study was examining the usefulness of a training package and that the participants themselves were not being evaluated. Moreover, the participant information sheets emphasized that information regarding the participants and their responses would not be shared with managers or others within their organization.

Individuals who contacted the researchers to participate were screened for current employment in the field of home healthcare and provision of “hands-on” personal care for homebound patients. Steps were taken to ensure an adequate cross-

section of aides by ethnicity, experience in the field, and geographic location; these steps included selection of diverse recruitment locations and purposive sampling.

A total of 80 participants were recruited from 32 organizations located in 15 states and randomly assigned to either the control or experimental condition. As a result of drop-out, 63 participants completed the study during the period allotted for the effort. A series of tests of independent means (T-tests for means, Z-tests for percentages) were conducted to determine whether those who did not complete the study systematically varied from those who did, including group assignment. No significant variations were found. A second set of tests for independent means examined whether there were systematic differences between groups in any of the demographic data. No differences between groups were found ($p > .05$ for all comparisons). The section that follows therefore focuses on the aggregate profile of the 63 participants who completed the study.

The sample is diverse with 52.4% indicating a Caucasian racial identity, 33.3% indicating African-American descent, 11.1% indicating a primary racial identity of Hispanic, and less than 2% indicating American Indian/Alaska native, Asian-American, or other. When asked in a separate question whether they considered themselves Hispanic, 15.9% indicated that they considered their ethnicity to be Hispanic.²¹ Age was approximately normally distributed across the categories: 18-24, 3.2%; 25-34, 15.9%; 35-44, 31.7%; 45-54, 31.7%; 55-64, 12.7%, and 65+, 4.8%. Females represented 96.8% of the sample, which reflects the home healthcare population being investigated.

When asked how long they had been in the home health field, responses varied from less than 2 years to more than 20 (less than 2 years, 11.1%; 2-5 years, 22.2%; 6-10

²¹ The difference in percentages for the two questions in regards to Hispanic ethnicity is not unusual and is a result of the complexity of assessing the cross-racial ethnicity category. Frequently, those of Hispanic descent will self-identify as something other than Hispanic when asked their race and then identify themselves as Hispanic when asked directly about their Hispanic ethnicity.

years, 19.0%; 11-20 years, 33.3%; more than 20 years, 14.3%); the median years of experience reported was 10 years ($M=11.75$, $SD=9.12$).

The majority of the sample (61.8%) reported at least some college education. Although less than 10% indicated having graduated from college, more than 95% reported having graduated from high school. Although the majority of participants (87.3%) indicated they had received some form of training for their role as a home healthcare provider, 12.7% indicated they had received no training for their job responsibilities. Almost four-fifths (79.4%) of the participants indicated they were licensed or certified in a field related to home healthcare, although, again, a substantial minority (20.6%) indicated having no licensing or certification. For those who indicated having certification, approximately two-thirds had earned or updated their credential within the past year: within 30 days (20%), within 6 months (16%), within 1 year (32%), within 2 years (16%), within 5 years (4%), and more than 5 years ago (12%).

Participants appear to be very satisfied with their occupation (5-point scale, $M=4.76$, $SD=.90$). The vast majority (81%) indicated they were extremely satisfied with their job, and only two participants rated themselves as “neither satisfied nor unsatisfied” or below. Although the majority of participants (71.4%) considered their current position to be a “long-term career,” 28.6% viewed their current position as transitional: “eventually moving on to something else.” Median reported income was \$10,001 to \$20,000, with a little more than 10% making less than \$10,000 and very few (<8%) reporting more than \$30,000. One participant refused to answer.

When asked about technology availability at home and at work, most respondents indicated they had access to VCRs (87.3%), DVD players (85.7%), and computers (71.4%) at home, with the majority also indicating some form of access to the internet (68.2%), roughly half of which (33.3% overall) was reported as “high-speed.” The workplace appears somewhat different with computers (60.3%) and VCRs (60.3%)

currently more prevalent than DVD players (27.0%), and less internet access overall (39.6%), although “high-speed” access remained similar (31.7%) to that in the home environment.

As required for participation, all 63 participants indicated that they were currently working in the field of home healthcare and that they regularly visit and care for patients in the patients’ homes. Additionally, all 63 participants provide “hands-on” care, such as bathing, feeding, dressing, or other assistance with daily living (ADL). The types of care provided are listed in Table 10, with the most common types of care being bathing (95.2%), dressing (50.8%), and repositioning (44.4%). When asked what the title of their current position is, participants considered themselves to be home health aides/certified home health aides (50.8%), certified nurse’s assistants/technicians (28.6%), home care aides (7.9%), and other (22.2%).

Table 10

Types of Hands-on Care Provided

<u>Type of Care</u>	<u>#</u>	<u>%</u>
Base	63	100.0%
Bathing/Personal hygiene	60	95.2%
Dressing/Change clothes	32	50.8%
Repositioning	28	44.4%
Feeding	24	38.1%
Cleaning/Laundry	20	31.7%
Massage/Rub lotion into skin	17	27.0%
Transferring from one place to another	16	25.4%
Help patient walk/move around	15	23.8%
Give medication	14	22.2%
Cooking	13	20.6%
Change linens/Make bed	10	15.9%
Exercise range of motion	10	15.9%
Assist with wound care/	8	12.7%
Replace dressing	7	11.1%
Check vital signs	7	11.1%
Run errands	6	9.5%

Totals may add to more than 100% due to multiple responses.

The number of clients for whom care is provided on a monthly basis is quite variable (M=27.91, SD=35.81), with the median number of clients cared for in a month

being 10. Participants were asked to estimate the percentage of patient visits during which steps were taken to prevent pressure ulcers. The estimated percent of visits was high, approximately normally distributed, and again quite variable ($M=72.62$, $SD=33.00$, $Median=90$). Forty-five percent of the participants indicated they took steps to prevent pressure ulcers 100% of the time, and a cumulative 59% indicated they did so at least 80% of the time. Although a significant proportion of the sample indicated that they take steps to prevent pressure ulcers quite frequently, almost two-thirds of the participants indicated they do so less than 50% of the time, and 16.4% indicated they do so less than 25% of the time. These results are not necessarily indicative of substandard care; not all patients are at-risk for pressure ulcer formation, and it is quite likely that participants realistically need not take steps with all patients, every visit, when those patients are not significantly at risk (i.e. they are not fully or partially immobile and appear to be at little risk for pressure, friction, and shear). In fact, the large proportion of respondents claiming to take steps to prevent ulcers on every visit might be an indication of prosocial response bias overall. While it is possible that 45% of the sample do, in fact have 100% at risk clients (i.e. every client, every time), this would appear unlikely.

The majority of participants (62.3%) know someone who has developed a pressure ulcer, and one half of participants (50.8%) indicated that they have had at least one client develop a pressure ulcer. The mean number of clients who have developed ulcers under an aide's care is 2.61 ($SD=6.06$), a result that is both kurtotic (13.931) and skewed (3.615), with almost half the aides reporting none, 14.3% reporting 1 client developing an ulcer, and some (8.8%) reporting between 10 and 30 clients developing ulcers.

Procedures

Once the target number of participants was recruited and screened, participants were randomly assigned to a control or experimental group. Multiple participants from one organization were assigned to the same study group to avoid cross-contamination. This occurred in three cases, with three individuals from one organization assigned to the control group, and with three individuals from another organization and two from yet another assigned, to the experimental group.

Members of both groups were sent the initial instrument via U.S. postal service and asked to complete and return it by a specified date. Those participants for whom surveys had not been received by the return due date received a follow-up phone call on the due date asking if they had completed the survey. If participants had completed the survey, they were thanked and informed that their initial \$20 gift certificate would be sent upon receipt of the survey. If they had not, they were reminded to do so and asked to do so no later than the following day. If participants could not locate the materials, an additional copy was sent overnight. Participants were reminded that upon receipt of the completed survey, they would be sent a \$20 gift certificate. They were thanked for their assistance with this important effort. When participants could not be reached directly, messages were left for them.

Participants who returned the initial measure were sent a second packet two weeks later. The packet for participants in the control group contained the survey instrument without the video evaluation questions. Control participants were instructed to complete the instrument at their leisure over the course of the ensuing week and to return it to the researchers using the provided postage paid return envelope. Upon receipt of the completed survey from a participant, the researchers sent the participant their second \$20 gift certificate.

The experimental group received a packet containing the pressure ulcer prevention instructional video, the survey instrument with the video evaluation questions, and a prepaid return envelope. The participants in the experimental condition were instructed to watch the video at their leisure over the course of the following week, open and complete the evaluation packet after reviewing the video, and return the instrument to the researchers using the provided prepaid envelope. Upon receipt of the completed survey, the researchers sent the participants their second \$20 gift certificate.

The follow-up procedures for both groups in the second assessment were the same as described above for the initial assessment. That is, all participants for whom packets had not been received by the due date were called and asked if they had completed the evaluation/survey. If they had not, they were reminded to do so, and asked to do so no later than the following day. If they could not locate the materials, an additional copy was sent overnight. Participants were reminded that upon receipt they would be sent an additional \$20 gift certificate and again thanked for their time and assistance with this important effort.

Returned packets were examined for errors and omissions. Follow up with participants to correct packet errors and omissions was conducted via telephone when necessary.

Materials

Instructional Video

An instructional video designed to help home healthcare workers understand and adopt practices of pressure ulcer prevention was used as an intervention in the experimental group. The video is 45 minutes in duration and consists of two modules. The first module focuses on pressure ulcer awareness and understanding, including risk

factors for, characteristics of, and procedures for monitoring for pressure ulcers. The second module focuses on key steps for prevention of pressure ulcers. Both modules directly address important factual and procedural information. Both modules also directly and indirectly incorporate beliefs that were shown to be related to the intentions of the home healthcare aides to adopt pressure ulcer prevention practices (see Chapter 3). The content and development of the video was described more fully in chapter 4. The script of the video is provided in Appendix B.

Data Collection Instruments

Three data collection instruments were developed for the study. One instrument (1a) was used for collection of data prior to the intervention. Two additional instruments (2a and 2b) were used to collect data immediately following the intervention. The post-study instruments for the control (2a) and experimental (2b) groups were identical to the pre-study instrument, with two exceptions: (1) instructions for the post-study instruments for both groups were modified as appropriate to the context of the second assessment, and (2) the post-study instrument for the experimental group (2b) contained additional questions related to the usability, quality, and perceived value of the video. These latter items were not appropriate for the control group and therefore were not included in the control group instrument (2a). The various sections of the instruments are described below. Aspects of the instruments related to reasoned action theories draw upon the elicitation and survey work reported in Chapter 3 and upon formatting and inclusion guidance from Francis and colleagues (2004, May), Ajzen (2002, September), Conner and Norman (1995), and Ajzen and Fishbein (1980).

All intention and belief items are on 7-point agreement or 7-point semantic differential scales. Instructions and instruments are provided in Appendix A. Descriptions of the constructs and items follow.

Distal Variables (knowSomeone, numClients, yrsField, jobSatis)

Distal variables, such as demographic characteristics and previous experience, may play either a direct or indirect role related to the dependent variables (Fishbein, 2000). The study controlled for several distal variables which may be related to pressure ulcer preventive care provision. The variables were: knowing someone who has had a pressure ulcer (knowSomeone), having one or more clients develop a pressure ulcer (numClients), years in the field (yrsField), and satisfaction with current occupation (jobSatis). Other demographic data gathered included race/ethnicity, age, income, gender, education attained, and licensing, as reported in the participants section above.

Knowledge

The ability to recall factual and procedural information related to pressure ulcers and pressure ulcer care was assessed using 12 items. Initially, a pool of 20 items was developed by a content expert based on the factual and procedural content identified during development. These items were reviewed multiple times for accuracy, appropriateness, and clarity by a second content expert as well as by core members of the research team. Through the review process, the items were refined and discarded, resulting in 12 items that were agreed upon by the research team and subject matter experts. The items are all closed ended questions and address information regarding pressure ulcers and common misunderstandings. For example, “The primary risk factor for pressure ulcers is: (a) depression, (b) incontinence, (c) advanced age, (d) immobility, and (e) weight loss.”

Other items assess participants’ understandings of the definition of a pressure ulcer, the most common locations where pressure ulcers form on the body, the causes of pressure ulcers, the frequency that someone should inspect for pressure ulcers, the prevalence of ulcers, and common early signs of pressure ulcers. Content underlying

each item is addressed in the video. A single composite knowledge score was created by summing the individual knowledge items.

Intention (INTD)

Intention toward engaging in pressure ulcer preventive care was assessed using three items: (1) “I intend to take steps to prevent pressure ulcers from forming on my patients.” (INTD1-“Intention”); (2) “I am LIKELY/UNLIKELY to take steps to prevent pressure ulcers while working with my patients.” (INTD2-“Self-prediction”); and (3) “I would like to take steps to prevent pressure ulcers while working with my patients.” (INTD3-“Desires”).

Attitudes and Behavioral Beliefs

Five items directly assessed participants’ attitudes about the target behavior itself. Behavioral beliefs were assessed through paired items for each individual belief. An indirect measure of attitude was computed as the mean of all behavioral beliefs.

Attitude-Direct (ATTD).

ATTD was assessed by five semantic differential items: “My taking steps to prevent pressure ulcers from forming on my patients is...” (1) “Extremely Good....Extremely Bad” (ATTD1-“Goodness”); (2) “Extremely Beneficial...Extremely Harmful” (ATTD2-“Benefit”); (3) “Extremely Enjoyable...Extremely Unenjoyable” (ATTD3-“Enjoyable”); (4) “Extremely Pleasant...Extremely Unpleasant” (ATTD4-“Pleasant”); and (5) “Extremely Wise...Extremely Foolish” (ATTD5-“Wise”).

Behavioral beliefs (BBx).

Behavioral beliefs are individual beliefs associated with engaging in pressure ulcer prevention. Assessment of each belief was achieved through two paired items. One

item assessed whether the participant agreed or disagreed with the belief. This is the Behavioral Belief (Bb) component of the belief. The other item in the matched pair assessed the participants' perceptions of the likelihood of the belief affecting them. This second item is the Behavioral Expectation (Be) component of the matched pair. In essence the two items ask "Do you agree with this statement and would it affect your practice?" An example of such a matched pair is "Looking for signs of pressure ulcers and taking steps to prevent them...Is something I feel competent to do." Participants rate this item on a 7 point scale from Strongly Agree...Strongly Disagree. The paired item is "Feeling competent is..." "Extremely Important...Extremely Unimportant."²² The product (Bb*Be) of these matched items represents a weighted Behavioral Belief (BB). The 14 behavioral beliefs identified in previous work and assessed in the study are:

Looking for signs of pressure ulcers and taking steps to prevent them...

1. Is something I feel competent to do (BB_Compotence)
2. Would protect me and my employer from liability (BB_liability)
3. Is a standard of practice/is required for my job (BB_standard)
4. Makes me feel that I am providing comprehensive health care (BB_comprehensive)
5. Would cause patients to feel worried and anxious (BB_ptanxiety)
6. Is an opportunity to educate patients and provide reliable information to them (BB_educate)
7. Is an opportunity to change patient behavior (BB_change behavior)
8. Would increase compliments and positive referrals (BB_compliments)
9. Avoids trouble with state and/or regulatory agencies (BB_avoidtrouble)
10. Shows compassion (BB_compassion)
11. Is appreciated by the patient (BB_appreciated)
12. May be perceived as unnecessary (BB_ptFamUnnec)
13. Is appreciated by the patient's family (BB_apprecFam)
14. Reduces long-term consequences (BB_reduceConseq)

²² This item formulation differs from the good...bad bipolar scale used in the survey. The survey followed the item formulation suggested by Ajzen (1995). The evaluation followed the important...unimportant scale suggested by Conner and Norman (1980), and Ajzen and Fishbein (1995) and others (a third variation, desirability, was not used). The decision was made based on the sense that good/bad did not capture the relevance of the consequences to the intended practice as well as "importance." Some researchers also suggest desirability, a dimension that might have been appropriate for this audience as well. This change in measurement affects comparison of results across stages (survey to evaluation); however it does not, of itself, affect intrastage results. On the other hand, it is possible that this formulation is differently perceived and had it been used during the survey stage, differing means and correlations may have been obtained, yielding different suggestions for the intervention.

Attitude-Indirect (ATTI).

ATTI is a scale score produced by summing the individual weighted Behavioral Beliefs and dividing by the number of those beliefs ($\Sigma(\text{be})/N$).

Subjective Norm and Normative Beliefs

Subjective norm is a measure of the general overall influence of others regarding engagement in pressure ulcer prevention. Normative beliefs are individual beliefs about what specific other people or organizations think about the behavior. Similar to attitude, subjective norm was assessed directly and indirectly.

Subjective Norm-Direct (SND).

Subjective Norm-Direct was assessed by 3 items: (1) “People who are important to me think I SHOULD/SHOULD NOT take steps to prevent pressure ulcers.” (SND1-“People Think I Should”); (2) “Other people like me usually DO/DO NOT take steps to prevent pressure ulcers with their patients.” (SND2-“Others Do It”); and (3) “I DO/DO NOT feel pressure from others to take steps to prevent pressure ulcers.” (SND3-“Pressure”).

Normative Beliefs (NBx).

Normative beliefs are beliefs about what other people think about the target behavior. These other people are “normative influences.” As with behavioral beliefs, each normative belief was assessed by two matched items, a Normative Belief (Nb) and a Motivation to Comply (Mc). For example, the normative belief “My employer thinks/tells me I should take steps to prevent pressure ulcers” was assessed on a 7 point scale ranging from Strongly Agree to Strongly Disagree. This item was paired with the motivation to comply component: “Generally speaking, I want to do what my employer thinks I should do,” which was also rated on a 7 point scale of agreement. The product

(Nb*Mc) of these items forms a weighted Normative Belief. The 12 normative influences identified in previous work and assessed in the study are:

1. My supervisor/case manager/nursing manager (NB_super)
2. My employer (NB_employer)
3. Experts (NB_experts)
4. State inspectors (NB_state)
5. My co-workers (NB_coworkers)
6. National or local health organizations (NB_healthOrg)
7. School/Professional training (NB_school)
8. Health insurance companies (NB_insurance)
9. Professional organizations in my field (NB_proOrg)
10. My patients (NB_pt)
11. Aides/Nurses who have worked previously with a patient (NB_prevAides)
12. My patients' families (NB_ptFam)

Subjective Norm-Indirect (SNI).

SNI is a scale score produced by summing the individual weighted Normative Beliefs and dividing by the number of those beliefs ($\Sigma(\text{NbMc})/N$).

Perceived Control and Control Beliefs

Perceived control is a measure of whether a behavior is perceived by the participant to be under his or her control. Perceived control reflects whether participants feel that the behavior is something that they are able to do, and in this regard is similar to self-efficacy (Bandura, 1977, 1995, 1997). Perceived control also reflects the extent to which participants perceive the decision to engage in the behavior as up to them or not. Control beliefs, which are similar to the previously delineated behavioral beliefs and normative influences, represent beliefs regarding various barriers and facilitators, external and internal to the participant, that influence provision of pressure ulcer prevention care. As with the behavioral and normative components, perceived control was measured directly and, through the control beliefs, indirectly.

Perceived Control-Direct (PBCD).

Perceived control was measured directly with 3 items: (1) “I am confident I could take steps to prevent pressure ulcers.” (PBCD1-“Self-Efficacy: Action”); (2) “Whether I take steps to prevent pressure ulcers is entirely up to me.” (PBCD2-“Perceived Control”); and (3) “I feel I know how to take steps to prevent pressure ulcers.” (PBCD3-“Self-Efficacy: Knowledge”).

Control Beliefs (CBx).

Each of a series of control beliefs was assessed, as with the behavioral and normative beliefs, by two paired items. The first item of the pair assessed the Control Belief (Cb). The control belief represents the likelihood of encountering a particular barrier or facilitator. For example, “How likely are you to encounter family resistance?” was rated on a 7 point scale of perceived likelihood (Extremely Likely to Extremely Unlikely). The second item in the matched pair was a semantic differential that assessed the Perceived Power of the belief (Pp). Perceived power represents the participants’ assessment of how and to what extent a particular barrier or facilitating condition might affect performance of the targeted behavior. For example, “Encountering family resistance...” would make pressure ulcer prevention “A Lot Easier” ...”A Lot Harder.” The product of the Control Belief and Perceived Power (Cb*Pp) for each individual belief formed a weighted control belief. The 14 beliefs identified in previous work and assessed in the study are:

1. Having the time available to work with a patient (CB_time)
2. Having an established professional relationship with a patient (CB_estRelation)
3. Having established rules and procedures regarding pressure ulcers in the workplace (CB_estRules)
4. Having privacy when working with a patient (CB_privacy)
5. Having tools/supplies/equipment available (CB_supplies)
6. Having ample space in a room (CB_space)
7. Encountering family resistance (CB_famResist)
8. Having a patient who is mentally altered (Alzheimer’s, dementia, forgetful) (CB_ptAltered)

9. Having a patient who does not follow your instructions during the time between visits (CB_ptNonComp)
10. Having a patient family that does not follow your instructions during the time between visits (CB_famNonComp)
11. Encountering a dirty or cluttered environment (CB_environ)
12. Being able to convince a patient to accept what you are doing (CB_ptAccept)
13. Being able to help a family understand what you are doing (CB_famAccept)
14. Encountering a patient who wants to die (CB_ptWantDie)

Perceived Control-Indirect (PBCI).

PBCI is a scale score produced by summing the individual weighted Control Beliefs and dividing by the number of those beliefs ($\Sigma(\text{CbPp})/N$).

Consumer Satisfaction (Experimental Group Only, Post-only)

Consumer satisfaction and needs were assessed with a consumer satisfaction scale, a series of items regarding new components the learners might find useful, a rating of the “newness” of the information in the video, and a series of open-ended questions. Ten 5-point items formed a brief consumer satisfaction scale, eliciting reactions to the usability and usefulness of the effort. The measures included perceptions of quality, comprehensiveness, organization, value to ones own practice, and value to colleagues. A set of six 5-point items examined usefulness of potential extensions to the video by asking respondents to rate the utility of six different possible additions to the video (e.g. “would the following be useful to you IF it were developed....”). A single 5-point semantic differential item inquired as to the extent to which the materials presented in the video seemed to be “All New to Me....Entirely a Review.” Additionally, four open-ended questions acquired information regarding the most useful components of the program, the least useful ones, components that could be changed or added, and elaboration of any previously answered items.

Analysis

Data from the instruments was entered into an Excel spreadsheet by a research assistant. The data was then imported into SPSS 14.0 (SPSS, 2005). A demographic profile of participants and a series of scale scores were generated. The original range for all of the variables was from 1 to 7, with higher scores indicating higher levels of concurrence with the statement or more positive ratings of the beliefs (e.g. more positive, more likely, easier). As in the survey stage of the research, a range of 1 to 7 was maintained for Motivation to Comply and Perceived Power. In order to capture the positive and negative sense of the individual ratings associated with the individual beliefs, Behavioral Beliefs, Behavioral Evaluation, Normative Beliefs, and Control Beliefs were rescaled to +3 to -3.

Scale scores were generated for: (1) direct indices of Attitude, Subjective Norm, and Perceived Control; (2) weighted Behavioral, Normative, and Control Beliefs; and (3) indirect indices of Attitude, Subjective Norm, and Perceived Control.

The principal analyses conducted in the study were comparisons between and within groups using the multivariate analysis of covariance and univariate analysis of covariance procedures. The analyses answered the research questions (RQ 1.-RQ 2.) by examining differences in knowledge, psychosocial constructs, and beliefs between group by occasion while controlling for: familiarity with someone who has had a pressure ulcer form (knowSomeone), previous experience with pressure ulcer formation (numClients), years in the field (yrsField), and job satisfaction (jobSatis). Consumer satisfaction data was analyzed to answer RQ 3.

Familywise alpha is 0.05. Steps were taken to maintain the experimentwise alpha for multiple comparisons; these included the step-down approach of investigating higher order comparisons prior to lower order ones (i.e. multivariate-> univariate -> post hoc), and the use of the Tukeys b procedure for post hoc comparison, when multiple means

were compared. For comparison of means analyses, because cell sizes are unequal, that is the design is unbalanced, estimated marginal means, rather than weighted means, were reported and used for post hoc analyses. Since, however, there were no empty cells, the Type III sum of squares was used for all such analyses (Maxwell & Delaney, 2004). Prior to presenting the results, each of the specific analyses is discussed below, followed by a discussion of alpha, power, and related issues.

Initial Analysis

Descriptive and bivariate correlation statistics for the data were generated and examined. During this analysis, the variables were examined for skewness and kurtosis, their means and standard deviations were examined, and a correlation matrix of the top-level constructs was generated and examined.

Changes in Knowledge

A repeated measures analysis of covariance (RM-ANCOVA) was conducted to answer RQ 1: whether there are interaction effects (group by occasion) for the knowledge variable. Occasion (time) was treated multivariately. Knowledge was univariate normal and Box's M for equality of covariance matrices was not significant ($p > .01$), indicating the assumptions for conducting the RM-ANOVA (with time treated multivariately) were met. KNOWLEDGE was entered as the dependent variable, group and occasion were fixed factors, and knowSomeone, numClients, yrsField, and jobSatis were entered as covariates.

Changes in Attitude, Subjective Norm, Perceived Control, and Intentions

A repeated measures multivariate analysis of variance (RM-MANCOVA) was conducted to answer RQ 2: whether there exist interaction effects (group by occasion) on the multivariate composite of four dependent variables: the direct indices for attitudes,

subjective norm, perceived control, and intentions. Box's M was not significant ($p > .01$) indicating that the assumption of heteroscedasticity was not rejected. Several of the variables were not normally distributed but instead were skewed, e.g. Attitude and Intention (see Table 12), which implies a violation of multivariate normality. However, MANOVA is robust to multivariate normality when sample sizes are not small (< 20) and the violation results from skewness as opposed to outliers, as is the case with the present sample (Tabachnick & Fidell, 2007).

To answer RQ 2.1, a series of repeated measures univariate analysis of covariance (RM-ANOVA) tests was conducted to further specify significant differences in the individual constructs across group by occasion. To answer RQ 2.1.1, identified significant differences were investigated with a post-hoc comparison either through direct examination in the case of two groups or using the Tukey method when multiple means were being compared. For direct indices for which significant differences were observed, individual salient beliefs associated with those constructs were examined individually via RM-ANCOVA with Tukey post hoc follow up.

Analysis of Consumer Satisfaction

To address RQ 3, descriptive statistics for the consumer satisfaction data for the experimental group were generated. In addition, a series of t-tests was conducted to determine whether differences were statistically significant from experimentally hypothesized mean values. Since a rating of 3 indicates that the participant was either unsure or did not agree or disagree with the item, usability ratings that were significantly different from 3.0, in the positive direction, indicate that the materials were considered useful, useable, and of value by the participants. As a result, 3.5 (on 5 point scales ranging from 1 to 5) was selected as a hypothetical test value, rather than simply the midpoint of 3.0, because it is more indicative of agreement with the items. For the six

items that assessed the value or worth of proposed additional features, the midpoint (3.0) was used as a test value. Therefore, for those items, significant differences indicated a positive or negative perception of the proposed materials or activities.

Power

Power is the likelihood of rejecting a null hypothesis when the null hypothesis is false. That is, it is the likelihood of finding an effect when the effect actually does exist (Tabachnick & Fidell, 2007). Power is an important issue for a study both at study onset and at conclusion. At the inception of a study, a priori power analysis may inform study design as well as affect the specification of a reasonable, effective, and efficient number of participants. During and after study implementation and analysis, the power analysis provides context for interpreting non-significant results. Non-significant results in the context of an underpowered study may be interpreted quite differently than such results in the context of a highly powered study.

The power of a study is affected, generally, by three factors: sample size, alpha, and standardized effect size (Cohen, 1988). Procedures and software applications for performing power analyses for univariate tests of significance (e.g., t-tests and ANOVAs) have become common place. Stand-alone packages (e.g. Statistica Power Analysis, NCIS PASS, and G*Power) and modules to be integrated within broader statistical analysis packages (e.g. UnifyPow for SAS, SamplePower for SPSS) handle these analyses. However, power analysis procedures for multivariate statistical analyses are much less standardized, and apparently few applications that directly support such analysis (Hair, Black, Babin, Anderson, & Tatham, 2006).

O'Brien and Muller (1993), extending the work of Muller, LaVange, Ramey, and Ramey (1992), propose a framework for considering power analysis holistically from t-tests through various applications of the general linear model. Unfortunately, while the

theoretical and statistical analytical framework is broadly applicable to most power analyses, the provided application of the framework is only available to SAS users.

D'Amico, Neilands, and Zambarano (2001), on the other hand, provide a method of using SPSS to conduct univariate and multivariate power analyses using the MANOVA syntax. This framework requires an estimate of the number of participants, means, standard deviations, and variable correlations to estimate the power for the study. However, D'Amico et al., only provide examples of, and syntax for: a simple single group, single time, single dependent variable, single covariate ANCOVA; a single time, multiple group, multiple dependent variable MANOVA; and a multiple time, multiple group, single dependent variable repeated measures design. The researchers do not extend this example to the more complex case of double multivariate analysis of repeated measures designs. Portions of the present study examine multivariate data at two time points and across two groups. To conduct a power analysis of such a design, the D'Amico framework needed to be extended and the syntax modified to produce the desired analysis. The syntax for the procedure is comprised of two parts. The first portion generates a working file with parameter estimates. The second portion conducts a MANOVA procedure on that working file. An example of the syntax used for the RM-MANOVA aspects of the present study, populated with estimated values for a sample size of 30 per cell, is as follows:

```
MATRIX DATA variables = type rowtype_ INTD Post_INTD ATTD
Post_ATTD SND Post_SND PBCD Post_PBCD

/FACTOR = type
/FORMAT = lower nodiagonal.
BEGIN DATA.
1 mean 2.63 2.89 2.19 2.49 2.25 2.79 5.93 6.51
1 n 30 30 30 30 30 30 30 30
2 mean 2.63 2.63 2.19 2.19 2.25 2.25 5.93 5.93
2 n 30 30 30 30 30 30 30 30
. sd .95 .95 .59 .59 1.08 1.08 1.15 1.15
. corr .50
. corr .56 .56
. corr .56 .56 .50
```

```

. corr .30 .30 .23 .23
. corr .30 .30 .23 .23 .50
. corr .26 .26 .39 .39 .37 .37
. corr .26 .26 .39 .39 .37 .37 .50
END DATA.

```

```

MANOVA INTD Post_INTD ATTD Post_ATT D SND Post_SND PBCD
Post_PBCD by type (1,2)
/WSFACTORS = outcome(2)
/measure = intent att sn pbc
/METHOD UNIQUE
/ERROR WITHIN+RESIDUAL
/MATRIX = in (*)
/POWER T (.05) F(.05)
/PRINT SIGNIF (MULT AVERF)
/NOPRINT PARAM (ESTIM).

```

In order to estimate power using this procedure, it is necessary to estimate numerous parameters. For applications of the general linear model involving multivariate analyses, this estimation has been described as a “complex exercise due to the need to make conjectures about many parameters” (O'Brien & Muller, 1993). Parameter estimation includes, in the case of a group by occasion multivariate analysis: mean values for group and time, standard deviations, and between and within covariance for all relevant variables.

Such estimation may be grounded in previously published research, data, or substantive knowledge of a field. Unfortunately, a review of the literature uncovered no studies that examined constructs similar to those proposed in the present study for either (1) the particular target behavior or (2) the particular target population. Although many studies have used reasoned action theory to inform data gathering and analysis for both prediction and evaluation, using data from these studies is problematic for at least two reasons. First, attitudes, perceived norms, and perceived control beliefs are audience specific, and extrapolating from other audiences and behaviors is likely to be as imprecise as estimating those from general rules of thumb. Second, while some studies present sufficient data to estimate parameters for some of the variables, such as the mean and standard deviation for intent, few provide the information that would allow an

estimation of the correlation matrices. No studies could be located which provide such information in the context of a group by occasion evaluation study, i.e. a controlled, pre-post multiple dependent variable design; however, two meta-analyses of evaluation studies that incorporate reasoned action theory were located. These reviews indicate that of those studies reporting significant differences, the observed effect size on intent generally ranged from small (.18) to moderate (.50), although several studies reported larger effect sizes, especially on the other constructs of the Theory of Planned Behavior (Hardeman et al., 2002; Webb & Sheeran, 2006). This information regarding expected effect size is useful in estimating several parameters, as discussed below.

While published research is of assistance for informing some of the power analysis parameters, little can be derived from the literature regarding means, SD, and correlation values. Fortunately, Goldsworthy, as part of the effort reported here, surveyed home healthcare aides about their intentions, attitudes, subjective norms, and perceived control regarding pressure ulcer prevention (see Chapter 3 for a discussion of the survey, the survey instrument, and the results). The data from survey participants (n=80) was available for estimating many of the parameters needed for power analysis, including means and standard deviations at time 1, and correlation matrix values for all time 1 variables. Moreover, using these pilot values as a baseline, time 2 values could be estimated based on a targeted effect size and informed conjectures regarding correlation of variables from time 1 to time 2. Using the moderate effect size (.50) noted in the Hardeman et al (2002) review of similar studies, estimated means for time 2 were computed using the baseline mean and standard deviation established for time 1 (from the survey data). This was done by calculating an estimated mean difference that would occur if the moderate effect size were observed in the proposed study. This predicted mean difference was then added to the observed mean (time 1) to estimate the time 2 means. Standard deviations for time 2 were assumed to be the same as those for time 1.

While it is reasonable to suggest that the standard deviation for the intervention group might become smaller from pre to post as a result of the educational experience, in the absence of substantive data to believe otherwise, the values were kept constant.

Similarly, the correlation coefficients among the time 1 variables were taken directly from a correlation matrix of the survey data. These values are assumed to be essentially constant over time because absent an intervening event, one would assume that the relationship of one construct to another would not change considerably. Therefore, the correlations used for time 1 were re-entered for the time 2 values. Finally, for the off-axis values, e.g. intent at time 1 (INTEND) with intent at time 2 (post_INTEND), a constant correlation of 0.50 was used because, again, absent an intervening event and in the presence of a relatively short duration between measurement periods, attitudes are likely to be relatively stable.

With these parameters estimated, the proposed family-wise $\alpha=0.05$ was used. These estimated parameters provided sufficient data to run the SPSS syntax extended from D'Amico and colleagues (2001). The procedure was conducted for several alternate values of N, with values above 35 (per condition) yielding sufficient power (power > 0.80) for the occasion main effect (0.89) and the group by occasion interaction (0.89). The power for the group main effect for 70 total participants was underpowered (< .25); the projected power for group may have been strongly impacted by the selection of relatively high, substantively reasonable, correlations between dependent variables (c.f. Tabachnick & Fidell, 2007). Since a group main effect was not an analysis of primary interest for the present study, the proposed number of participants was based upon the analyses for the other two effects.

Once the number of participants required for 0.80 power with the MANOVA procedure was established, a series of power analyses was conducted using the same estimated values but for the individual dependent variables for the repeated measures

univariate analysis of variance tests (RM-ANOVA). Power to observe group by occasion differences among the four dependent variables varied widely: Intent, 0.224; ATTD, 0.610; SND, 0.595; and PBCD, 0.603. The approximate number of participants required to achieve power of 0.80 for these individual variables is >300 for INTEND, 140 for ATTD, 120 for SND, and 129 for PBCD. The study targeted recruitment of 80 participants overall in order to exceed 0.80 power for the omnibus multivariate analysis.

An a priori power analysis for the knowledge variable was also conducted. Means, standard deviations, and between group effect sizes for this analysis were estimated from existing data gathered in a study of foster care providers (Goldsworthy, 2006, November 4-8). In that study, an intervention designed to increase knowledge and awareness of fetal alcohol syndrome and its diagnostic procedures was evaluated in a randomized, waitlist design. The intervention was similar in duration and design to the intervention being assessed in the current study. The knowledge measure used to assess key information related to fetal alcohol syndrome was similar in structure and types of questions to the measure used with the home health aide population. Foster care providers and home health care providers have similar characteristics: both often work in medically related yet relatively “lay” roles in their fields. Using data from the foster care providers to estimate parameters of the power analysis indicated that the number of participants projected for the RM-MANOVA (n=80) yields power of 1.00 for KNOWLEDGE.

As noted above, the overall alpha for the study was 0.05, indicating only a 5% chance that the null hypotheses will be rejected when they are, in fact, true (Tabachnick & Fidell, 2007). Because the final number of participants (n=63) fell below the sought 80, the study is underpowered, especially for the multivariate composite of the psychosocial variables and the post hoc univariate analysis of the individual variables, and there is, therefore, an increased likelihood of Type II error (failing to detect

differences when such differences do in fact exist in the population). Where differences are detected, the effect sizes are reported to provide interpretive context.

Results

Examination of Variables

Descriptive statistics for the dependent, independent and covariate study variables are provided in Table 11 through Table 15. Descriptive statistics for the specific belief variables (Table 22, Table 23, and Table 24) are provided in their own section on pages 164-166 below. A univariate analysis of variance did not detect differences at pretest on the study covariates or on any of the primary study construct variables (Knowledge, Intention, Attitude, and Perceived Control) except Subjective Norm. Subjective Norm was higher in the control group than in the experimental group ($F_{1,61}=3.884; p<.05$).²³

As shown in Table 13, Direct Attitude was significantly correlated with Intention. Subjective Norm and Perceived Control were not significantly correlated with Intention. Not surprisingly, regressing Intention on Attitudes, Subjective Norm, and Perceived Control led to a significant model, as depicted in Figure 8: Regression model at pretest. Attitude emerged as the sole significant predictor of Intention ($F_{3,59}=5.696, p<.05$, Adjusted $R^2=.19$). This result parallels that in the survey research and confirms that intention appears to be most closely associated with attitudes toward the behavior (as opposed to perceived norms and control issues regarding the behavior).

Finally, several issues should be noted. As shown in Table 12 as well as Table 22, Table 23, and Table 24, many of the core construct and belief variables are near their maximum values on their respective scales, often with very little variance. Moreover,

²³ Group equivalence of demographic characteristics was discussed previously in the participants section.

some are highly skewed to the left and often kurtotic within and between groups. This is indicative of quite high response patterns to all items (i.e. ceiling effects): specifically, the participants endorsed performing the behavior, and various beliefs related to the behavior, very strongly. For example, collapsing across group and occasion, the grand mean for intention to engage in the behavior (INTD) is 2.77 (SD=.40), on a scale of -3 to 3. This overall pattern in the data suggests there is very little room for improvement and, as a result, differences are likely to be small and more difficult to detect. Thus, the initial power estimate (described below) may be too liberal, a situation exacerbated by the small variance associated with many of the items.

Table 11

Mean(SD) of Primary Study Variables at Pretest, by Group

	<u>N</u>	<u>Experimental</u>		<u>Control</u>	
		<u>(n=28)</u>		<u>(n=28)</u>	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
knowSomeone	28	.57	.50	.64	.49
numClients	28	2.21	3.86	3.11	7.78
yrsField	28	11.80	10.03	10.90	7.33
jobSatis	28	4.89	.32	4.61	.74
Knowledge	28	7.32	1.31	7.21	1.69
INTD	28	2.75	.41	2.79	.39
ATTD	28	1.83	.83	2.20	.68
SND*	28	1.02	.75	1.52	1.08
PBCD	28	1.68	1.13	2.01	.97

*p<.05

Note. Covariate values at pre were used. N is the number of participants available to the cell for the various multivariate analyses. This number is less than the overall N per group and overall as a result of missing data.

Table 12

Descriptive Statistics for Individual Items Comprising the Direct Psychosocial Variables (INTD, ATTD, SND, PBCD)

	<u>Control (N = 30)</u>							<u>Experimental (N = 32)</u>								
	<u>Pre</u>			<u>Post</u>				<u>Pre</u>			<u>Post</u>					
	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>				
INTD	2.73	(0.43)	-1.41	0.75	2.74	(0.59)	-3.75	16.48	2.78	(0.39)	-1.61	1.31	2.84	(0.42)	-3.56	13.16
“Intention”	2.67	(0.55)	-1.41	1.20	2.67	(0.71)	-2.49	6.54	2.72	(0.52)	-1.72	2.32	2.88	(0.42)	-3.63	13.53
“Self-Prediction”	2.60	(0.77)	-2.06	3.90	2.67	(0.66)	-2.59	8.27	2.72	(0.63)	-2.13	3.26	2.78	(1.07)	-5.44	30.11
“Desire”	2.93	(0.37)	-5.48	30.00	2.90	(0.55)	-5.48	30.00	2.84	(0.45)	-3.05	9.43	2.88	(0.42)	-3.63	13.53
ATTD	2.10	(0.83)	-1.24	2.46	2.07	(0.84)	-0.70	-0.12	1.90	(0.83)	-0.06	-1.28	2.25	(0.56)	0.18	-1.37
“Goodness”	2.40	(0.86)	-1.26	0.72	2.57	(0.82)	-1.85	2.62	2.44	(0.76)	-0.95	-0.54	2.88	(0.42)	-3.63	13.53
“Benefit”	2.40	(0.86)	-1.26	0.72	2.37	(1.30)	-2.87	9.68	2.34	(0.83)	-0.74	-1.12	2.94	(0.25)	-3.80	13.23
“Pleasantness”	1.50	(1.46)	-0.39	-0.91	1.60	(1.38)	-0.31	-1.57	1.06	(1.48)	-0.24	0.02	1.41	(1.36)	0.01	-1.64
“Enjoyable”	1.57	(1.65)	-1.06	0.59	1.20	(1.75)	-0.78	0.15	1.19	(1.33)	0.42	-1.68	1.19	(1.35)	0.30	-1.57
“Wise”	2.63	(0.76)	-2.22	4.52	2.60	(0.77)	-2.06	3.90	2.47	(0.76)	-1.06	-0.38	2.84	(0.57)	-4.38	20.62
SND	1.54	(1.07)	-0.14	-0.62	1.72	(1.10)	-0.48	-0.40	1.06	(0.74)	-0.52	2.24	1.28	(0.81)	-0.08	0.31
“Others do it”	2.13	(1.46)	-1.97	4.13	2.47	(0.90)	-1.72	2.18	2.25	(1.37)	-2.26	5.97	2.31	(1.12)	-2.29	6.34
“I feel pressure”	-0.37	(2.65)	0.14	-1.86	0.20	(2.62)	-0.18	-1.75	-1.84	(1.82)	1.27	-0.04	-1.34	(2.12)	0.77	-1.06
“People think I should”	2.83	(0.53)	-3.16	9.02	2.50	(1.31)	-3.23	11.15	2.78	(0.66)	-3.34	11.35	2.88	(0.42)	-3.63	13.53
PBCD	1.98	(0.95)	-0.36	-1.13	2.37	(0.92)	-1.47	1.22	1.75	(1.11)	-0.42	-0.60	2.91	(0.24)	-2.61	6.69
“Confidence”	2.47	(0.82)	-1.50	1.63	2.53	(0.90)	-1.93	2.80	2.44	(0.91)	-1.56	1.50	2.91	(0.30)	-2.93	7.00
“Perceived Control”	1.10	(2.22)	-0.78	-0.79	0.83	(2.39)	-0.63	-1.19	0.44	(2.60)	-0.33	-1.69	1.47	(2.34)	-1.27	-0.05
“Self-Efficacy”	2.37	(0.85)	-1.17	0.57	2.20	(1.03)	-1.04	-0.14	2.38	(0.87)	-1.47	1.71	2.91	(0.30)	-2.93	7.00

Table 13

Correlation Matrix: Intention, Direct and Indirect Psychosocial Variables at Pretest

	1. Intention (Direct)	2. Attitude (Direct)	3. Subjective Norm (Direct)	4. Perceived Control (Direct)	5. Attitude (Indirect)	6. Subjective Norm (Indirect)	7. Perceived Control (Indirect)
1. Intention (Direct) - INTD	1						
2. Attitude (Direct) - ATTD	.438**	1					
3. Subjective Norm (Direct) - SND	.181	.081	1				
4. Perceived Control (Direct) - PBCD	.188	.122	.216	1			
5. Attitude (Indirect) - ATTI	.460**	.545**	.360**	.335**	1		
6. Subjective Norm (Indirect) - SNI	.116	.108	.080	.102	.351**	1	
7. Perceived Control (Indirect) - PBCI	.155	.003	.066	-.022	.125	.204	1

** Correlation is significant at the 0.01 level (2-tailed).

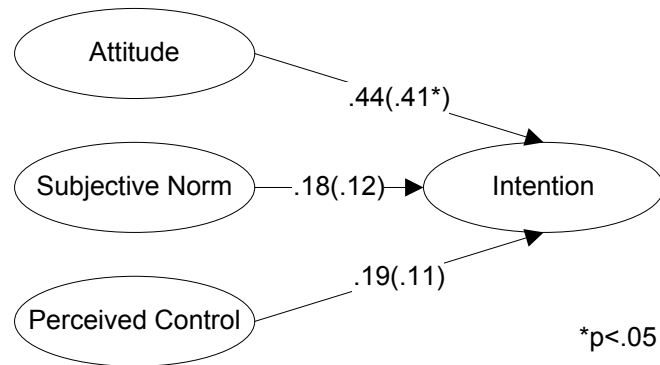


Figure 8: Regression model at pretest

Knowledge

As indicated in Table 14 and Table 15, there was a significant group by occasion effect for the knowledge variable when controlling for familiarity with someone who had developed a pressure ulcer (knowSomeone), number of clients with pressure ulcers (numClients), years in the field (yrsField), and job satisfaction (jobSatis). There was also a significant within-participants interaction effect for occasion by numClients.

Table 14

Within-Subjects Effects for RM ANCOVA (DV=Knowledge)

		<u>Mean</u> <u>Square</u>	<u>Hypothesis</u> <u>df</u>	<u>F</u>	<u>p-value</u>
Within-Subjects	Occasion	1.259	1	1.396	.243
	Occasion x knowSomeone	.849	1	.942	.336
	Occasion x numClients	3.956*	1	4.386	.041
	Occasion x yrsField	.019	1	.021	.886
	Occasion x jobSatis	.727	1	.806	.374
	Occasion x Group	26.581*	1	29.472	<.001
	Error	.902	50		

*p<.05

Table 15

Between-Subjects Effects for RM ANCOVA (DV=Knowledge)

		<u>Mean</u> <u>Square</u>	<u>Hypothesis</u> <u>df</u>	<u>F</u>	<u>p-value</u>
Between-Subjects	knowSomeone	13.005	1	3.427	.070
	numClients	6.735	1	1.775	.189
	yrsField	4.914	1	1.295	.261
	JobSatis	.038	1	.010	.920
	Group	27.885*	1	7.348	.009
	Error	3.795	50		

*p<.05

Post hoc tests were performed using Tukey.²⁴ Adjusted and unadjusted means for Knowledge, presented by group, are provided in Table 16 and illustrated in Figure 9.

Knowledge among the experimental group at post test statistically significantly exceeded

²⁴ Critical values (alpha = .05, p [number of means] = 4, and v [degrees of freedom for denominator of equation: Error] = 40) were obtained from Table E.6 in Kirk. The critical difference that each pair-wise contrast had to exceed in order to be statistically significant was calculated (see Kirk, 1995, p.144-146).

all other groups at the $p < .05$ level, i.e. Experimental-Post (9.15) > Control-Pre (7.26), Control-Post (7.10), and Experimental-Pre (7.28). That is, the participants who viewed the instructional video learned, and learned more than those who did not watch the instructional video. Moreover, the effect sizes of these differences were large, ranging from $d = 1.20$ to 1.25 (Cohen, 1988).²⁵ Specifically, the gain in knowledge from pre to post among those watching the video, as represented by the mean difference in scores before and after viewing the instructional video, was 1.87, or a gain of approximately 25%. This represents an effect size of $d = 1.20$. Although less instructive, the other comparisons are similar (Experimental-Post versus Control-Post, $d = 1.25$; Experimental-Post versus Control-Pre, $d = 1.21$).

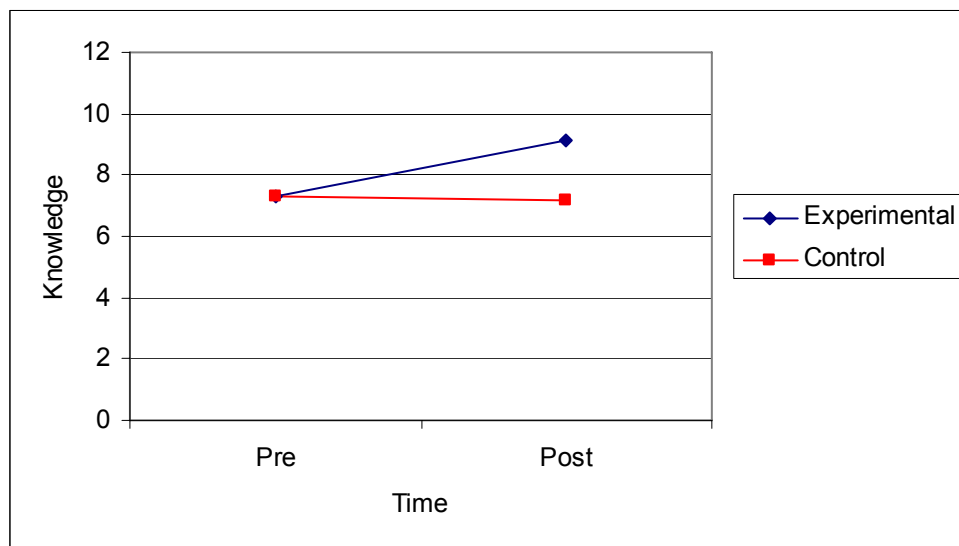


Figure 9: Mean Knowledge, Group x Occasion

Table 16

Unadjusted Mean (SD) and Adjusted Mean (SD) Values by Group at Pre and Post

<u>Measure</u>	<u>Group</u>	<u>Unadjusted Means (SD)</u>		<u>Adjusted Means (SD)</u>	
		<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
Knowledge	Test (n = 28)	7.32 (1.31)	9.11 (1.47)	7.28 (1.48)*	9.15 (1.64)
	Control (n = 28)	7.21 (1.69)	7.14 (1.82)	7.26 (1.48)*	7.10 (1.64)*

* significantly different ($p < .05$) from the experimental group at post

²⁵ Cohen's $d = (\text{Mean 1} - \text{Mean 2}) / \sigma_{\text{pooled}}$. $\sigma_{\text{pooled}} = \sqrt{(\sigma_1^2 + \sigma_2^2)/2}$. Means used were the adjusted means. SDs (σ) were calculated as follows: $\text{SD} = \text{SE} \cdot \sqrt{n}$.

Table 17 lists the proportion of participants who responded correctly to each question, by group and occasion. The overall pattern of improvement across items, between occasions within the experimental group, aligns with the results of the univariate results from the RM-ANOVA. Several items were answered correctly by a high percentage (>80%) of the sample at pre-test, indicating that some of the knowledge was already widely known, at least in this sample. For most items, the proportion of respondents answering each question correctly was generally higher for the experimental group after viewing the video than for all other groups. Three exceptions to this pattern were questions related to early signs of pressure ulcer formation, appropriate tools, and whether the formation of a pressure ulcer occurs only when something is done incorrectly. Responses for the first of these, covering early signs, were mostly correct in both groups before the intervention (.97 in the control and .88 in the experimental group). All members of the control answered correctly at post (a gain of one person) and correct responses in the experimental grew such that only one person answered incorrectly at post (1.00 and .97, respectively). This may indicate that the question was too easy, poorly constructed, or that the information is well known. Responses for the appropriate tools item were flat and mostly incorrect, perhaps indicating a problem with the item formulation or due to lack of learning. For the third item, both groups gained, but the control group ended up slightly higher (though demonstrating less gain) than the experimental group, none of which was statistically significant.

A series of repeated measures analysis of covariance with post hoc followup identified several individual items for which the differences between group and occasion were significant ($p < .05$). Proportions that are significantly different from those of the experimental group at post are noted in Table 17. Each of these comparisons favored the experimental group after watching the instructional video; they included the ability to identify causes of pressure ulcers, the ability to correctly identify how frequently the skin

of at-risk clients should be inspected, awareness of prevalence of pressure ulcers, and the recognition that pressure ulcers can form from the “inside-out.”

Table 17

Proportion of Correct Responses for Individual Knowledge Items

<u>Item</u>	<u>Control (N = 31)</u>		<u>Test (N = 32)</u>	
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
Definition	.65	.65	.88	.81
Causes	.39*	.26*	.42*	.72
Risk factors	.77	.77	.88	.97
Skin composition	.71	.74	.88	.97
Common locations	.97	.97	.97	.97
Inspection Frequency	.58*	.58*	.66	.97
Useful Tools	.03	.06	.09	.03
Prevalence	.29*	.26*	.28*	.66
Early Signs	.97	1.00	.88	.97
Misconception: Scrubbing	.42	.32	.31	.53
Formation: Inside out	.87	.81	.69*	1.00
Fault	.61	.74	.47	.63

* differs from experimental group, post (p<.05)

Multivariate Composite of Psychosocial Variables

As indicated in Table 18, there was a significant group by occasion effect for the multivariate composite of the direct measures of Attitude (ATTD), Subjective Norm (SND), Perceived Control (PBCD), and Intention (INTD). Follow up univariate analyses of covariance on the individual constructs identified a group by occasion effect for Perceived Control. The within and between participants results of all post hoc ANOVAs are provided in Table 19 and Table 20.

Table 18

Repeated Measures Multivariate Analysis of Covariance

(RM MANCOVA) for INT, ATT, SN, PBC

		<u>Wilk's</u> <u>Lambda</u>	<u>F</u>	<u>Hyp.</u> <u>df</u>	<u>Error</u> <u>df</u>	<u>p-</u> <u>value</u>
Between-Subjects	knowSomeone	.953	0.579	4	47	.680
	numClients	.876	1.661	4	47	.175
	yrsField	.821	2.562	4	47	.051
	jobSatis	.911	1.148	4	47	.346
	Group	.849	2.092	4	47	.097
Within-Subjects	Occasion	.989	0.131	4	47	.970
	Occasion x knowSomeone	.985	0.179	4	47	.948
	Occasion x numClients	.906	1.213	4	47	.318
	Occasion x YearsFld	.963	0.451	4	47	.771
	Occasion x jobSatis	.977	0.281	4	47	.889
	Occasion x Group	.758*	3.761	4	47	.010

*p<.05

Table 19

Within-Subjects Univariate ANOVAs for RM MANCOVA (INTD, ATTD, SND, PBCD)

<u>Source</u>	<u>Measure</u>	<u>Mean Square</u>	<u>df</u>	<u>F</u>	<u>p-value</u>
Occasion	INTD	.023	1	.201	.656
	ATTD	.052	1	.153	.698
	SND	.008	1	.027	.869
	PBCD	.153	1	.319	.575
Occasion x knowSomeone	INTD	.012	1	.100	.754
	ATTD	.071	1	.207	.651
	SND	.091	1	.321	.574
	PBCD	.080	1	.166	.686
Occasion x numClients	INTD	.401	1	3.441	.070
	ATTD	.397	1	1.157	.287
	SND	.496	1	1.753	.192
	PBCD	.118	1	.245	.623
Occasion x YearsFld	INTD	.018	1	.156	.695
	ATTD	.345	1	1.006	.321
	SND	.016	1	.058	.811
	PBCD	.439	1	.914	.344
Occasion x JobSatis	INTD	.011	1	.090	.765
	ATTD	.002	1	.006	.938
	SND	.014	1	.050	.825
	PBCD	.492	1	1.026	.316
Occasion x Group	INTD	.043	1	.367	.547
	ATTD	1.105	1	3.219	.079
	SND	.019	1	.069	.794
	PBCD	6.492*	1	13.524	.001
Error	INTD	.117	50		
	ATTD	.343	50		
	SND	.283	50		
	PBCD	.480	50		

*p<.05

Table 20

Between-Subjects Univariate ANOVAs for RM MANCOVA (INT, ATT, SN, PBC)

<u>Source</u>	<u>Measure</u>	<u>Mean Square</u>	<u>df</u>	<u>F</u>	<u>p-value</u>
knowSomeone	INT	.232	1	.772	.384
	ATT	.353	1	.531	.469
	SN	.107	1	.071	.791
	PBC	.932	1	.724	.399
numClients	INT	1.556*	1	5.186	.027
	ATT	.385	1	.578	.450
	SN	.088	1	.058	.810
	PBC	1.182	1	.918	.343
Years in Field	INT	.470	1	1.568	.216
	ATT	1.336	1	2.008	.163
	SN	.062	1	.041	.840
	PBC	5.385*	1	4.182	.046
Job Satisfaction	INT	.002	1	.006	.939
	ATT	2.514	1	3.778	.058
	SN	.416	1	.276	.602
	PBC	.038	1	.029	.865
Group	INT	.002	1	.008	.929
	ATT	1.429	1	2.147	.149
	SN	5.658	1	3.752	.058
	PBC	.466	1	.362	.550
Error	INT	.300	50		
	ATT	.665	50		
	SN	1.508	50		
	PBC	1.288	50		

* p<.05

As with the analysis of the knowledge variable, post hoc tests were performed using Tukey (see footnote 24). PBC for the experimental group at post-test exceeded PBC for all other groups ($p < .05$). The effect size of the difference between PBC for the experimental group before and after viewing the instructional video was large ($d = .91$) as was the effect size for the difference in PBC, at post test, between those who had viewed the instructional video and those who had not ($d = .76$). No other statistically significant differences in the constructs were observed. Adjusted and unadjusted means for Intention (INTD), Attitude (ATTD), Subjective Norm (SND), and Perceived Control (PBCD) are provided in Table 21 and these are plotted for group by occasion in Figure 10 (INTD), Figure 11 (ATTD), Figure 12 (SND), and Figure 13 (PBCD). The scales for these

figures are -9 to 9; however, they have each been plotted against the minimum and maximum values in the sample.

Table 21

Unadjusted Mean (SD) and Adjusted Mean (SD) Values by Group at Pre and Post

<u>Measure</u>	<u>Group</u>	<u>Unadjusted Means (SD)</u>		<u>Adjusted Means (SD)</u>	
		<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>
INT	Test (n = 28)	2.75 (.41)	2.82 (.45)	2.74 (0.42)	2.81 (0.53)
	Control (n = 28)	2.79 (.39)	2.77 (.60)	2.79 (0.42)	2.78 (0.53)
ATT	Test (n = 28)	1.83 (.83)	2.21 (.56)	1.79 (0.79)	2.18 (0.69)
	Control (n = 28)	2.20 (.68)	2.17 (.76)	2.24 (0.79)	2.20 (0.69)
SN	Test (n = 28)	1.02 (.75)	1.26 (.82)	1.05 (.95)	1.27 (0.95)
	Control (n = 28)	1.52 (1.08)	1.77 (.98)	1.49 (.95)	1.77 (0.95)
PBC	Test (n = 28)	1.68 (1.13)	2.57 (.65)	1.66 (1.06)*	2.53 (0.85)
	Control (n = 28)	2.01 (.97)	1.85 (.95)	2.03 (1.06)*	1.89 (0.85)*

* Significantly different ($p < .05$) from the experimental group at post-test.

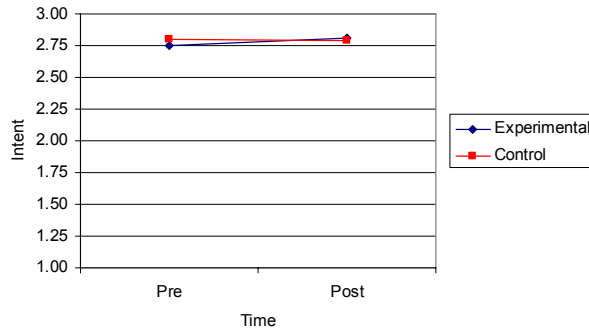


Figure 10: Mean Intentions, Group x Occasion

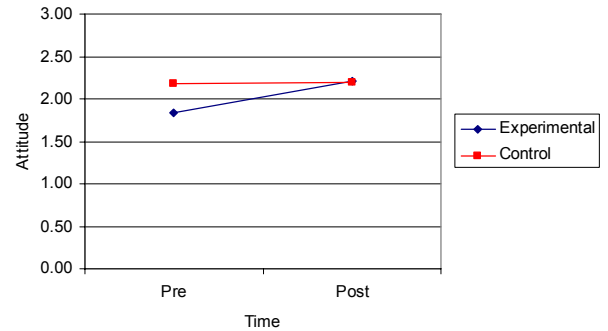


Figure 11: Mean Attitudes, Group x Occasion

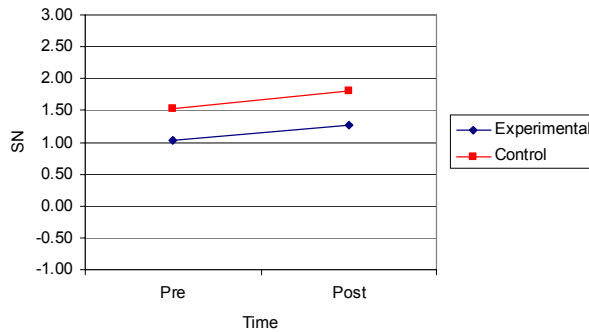


Figure 12: Mean Subj. Norm, Group x Occasion

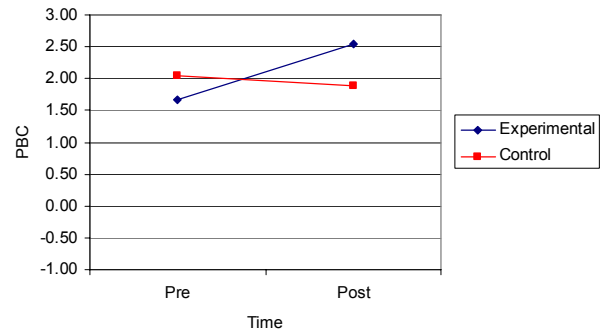


Figure 13: Mean Perc. Control, Group x Occasion

Finally, an examination of the individual behavioral, normative, and control beliefs found no significant relevant group by occasion effects. Descriptive statistics for the beliefs are provided in Table 22 (behavioral beliefs), Table 23 (normative beliefs), and Table 24 (control beliefs).

Table 22

Descriptive Statistics for Behavioral Beliefs

<u>Belief</u>	<u>Control (N = 31)</u>						<u>Experimental (N = 32)</u>					
	<u>M (SD)</u>	<u>Pre</u> <u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Post</u> <u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Pre</u> <u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Post</u> <u>Skew</u>	<u>Kurt</u>
Competency	8.06 (1.98)	-2.32	5.27	7.81 (2.55)	-2.24	4.33	7.75 (2.71)	-2.17	3.62	8.38 (1.90)	-3.49	12.89
Protection For Me/My Employer	7.48 (3.00)	-1.66	1.09	7.23 (3.94)	-2.90	9.40	7.34 (3.17)	-1.65	1.14	8.28 (1.78)	-2.35	4.27
Is Standard Practice	7.42 (2.66)	-1.61	1.60	8.16 (2.41)	-2.94	7.80	7.75 (2.58)	-2.01	3.38	8.28 (2.34)	-3.21	9.31
Providing Comprehensive Care	8.19 (2.30)	-2.90	7.61	8.29 (2.27)	-3.13	8.81	7.78 (2.50)	-1.83	1.87	8.19 (2.12)	-2.79	7.58
Patient Worry/Anxiety	2.26 (5.69)	-0.27	-0.81	3.87 (5.58)	-0.82	-0.16	0.56 (4.88)	-0.27	-0.05	0.72 (5.73)	-0.21	-0.52
Educating Patients	7.06 (3.97)	-2.70	8.38	7.58 (2.69)	-2.04	3.34	6.66 (3.98)	-2.25	6.55	7.69 (2.48)	-1.70	1.67
Changing Patient Behavior	4.90 (4.44)	-1.06	1.38	3.71 (4.55)	-0.61	0.34	3.84 (3.80)	0.35	-1.59	5.63 (4.43)	-1.37	2.09
Increasing Compliments	5.23 (4.67)	-1.09	0.93	5.45 (4.02)	-0.41	-1.70	5.41 (4.11)	-0.39	-1.76	5.31 (4.34)	-0.52	-1.50
Avoiding Regulatory Trouble	6.84 (3.65)	-1.31	0.10	6.84 (3.00)	-1.00	-0.34	6.72 (3.68)	-1.16	-0.52	7.50 (2.78)	-1.82	2.27
Showing Compassion	7.97 (2.42)	-2.43	5.14	7.68 (2.61)	-2.04	3.42	6.94 (4.06)	-2.44	6.78	8.34 (1.77)	-2.42	4.21
Appreciation Of Patient	7.68 (3.64)	-3.70	15.28	6.55 (3.52)	-1.02	-0.67	6.16 (3.56)	-0.83	-0.84	6.34 (3.47)	-0.88	-0.82
Perceived As Unnecessary	-1.90 (6.38)	0.47	-0.95	-1.35 (5.68)	-0.23	-1.50	-2.03 (6.15)	0.22	-1.14	-0.81 (6.43)	0.08	-1.25
Appreciation Of Patient's Family	6.58 (3.45)	-1.05	-0.44	6.35 (3.32)	-0.77	-1.02	5.59 (4.38)	-1.41	2.28	6.91 (3.28)	-1.27	0.12
Reducing Long-Term Consequences	8.00 (2.48)	-2.41	4.71	7.52 (3.43)	-2.77	8.00	7.63 (3.25)	-2.00	2.14	8.50 (1.48)	-3.37	12.18
Unadjusted means												

Table 23

Descriptive Statistics for Normative Beliefs

<u>Belief</u>	<u>Control (N = 31)</u>						<u>Experimental (N = 32)</u>					
	<u>M (SD)</u>	<u>Pre</u> <u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Post</u> <u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Pre</u> <u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Post</u> <u>Skew</u>	<u>Kurt</u>
Coworkers	2.45 (10.33)	-0.83	1.10	2.61 (8.86)	-1.05	2.11	2.44 (9.20)	-0.52	1.57	4.31 (5.69)	0.30	2.89
Employer	3.06 (6.08)	-1.09	10.18	1.39 (5.13)	-3.53	13.41	3.78 (4.46)	2.21	6.69	2.66 (3.01)	-3.49	20.05
Patient	1.84 (8.14)	-0.66	4.26	0.68 (7.17)	-1.15	6.19	0.34 (5.59)	-0.28	0.54	1.34 (4.50)	-0.77	6.15
PatientFam	0.65 (7.93)	-1.28	4.25	1.32 (7.53)	-1.11	5.12	1.44 (5.38)	-0.46	1.40	2.50 (4.20)	-0.48	4.68
Experts	4.39 (7.32)	-0.23	5.86	2.84 (4.27)	0.02	9.33	2.78 (2.45)	0.33	1.22	2.84 (2.24)	-2.35	8.55
ProfOrganizations	3.87 (3.64)	3.79	16.96	2.74 (1.75)	0.22	8.37	2.66 (2.54)	-0.12	2.22	2.63 (1.10)	-1.81	2.16
Insurance	0.58 (9.02)	-1.11	2.26	0.29 (8.75)	-1.05	2.57	1.00 (7.31)	-0.85	1.74	2.09 (5.80)	-1.86	8.27
HealthOrg	2.87 (6.23)	-0.83	9.04	3.55 (2.64)	2.78	11.51	2.41 (2.98)	0.81	2.88	2.72 (2.59)	0.21	8.38
Supervisor	2.52 (5.97)	-1.17	10.45	2.81 (1.33)	-2.46	13.08	2.84 (1.22)	0.32	2.23	2.97 (2.04)	2.02	14.79
Training	4.52 (5.16)	2.21	5.76	3.26 (3.78)	3.37	17.17	3.31 (1.35)	0.63	1.49	3.25 (1.44)	2.25	8.85
PrevAide	3.77 (10.43)	-0.93	1.57	3.16 (8.21)	-1.31	3.99	4.31 (7.98)	-0.93	2.55	6.00 (6.42)	1.20	0.62
State	1.58 (6.85)	-1.26	6.86	0.29 (7.37)	-2.52	5.24	3.41 (3.48)	1.50	1.59	3.31 (2.78)	1.88	4.72

Table 24

Descriptive Statistics for Control Beliefs

<u>Belief</u>	<u>Control (N = 31)</u>						<u>Experimental (N = 32)</u>					
	<u>Pre</u>			<u>Post</u>			<u>Pre</u>			<u>Post</u>		
	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>	<u>M (SD)</u>	<u>Skew</u>	<u>Kurt</u>
Time	7.32 (2.55)	-1.25	0.29	7.45 (3.18)	-2.20	4.08	7.44 (2.37)	-1.56	2.12	8.03 (2.10)	-2.45	6.27
Establish Relationship	7.13 (2.31)	-0.78	-0.76	7.39 (3.04)	-1.68	1.42	7.19 (3.47)	-2.27	5.76	7.81 (2.36)	-1.66	1.11
Establish Rules	5.84 (3.72)	-0.72	-0.75	7.03 (3.02)	-1.25	0.16	7.69 (2.84)	-2.27	4.60	7.72 (2.47)	-2.19	4.53
Privacy	7.26 (3.28)	-1.94	2.94	7.71 (2.67)	-2.02	3.07	6.41 (4.16)	-2.04	4.86	7.38 (2.77)	-1.61	1.56
Supplies Available	7.19 (2.57)	-1.44	1.49	7.23 (2.91)	-1.37	0.43	5.97 (2.93)	-0.56	-0.75	6.44 (3.21)	-0.88	-0.64
Space Available	5.74 (4.15)	-1.66	3.85	6.23 (3.73)	-0.86	-1.05	5.38 (3.26)	-0.28	-1.34	5.28 (3.68)	-0.56	-0.88
Encounter Family Resistance	2.03 (5.66)	-0.27	-0.91	2.71 (4.78)	-0.04	-0.44	0.81 (4.11)	0.21	0.51	1.22 (5.22)	0.28	-0.90
Patient Mentally Altered	-0.87 (5.62)	0.54	-0.58	0.65 (4.28)	0.34	0.70	-0.47 (5.53)	0.12	-0.28	-2.53 (4.78)	0.43	0.38
Patient Not Compliant	-0.71 (5.13)	0.06	-0.14	0.00 (5.10)	0.25	0.02	-1.56 (5.65)	0.30	-0.70	-2.00 (4.80)	0.50	0.23
Family Not Compliant	-0.06 (5.38)	-0.07	-0.34	0.52 (4.33)	0.25	1.13	-1.50 (5.72)	0.38	-0.53	-1.88 (5.12)	0.25	-0.30
Dirty/Cluttered Environment	0.00 (5.97)	0.27	-0.89	0.48 (4.77)	-0.05	0.35	-1.94 (5.10)	0.26	-0.25	-1.16 (5.15)	0.29	-0.18
Convince Patient	4.39 (4.54)	-1.10	1.46	4.29 (3.89)	-0.23	-1.03	3.69 (4.14)	-0.72	1.22	3.47 (4.89)	-0.87	0.17
Create Family Understanding	5.26 (4.79)	-1.74	3.39	6.35 (3.42)	-0.99	-0.23	5.34 (4.95)	-1.65	2.68	5.09 (5.12)	-1.32	0.84
Patient Wants To Die	-0.26 (5.74)	0.35	-0.78	1.23 (5.41)	-0.29	-0.14	-0.94 (5.24)	0.08	-0.20	-1.75 (4.87)	0.33	-0.03

Consumer Satisfaction

Usability and Usefulness Scale

To examine participants' perceptions of the instructional video, ten items related to usability and usefulness were rated. From these, a usability scale was created as the mean of the items. Cronbach's Alpha for the items comprising the usability scale was .855, indicating acceptable internal consistency. The grand mean for the scale was 4.77 (SD=.347) on a scale of 1 to 5. This result indicates that participants found the overall instructional video to be extremely useful and usable. Individual analysis of the ten items comprising the scale, as listed in Table 25, indicates that each item statistically significantly exceeded the benchmark value of 3.5. In fact, all means were greater than 4.5, indicating extremely strong endorsement of the items. This suggests that after watching the video, learners felt better prepared to prevent pressure ulcers, that the material had increased their understanding, and that the video was useful, engaging, comprehensive, well-organized, easy to understand, and of high-quality. Moreover, participants indicated that they would use information from the program in their work and recommend the program to their colleagues. Finally, the participants rated their overall impression of the program as, on average, very good to excellent (scale of 1 to 5, $M=4.56$, $SD=.564$). When asked to indicate whether the instructional video contained "all new information" or "all review information" on a bipolar scale (1-5), the participants indicated that the materials were a balance of new information and review information (see Table 26, $M=2.81$, $SD=1.378$).

Table 25

Ratings of Usefulness and Usability (Post test, Experimental Group Only)

	<u>N</u>	<u>Mean</u>	Std. <u>Dev.</u>	Std. Error <u>Mean</u>
Additive Usability Variable (alpha=.855)	32	4.77*	.347	.061
I feel better prepared to prevent pressure ulcers	32	4.88*	.336	.059
The program has been useful	32	4.75*	.622	.110
The program increased my understanding of pressure ulcers	32	4.84*	.369	.065
The program was engaging	32	4.56*	.669	.118
The program was of high-quality appearance	32	4.69*	.644	.114
The program was comprehensive	32	4.66*	.653	.115
The program was well-organized	32	4.78*	.553	.098
The program was easy to understand	32	4.75*	.568	.100
I will use information from the program in my work	32	4.88*	.336	.059
I would recommend this program to care providers like myself	32	4.88*	.336	.059
Overall impression of the program	32	4.56*	.564	.100

* p<.05

Table 26

Perception of “Newness” of Material Presented

	<u>N</u>	<u>Mean</u>	Std. <u>Deviation</u>	Std. Error <u>Mean</u>
Overall, for me, the video included (All New Information...All Review Information)	32	2.81	1.378	.244

Perceived Value of Proposed Components

In addition to determining participants’ perceptions regarding the instructional video, an effort was made to quantify the value they would place on adding various components to the training materials. These components had been mentioned by individuals in previous work and had prima facie validity; the study sought to assess whether the home health care aides would value them. Participants rated six potential augmentations to the existing instructional video. As indicated in Table 27, they thought all six proposed components would be valuable: a reference guide of available tools was rated the highest (M=4.81) and web-based discussions, references, and ask-the-expert

features were rated the lowest, albeit still quite high (M=4.22). This latter item also had the highest variability (SD=.906).

Table 27

Perceived Need for Additional Components

	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>	<u>Std. Error Mean</u>
A reference guide of tools available to reduce pressure ulcer risk	32	4.81*	.535	.095
Segments demonstrating detailed steps to prevent ulcers	32	4.78*	.553	.098
Materials to help patients and families understand what I do	32	4.75*	.508	.090
Segments on working with families and guardians	32	4.69*	.535	.095
Segments portraying special situations and outcomes	32	4.63*	.609	.108
Computer-based lessons and activities to practice what I've seen	32	4.59*	.665	.118
Web-based discussions and "Ask-the-Expert" features	32	4.22*	.906	.160

*p<.05

Training Preferences

In addition to perceptions of need for additional components, the study also examined participants' preferences for training modalities. That is, how do they like training to be delivered? The results, as shown in Table 28, indicate a strong preference for DVD-based, face-to-face, or VHS-delivered training as compared to multimedia activities delivered on CD-ROM or over the web.

Table 28

Ratings of Various Types of Training Modalities

	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>	<u>Std. Error Mean</u>
DVD	30	3.93	1.081*	.197
Face-to-face seminars	32	3.53	1.414*	.250
VHS tape	32	3.31	1.148	.203
CD-ROM	29	2.59	1.376	.256
Web-based activities	29	1.83	1.071*	.199

* Significantly different from 3.0, p<.05.

Open-ended Feedback

Finally, a series of open-ended questions sought feedback regarding the instructional video. These questions asked participants to identify the strongest or most useful aspects of the program, the weakest or least useful aspects, and things that could

be changed or added to the program. A final open-ended question sought elaboration on any of these aspects, any of the previous responses, or anything else that the participants would like to discuss or comment upon.

Useful aspects.

In terms of useful or strong segments of the program, one participant appreciated “being able to watch and see that one-on-one contact, students asking vital questions. It was very interactive. I could relate to the one on one teacher/student interaction.” Others appreciated the DVD format “because I can sit and relax at my home to watch and understand what I need to do better,” a comment which was mirrored by another participant: “The CD (sic) itself and all the great info because I can pause it, return it and replay it over and over again. I can show it to other co-workers and my families. It is very good, thank you.”

Several participants made comments indicating they had picked up on the beliefs and consequences aspects of the programming. Specifically, “Showing the pictures of pressure ulcers and expressing what could happen if a patient is not cared for correctly,” was valued by one participant. This theme appeared in several other remarks including, “Showing how important it is to prevent pressure areas makes me feel better about what to do to prevent ulcers or pressure areas,” and “Seeing pressure ulcers is believing how important it is to check the skin on every visit.” Simple depiction of pressure ulcers appears to have been valuable because apparently some participants had never seen one: “The graphic picture got my attention because I've never seen a pressure ulcer....”

Not-so-useful aspects.

When asked specifically about dislikes or weaknesses of the program, most participants provided additional positive feedback, for example, “All information was

important,” “I thought all the segments were useful,” “I liked it all,” and “I thought it was all well done.” Only seven participants provided critical comments. Four of these comments were not precisely negative, but were informative both regarding the program and regarding the participants. First, one participant commented that it was “a good refresher course” while three others indicated:

Going over pressure ulcers. I watched and learned about pressure ulcers and this is a review. The information was at the beginner level. I feel that I've already established the foundation information.

It wasn't weak, if I were new, it would seem very helpful. The program has a way of telling you something and then teaching you about it. The way it goes over things was very helpful.

[It] is a really great training tool for people new to the field.

All four of these remarks indicate that the participant was neither new to care nor to the information provided. For them the information served as a review.

Although no one directly mentioned the narrative framework of the instructional video, four comments had implications for beliefs and consequences:

I would like to have seen more pictures of patients so that other people can actually see what can happen if the patient is not taken care of.

At the beginning, the ladies in the program said that they thought that it was not that important to know about pressure ulcers. It is important because it could be fatal.

The girl who said it is an invasion of a patient's privacy.

The negative woman that was in the segment.

The first of these comments implies that, at least tacitly, a recognized goal of instructional activities such as this one is to demonstrate consequences of (in)action and, by extension, to increase the likelihood of people engaging in the steps to prevent the consequences. That is, if you show people how bad it can be, they may be more likely to do something about it. Since these were responses to a question that sought to identify

weak or disliked segments, the latter three comments should be read as portions of the program that the participants did not appreciate. Each of these comments relates to a short segment of the program that was specifically included to raise belief issues. The comments indicate that these participants did not like the depicted aides making belief statements that are misconceptions. Whether or not this dislike translates into a need to reconsider inclusion of such statements in the instruction, the remarks do indicate that at least some of the participants attuned to these statements of false beliefs, especially since the segments incorporating them were quite brief. It should also be noted that these misconceptions were immediately addressed by other characters in the instructional video.

While the previous three comments focused on sections of the video that presented maladaptive beliefs (i.e. beliefs that could dissuade aides from engaging in steps to prevent pressure ulcers), one comment strongly addressed attempts to instill or reinforce specific beliefs regarding consequences of engaging in prevention efforts (i.e. that patients, patient's families, and employers appreciate aides taking steps to prevent pressure ulcers):

I don't need my patient or family to appreciate me, I just feel good about myself doing the job. That's why I love my job because I feel I can report what's wrong so something can be done about it. I can make a difference.

Finally, there were two critical comments that could not be fully interpreted: "Student chats after the seminars" and "Introduction, it didn't give any information." Since the research was not conducted as a formative locally situated focus group, follow up was not possible. In the first case, it seems the participant did not care for the humorous transitions between segments, in which characters exchange banter. In the second, we are at a loss.

Things to add or change.

Several comments indicated that it would be important to regularly update the information, and one participant suggested that the materials be disseminated: specifically, “Make sure that all home bound patients receive the information as [well as] all nursing homes and hospitals.” A number of comments concerned the need for materials on working with patients and their families. One participant requested that materials demonstrate “how to deal with families and patients who have dementia/alzheimers. Some patients get combative when I try to help them.” Another participant made the rather emotional statement that:

I think that the medical field should be able to talk to families that take care of their loved ones so they don't have to be admitted to the hospital with bed sores. I've seen many cases of bed sores, very awful bed sores, sometimes with the skin all blackened and that's what makes me mad.

Each of these comments suggests the need for supporting patient-provider and patient family-provider interaction.

Several participants suggested having information on *treatment* of existing pressure ulcers. Others reiterated the importance, noted earlier, of “putting more examples or showing worse cases of bed sores.” One participant proposed a CPR class, a suggestion which, while perhaps interesting to develop, the researchers cannot fully appreciate. Functional comments were also suggested, including adding subtitles in other languages and adding additional chapter points in the DVD to allow for finer grained navigation.

Finally, summarizing the positive remarks regarding the overall functionality and appearance of the instructional video, one participant noted that, “I have seen other films on pressure ulcers and I think this is best one I have seen,” while another closed by commenting, “The program was very well organized and informative. I will use it in the

future.” Yet another aide captured the perceived value of the instructional effort, the potential issue of the sample being highly experienced, and the perceived need for training and support among an array of audiences:

My english is not very good for writing but I believe this DVD is great. It should be seen by everyone in home health and nursing homes. It is very helpful. I have seen a lot in the ten years I have been doing this job and most aids or RNs do not look for signs especially in nursing homes.

Discussion

These results indicate that the instructional video led to increases in knowledge and beliefs about pressure ulcers and pressure ulcer preventive care. In terms of RQ 1, growth in knowledge was greater among those viewing the video as compared to those who did not. In terms of RQ 2, statistically significant changes were observed in perceived control for those who watched the instructional program compared to those who did not watch it. Finally, in answer to RQ 3, those viewing the video found it to be useful and easy to use. The following sections discuss each of these results in more detail. The discussion of results is followed by sections on the implications of the results and the limitations of the evaluation.

“Knowledge”

One would expect that if factual and procedural information is presented to individuals who do not already have such information, then they will, to greater or lesser extents, learn that information. It was expected that by incorporating information about pressure ulcers and their prevention within an instructional video, those who watched the video would know more about ulcers and their prevention after viewing the video than before doing so. That is,

RQ1. Is there a significant difference between groups in participants’ growth in knowledge of pressure ulcers and pressure ulcer care (Knowledge) when

controlling for previous experience with pressure ulcer formation, years on the job, and job satisfaction?

The answer to this research question is “yes.” Those who viewed the instructional video demonstrated greater gains on the knowledge measure than those who did not. Moreover, the gains were meaningful, with an average improvement of 25% which represents a large effect size, $d=1.20$. Those viewing the video clearly learned something new. Gains were demonstrated for most items, and in several cases, gain was statistically significant. In particular, significant gain was shown in the ability to identify causes of pressure ulcers, the ability to correctly identify how frequently those at-risk should be inspected, awareness of the prevalence of pressure ulcers, and the recognition that pressure ulcers can form from the “inside-out,” (see Table 17 on page 158 for descriptive statistics for the individual items).

Do such knowledge gains matter? Factual knowledge is relatively easy to change, and such change is often not associated with changes in intentions and behaviors, especially if that factual knowledge concerns a condition, disease, or objective as opposed to the sought after behavior itself (Fisher & Fisher, 2002).²⁶ That is, from a reasoned action perspective, knowledge of (and beliefs about) a disease and how it is spread will have little (direct) impact on any given behavior. For example, taking action to reduce the spread of disease, such as wearing a condom or not sharing a needle, is not strongly associated with knowledge and beliefs about the disease itself. On the other hand, it is indeed hard to imagine a situation in which one would attempt to engender any form of preventive behavior without helping people understand what is being prevented and how to prevent it. In fact, changing a person’s behavior regarding a specific action would seem particularly difficult if that person did not know what the action was or what its components entailed.

²⁶ Unlike factual knowledge, it is hard to imagine a case where procedural knowledge, i.e. how to do a particular behavior or set of behaviors, does not affect beliefs concerning and intended performance of a particular behavior, especially the lack of such procedural knowledge.

The process of fostering such knowledge, even if such a process is as simple as telling someone about a problem, will cause people to assimilate or accommodate that new information, to make sense of it within their existing stories, to construct a new understanding of the world—an understanding that organizes and is organized by other beliefs and information. How much individuals' understanding is perturbed, and how much their behavior is changed, will, of course, be dependent on each person's existing, idiosyncratic, story—their understanding of the world. The more that components of the story are antithetical to the desired behavior—that is, the more that a person's existing beliefs run counter to the target behavior—the more effort that will be needed to change those beliefs. For some behaviors, fostering behavioral adoption may be relatively simple, perhaps fostered simply by telling someone about the problem. For example, telling people that “radon is a gas that can leach from the ground into your home and the gas can make you sick or kill you, and, by the way, you can test for it,” may be sufficient for a significant proportion of the population to obtain a test (Weinstein & Sandman, 2002).²⁷ Without being presented with the information, however, no one is likely to obtain a test, unless the performance of the test is moved outside the realm of individual choice and into the realm of administrative or legislative behavioral regulation or other sociotechnical solutions.

Specifically, understanding what pressure ulcers are and what causes them may not be sufficient to foster engagement in pressure ulcer prevention; understanding this

²⁷ Of course, the borders between factual knowledge and belief-based information are not clearly defined. Imagine the following conversation: What is radon? It's a gas that leaches from the ground. Oh, how does it affect me? Well, it could kill you and your loved ones. How's that? It can come out of the ground into your house, accumulate, and harm you when you breathe it. Okay, that's bad. How likely is it? Well, not terribly likely where you live but detection's cheap.... Which of these targets a belief and which is about taking action to prevent an outcome (i.e. checking one's home for radon)? Does the answer change if the conversation began: Everyone should have their home checked for Radon! It seems that whether a bit of information is related to a behavioral, normative, or control belief or is instead simply a bit of decontextualized factual knowledge about a disease or condition depends not only on what the behavior and beliefs of interest are but also one whether a particular individual perceives the information as relevant to those beliefs (and the beliefs as relevant to the behavior).

information is, however, arguably necessary for engagement. Furthermore, such factual information may support belief change in regard to intentions to engage in the behavior. For example, an individual may know how to prevent pressure ulcers but may not know when it is important to do so. This lack of understanding may arise for at least three reasons. First, pressure ulcer formation may be perceived as relatively uncommon, therefore taking steps to prevent pressure ulcers is unnecessary because few patients are at risk. Second, individuals may not be aware of the risk factors for pressure ulcers and therefore not know which clients they should assess; and third, they may not understand how rapidly ulcers form and, by extension, how frequently they should take steps to prevent them. In the present study, the participants who viewed the instructional video did in fact show growth in their understanding of the prevalence of ulcers, with most (74%) underestimating the prevalence prior to viewing the video, and the majority (66%) correctly estimating the prevalence after viewing the instructional video. If a provider does not know how frequently a client should be inspected, or even that inspection is necessary, then the provider's likelihood of engaging in the behavior is probably quite low. Prior to viewing the video, between 34% and 42% of the providers underestimated the frequency that a client should be inspected; after viewing the video, 97% of the participants correctly identified the frequency of inspection. In the end, while factual information may not be sufficient for behavioral change and skilled performance, it is arguably necessary to any such efforts. The results of this study indicate that the instructional video led to growth in knowledge of pressure ulcers and their prevention overall as well as in several specific areas, including prevalence, causes, and inspection frequency.

Intentions, Attitudes, Subjective Norm, and Perceived Control

In addition to growth in factual knowledge, fostering change in intention, attitudes, subjective norm, and perceived control is desirable. According to reasoned action theory, such change should lead to changes in behavior. Individual behavioral, normative, and control beliefs related to engagement in steps to prevent pressure ulcers were identified and incorporated within the instructional video viewed by the experimental group. One would expect that through such incorporation of specific beliefs, the instructional video would lead to changes in the associated constructs. That is, people who viewed the video should demonstrate changes in their beliefs regarding engagement in pressure ulcer preventive care. That is,

RQ2. Are there significant differences in learning between groups on a multivariate composite of direct indices of attitude (ATTD), subjective norm (SND), perceived control (PCD), and intention (INTEND) when controlling for previous experience with pressure ulcer formation, years on the job, and job satisfaction?

The answer to this question is also “yes.” A significant group by occasion interaction effect was observed in the psychosocial multivariate composite. So, if the instructional video led to overall changes in intentions and beliefs, the question becomes: can changes in specific constructs be identified, which leads to

RQ2.1. Are there significant differences in the individual components of the multivariate composite of the direct indices between groups?

Again, the answer is yes. Statistically significant changes were identified as occurring in the perceived control construct.²⁸ Those who viewed the video had higher levels of perceived control after viewing than they had before viewing the video; moreover, these levels were higher than those in the control group. The effect size for both of these differences was again large ($d=.91$ and $d=.76$, respectively). No other significant effects were identified. This result is quite positive because it indicates that

²⁸ See Table 21 on page 162 for the adjusted and unadjusted means for the psychosocial variables.

those viewing the video felt more able to take steps to prevent ulcers after viewing it than before doing so.

No effect was found for intentions to engage in prevention, and according to the reasoned action theories, intentions are the most immediate determinate of actual behavior. While this is disappointing, there was, for all intents and purposes, no room for improvement on the intention variable. At pretest the unadjusted mean for the experimental group was 2.75 (on a scale of -3 to 3) with a standard deviation of only .41. With such a high initial mean, and such a limited amount of variation around that mean, an increase in the mean (or a decrease in variation) is unlikely to be statistically detectable, especially with a small sample size.

As reported in Chapter 2, the target behavior appeared to be most strongly predicted by attitude, not perceived control, yet attitude was also unaffected, at least to a statistically identifiable extent, by the intervention, despite the inclusion of narrative elements that directly targeted behavioral beliefs. Similar to intention, attitude was already relatively high and invariant at pre-test (although not to the same extent as intentions). An examination of the means from pre-test to post-test suggests that attitude did increase among the participants who viewed the video and that it did not increase among those who did not view. As shown in Table 21, the increase in the attitude index was from 1.83 (SD=.83) to 2.21 (SD=.56) on a scale from 3 to -3. So attitude may have been affected by the instructional video; any such effect, however, was not significant.

Finally, participants' subjective norms appear to have been largely unaffected by the instructional intervention. When perceptions of subjective norm are already relatively high and normative influences are not surprising, overall ratings of subjective norm are unlikely to be affected, even when individuals representing the influences repeatedly state the importance of engaging in prevention. Nonetheless, by incorporating

those influences as models and deliverers of information, the instructional video may reinforce the acceptance of the presented content by drawing upon the existing perceptions among the target audience regarding certain groups of individuals.

In the present effort, essentially no normative influences were perceived as not wanting healthcare aids to engage in prevention activities. The sole exceptions to this pattern of positive influence were the patients and families themselves. In the elicitation, some providers indicated that patients and families might not want them to look for signs of pressure ulcers nor take steps to prevent them (for a variety of reasons, mostly related to consequences, fear of detection, and invasion of privacy); however, in follow up survey work and correlation analysis, these did not emerge as strongly correlated with, let alone predictors of, intentions.²⁹

RQ2.1.1. Are there significant differences between groups on individual weighted beliefs that make up the indirect constructs?

Because significant differences were identified for the construct of perceived control, as discussed above, a series of repeated measures analysis of covariance were conducted on the individual weighted beliefs that are associated with perceived control. No significant group by occasion effects were identified.

In summary, perceived control increased among those viewing the instructional video; however, intentions, attitude, and subjective norm did not increase to a statistically significant extent. Increases in perceived control suggest that participants felt more able to engage in prevention after viewing the instructional video than before doing so. The lack of observed increases in intentions and attitudes are disappointing; however, this result may be at least partially attributable to the initial high and invariant scores on those indices rather than a failure of the instructional video per se. This issue

²⁹ Of course, this result may have been an artifact of the lack of variance in intentions as opposed to a lack of relationship in the population.

may have been compounded by the relatively small sample size. Finally, as expected, no significant differences were observed for subjective norm.

Consumer Satisfaction

RQ3. Do members of the experimental group rate the intervention highly on measures of utility, effectiveness, and value? How can the intervention be improved?

Participants viewing the video rated it highly on a 10-item measure of usability and usefulness, with the grand mean for the scale being 4.77 (1-5, SD=.347). All items received strong ratings, including those associated with the design of the video as well as those related to the instructional program's usefulness to the participants and others like the participant. The results suggest that the video was well-organized, engaging, and of high quality appearance. One item from the index further supports the gain in perceived control identified in the previous section: when asked to rate whether watching the video made them feel better prepared to prevent pressure ulcers, participants strongly indicated that they did, indeed, feel better prepared (M=4.88, SD=.336).

The results also suggest the information integrated within the program is a mix between that which they already know and that which is new to them (5 point bipolar scale, new \leftrightarrow review, M=2.81, SD=1.378). This finding is further supported by open-ended comments that indicated many of the aides were already aware of much of the information but that the program served as a solid review for them or would be good for someone new to home health care.

Participants rated several suggested extensions to the present effort as highly valuable. These extensions included a reference guide, more detailed segments on the prevention steps, materials to support patients and families, segments on special situations and outcomes, and computer-based activities to practice what they have seen. Materials to support working with families and patients in a variety of settings and

circumstances appear to be a particularly valuable addition. Not only were these proposed components highly rated but specific open-ended comments also implied or directly suggested the usefulness of such materials to the aide's practice. Specifically, comments noted a need for materials to overcome perceived barriers (e.g. working with mentally altered patients and/or effectively communicating to both the patient and, when applicable, the patient's family the importance of continuity of care between visits).

Web-based features were rated lowest among the proposed additional features ($M=4.22$). This lower prioritization of the web features parallels the web as the lowest rated avenue for training among the aides. That is, of a variety of training modalities, participants rated web-based activities as their least preferred method of receiving training. This result is not surprising, considering that reported internet access (of any kind) at home or at work did not exceed 70%. The results suggest that DVD, VHS, and group (face-to-face) instructional modalities may be more appropriate for this audience than computer-based activities. At the very least, forms of instruction other than computer-based activities should be available.

Limitations of the study

There are several limitations to the present evaluation study, including sample size, the limited duration of the intervention, the lack of a behavioral measure, and the risks of a test effect, sample specific findings, and response bias.

The a priori power analysis indicated that while power for the study was sufficient to reasonably identify main and interaction effects for the knowledge and multivariate composite outcomes, power was low for conducting analyses on direct indices (INTD, ATTD, SND, PBCD) and individual items, such as the behavioral beliefs. As such, while those comparisons were conducted, non-significant results must be tempered by the realization that the likelihood of a Type II error is relatively high. Both

the attrition below the participation level targeted on the basis of the power analysis and the presence of several skewed and relatively more invariant variables than hypothesized for the a priori power analysis, further exacerbate this issue. Future studies should address this concern through ensuring adequate power, whether by modifying the design, improving assessment of the constructs and beliefs, increasing participants, or some combination of all three.

The duration and nature of the intervention, a 45 minute video, was limited. While such brief interventions, including the present one, have been shown to affect knowledge and, to a lesser extent, beliefs, lengthier interventions which engage the participants in activities designed to increase understanding and modify attitudes are likely to lead to larger differences between and within groups. That the present study identified significant differences on several variables despite the short duration would seem to further support the efficacy of the instructional materials. Of course, maintenance of these changes over time is an important aspect of any intervention, and a further limitation of the present study is that participants are not observed longitudinally.

It is important to note that behavior itself was not measured in the present study. To assess behavior, either self-report data or direct observation is needed. Either approach was methodologically problematic for the present effort, with the former being enmeshed in issues of accuracy of self-report data and the latter being procedurally difficult. This limitation should be tempered by the context of the associated reasoned action theories: the strong correlations between intentions and self-reported and actual behavior is an established element of the theories of reasoned action that inform the present study (c.f. ,Armitage & Conner, 2001). As such, it is reasonable to suggest that observed changes in the reasoned action constructs will have an effect on the related

behavior. However, the actual presence and strength of this effect can not be known. Future research should, therefore, include behavior.

A test effect, otherwise known as a “testing threat” (Fraenkel & Wallen, 1996), is a potential risk when a pre-test post-test measure is used. First, the pre-test may simply serve as practice for the post-test. Even though the answers are not provided to the participants, they may reflect on responses and when encountering them later, answer differently, even in the absence of an intervening intervention. For the present study, this threat was controlled for by the presence of a control group; any such practice effect should impact both groups monolithically.

A second aspect of the testing threat occurs when the pre-test alerts participants as to the nature of what is being studied and perhaps makes them attune to the information on the test more than they would otherwise. This threat is present whenever a single instrument is completed on multiple occasions, regardless of the type of study, although it can be particularly vexing for evaluation efforts. Insofar as the pre-test serves as a cue to learning, the question becomes whether the participants would have demonstrated the improvements they did were it not for the pretest that cued them to the objectives to be learned. Moreover, is the assessment indicative of the overall learning that occurred or simply that the learners did better (solely) on the cued items. The researchers sought to attenuate this threat by placing two weeks between the time the initial assessment occurred and the time the instructional video and assessments were delivered to the experimental group and the second assessments were delivered to the control group. Furthermore, the considerable number and complexity of the intention and belief items makes it unlikely that the pre-test items would alert participants in either group to specific information, at least not in more than a general sense of what the study was about and not in a manner that is likely to differentially affect the groups. On the other hand, there were fewer knowledge items, and it is

possible that participants were alerted to their content. Accordingly, when participants encountered relevant content information, they may have paid more attention to it than if they had not participated in a pretest. The likelihood of this is, of course, much higher in the experimental group than in the control. Again, the time between tests sought to mitigate this risk. From another perspective, it could be argued that given the nature of the information being tested, such an effect is valuable and that some form of pretest should be included in all such efforts. In essence, the pre-test can be considered a part of the instructional process, as it is with mastery learning and other criterion-referenced based approaches to instruction and assessment. In the end, however, there is a testing threat present, and the pre-test may in part be responsible for the gains demonstrated.

As with any study, findings may be sample specific. The steps taken to ensure an adequate cross sample of the population should mitigate this limitation. Moreover, demographic data were analyzed, and all variable distributions align with existing descriptions regarding the general characteristics of the population, with most being normally distributed. One characteristic of the sample of concern in this regard is years of experience in the field. Although the variable is normally distributed and approximates the population, there are very few individuals in the sample with less than six months of experience. It is probable that those just entering the home healthcare profession would be more unaware of pressure ulcers and have more variant beliefs regarding taking steps to prevent them than those established in the field. This relative lack of newcomers to the profession may in part explain the extremely high and often invariant mean ratings on intentions and beliefs. Replicating the effort with an established quota for individuals new to the field, especially those who have received no training and have little experience, or simply conducting an evaluation of the materials within that audience, would further our understanding of these issues.

Response bias is another area of concern and could also explain, again in part, the high means and relative invariance on many of the psychosocial variables and beliefs. While randomly assigned to conditions, the sample was self-selected from the overall population. As such, non-response bias cannot be ruled out. Such bias has been shown in other health-related research efforts to systematically exclude those who may be most in need of an intervention, with survey non-respondents being more likely to be socioeconomically disadvantaged and/or to underutilize services as compared to respondents (Partin, 2006). It is possible that self-selection for the study led to a positive bias on the psychosocial measures. This possibility would be exacerbated if, as is reasonable to suggest, those with less experience and less confidence in their capabilities are also those least likely to volunteer. It is, of course, also possible that the home health aides do in fact feel strongly about and are committed to engaging in pressure ulcer prevention. As noted above, because there is no measure of actual behavior, it is not possible to tease apart actual intentions and prosocial response bias.

Conclusion

Keeping the aforementioned limitations in mind, the instructional video was effective and well-received. Participants learned from it, in terms of both knowledge gains and changes in their psychosocial perceptions related to engaging in steps to prevent pressure ulcers, particularly in the perceptions of control related to taking preventive steps. Moreover, participants were engaged by the video and rated it extremely well on all consumer satisfaction items. Suggestions emerged for improving the materials, based on the results and on feedback from the participants, and the methodology, as noted in the limitations.

CHAPTER 6

OVERALL DISCUSSION

Summary

The present project sought to examine the interplay of reasoned action theory and constructivist epistemology as they mutually inform an instructional development effort. This interplay was examined in an instructional effort to decrease the prevalence of pressure ulcers and their associated sequelae in the home health care environment. While other approaches are potentially appropriate, the present effort addressed the goal through an instructional video. It sought to foster improved performance of pressure ulcer prevention behaviors among home health aides.

Such performance may be understood as occurring when three conditions are met: target audience members know what the behavior is, they know how to do it, and they, in fact, want to do it. Learning objectives and related content were identified for each of these areas. Content for the former two areas, which involve factual and procedural objectives, was identified through interviews with target audience members and subject matter experts. The third area, involving affective, or psychosocial, learning objectives and the associated content was the primary focus of this study.

A particular perspective on behavior, known as reasoned action theories, framed the identification of the affective content of the effort. This perspective suggests that not only can behavior be understood as occurring when the aforementioned three conditions are met (knowing about it, knowing how to do it, and wanting to do it), but that much of people's actual engagement in any particular behavior can be predicted if researchers (and developers) know about people's intentions concerning engaging in the behavior, their attitudes toward the behavior, their perceived norms regarding the behavior, their perceptions of control in relation to the behavior, and their specific beliefs regarding the

behavior. Considerable research has been conducted using reasoned action theories in order to describe, predict, and, to a lesser extent, change people's behavior. The present effort drew upon this extensive research in order to integrate reasoned action theory within an instructional development process. This integration involved use of reasoned action theory during aspects of both the design and evaluation stages of development. Such use included conducting a qualitative elicitation study among target audience members, conducting quantitative survey research among the target audience, analyzing the resulting data in order to identify beliefs that could be effectively targeted by the instructional intervention in order to bring about and/or reinforce the target behavior, and examining the beliefs within an evaluation of the resulting instructional video.

In the elicitation study, 20 home health aides were asked a series of questions related to monitoring for and taking steps to prevent pressure ulcers. This process led to the identification of 15 positive and 8 negative behavioral beliefs (perceived consequences of engaging in the behaviors), 16 positive and 5 negative normative beliefs (people or organizations that the aides perceived as for or against engaging in the behaviors), and 14 positive and 16 negative control beliefs (conditions which the aides perceived as facilitating or inhibiting the behaviors). The frequency of these beliefs ranged from almost 90% of the sample to a single member of the population (5.3%). The positive and negative belief themes were then used, along with input from subject matter experts and findings from similar research efforts, to generate a survey instrument.

The survey instrument was implemented with 80 members of the target audience. The instrument assessed intentions, attitude, subjective norm, perceived control, and the individual beliefs. Regression analysis determined that intentions to engage in pressure ulcer prevention activities were most strongly predicted by participants' attitudes toward taking steps to prevent pressure ulcers (as opposed to their perceived norms and perceptions of control regarding such engagement). Stepwise

regression of intention upon specific beliefs associated with the behavior found that perceptions of pressure ulcer care as an act of compassion or as a part of comprehensive care most efficiently predicted intentions. Examination of the correlations between specific beliefs and intention to engage in preventive care suggested several additional beliefs that might be effectively targeted through an instructional effort. For behavioral beliefs, that is for beliefs related to the consequences of engaging in pressure ulcer preventive care, beliefs to target included the positive effects on the patients and families; avoidance of regulatory, state, and liability issues; the ability of care providers to provide prevention care; and the perception of preventive care as a standard practice.

For normative beliefs, the data suggested that home health aides may be most receptive to information and instruction provided by employers and supervisors. That is, the aides appear to perceive these individuals as strong and positive normative influences in respect to engaging in pressure ulcer care. On the other hand, home health aides' intentions to engage in prevention do not appear related to the perspectives of patients and families: the beliefs of patients and their families regarding pressure ulcer care (as perceived by home health aides) were not highly correlated with intentions to provide such care. Despite this finding in respect to patients and families as normative influences, the support of patients and families appears to be an important factor which emerges as behavioral and control beliefs.

Regarding control beliefs, several barriers and facilitators are associated with whether care is provided. A regression analysis indicated that having established procedures facilitates care and encountering family resistance may inhibit care provision. Examination of the correlation statistics suggested that resource availability, family and patient understanding, family and patient acceptance, and environmental conditions are also perceived as affecting care.

These results were used to inform the design of an instructional video. This design occurred within an overarching epistemological framework that considers understanding to be a constructive process in which the meaning of a particular experience is always idiosyncratic and generated on-the-fly based on the settings and circumstances of the experience and the lived experience of the participant. Several implications of this constructivist epistemological perspective were set forth and used to inform the design of the instructional video. In particular, narration—storytelling—as a mode of understanding, authenticity, and scaffolding were each drawn upon to inform design.

An instructional video predicated on the identified beliefs and the factual and procedural content, and influenced by the constructivist epistemological framework, was produced. The video, which is 45 minutes in duration, follows a newcomer to home health care as she learns about pressure ulcer prevention. Specific behavioral, normative, and control beliefs are incorporated throughout the story line. Factual information is presented directly and reinforced through recurrent use throughout the story. Prevention skills, as well as information seeking ones, are modeled.

The instructional video was evaluated in a controlled experimental design. Sixty-three home health aides, who were randomly assigned to either a control or experimental (watch the instructional video) condition, completed the study. The study examined participants' knowledge, intentions, attitude, perceived norms, perceptions of control, and specific behavioral, normative, and control beliefs, before and after the intervention period. Significant differences in knowledge gains and the multivariate composite of participants' psychosocial perceptions of pressure ulcer preventive care were identified, with the experimental group demonstrating more growth than the control group. Of the four components making up the multivariate composite, i.e. attitudes toward the behavior, perceived norms regarding the behavior, perceptions of control regarding the

behavior, and intentions to engage in the behavior, only perceived behavior control demonstrated a significant interaction effect, with the experimental group showing a greater increase than the control group on this construct. Each of these findings was significant ($p < .05$) and, moreover, the differences represented large effect sizes. No significant differences were found on the individual behavioral, normative, and control belief items.

In terms of consumer satisfaction, the participants liked the video. The instructional program was rated highly on a 10-item index of usability ($M = 4.77$, $SD = .347$, on a scale of 1 to 5). In particular, participants thought the program was well-developed, appropriate, and would be useful to themselves and to their colleagues. Participants indicated that the materials were a mixture of new and review information. Strengths, weaknesses, and suggestions for improvement were identified.

So, (now) What?

Reasoned action theory has a considerable research tradition behind it and has been shown, in its variant forms, to be effective in predicting a significant proportion of people's intentions and behaviors regarding specific behaviors. On the other hand, the theory has been used infrequently to inform the design of interventions, instructional or otherwise. Few applications of reasoned action theories to intervention development integrate the associated constructs and methods within both the design and evaluation stages of development, and fewer still address all four levels of the theory: specific beliefs, proximal determinants of intentions (the theoretical constructs of attitudes, subjective norm, and perceived control), intentions, and behavior. This effort examined use of three of the four levels (beliefs, constructs, and intentions, but not actual behavior) and did so by integrating reasoned action constructs and methodologies within both the design and evaluation stages of instructional development.

The research effort suggested that reasoned action theory was nominally a behavioral theory and not, as is sometimes claimed, a behavioral *change* theory. That is, reasoned action theory specifies the direct and proximal causes of behaviors but does not make explicit claims regarding how to effectively extinguish, modify, instill, or reinforce those behaviors.³⁰ Similarly, there are a number of behavioral change “theories” within the health behavior, health communications, instructional design, learning sciences, and associated fields, that are perhaps more correctly identified as behavior change *strategies* or *principles*. Examples are many and varied and range from reinforcement and punishment (behavioral) to “persuasion” and “information provision” (cognitive) to “community participation” and “social networking” (social cognitive). Arguably, these are not theories of behavior *change*; they are tools to foster behavior change.

There is an important difference between theories and tools. Tools enable people to perform tasks, but they do not always, or even usually, overtly tell the user *why* the tool is useful (or, in many cases, how it should be used appropriately). That is, a hammer can put a nail into a board, but something else has to explain how and why to build a cabinet. Hammers are not furniture construction theories, if you will, but their use is always informed by “construction theory,” by what it means to make something, what the most effective and efficient tools are for building specific types of things, and what the valued outcomes of the construction process are. The mere choice to use a hammer, as opposed to, say, glue or dovetail joints, is as much about the perspective and skills of the builder as it is about the tools at one’s disposal, and such choices should, ideally, be informed by an overarching “construction theory” (what is construction, what are the valued outcomes, and how can outcomes be reached effectively and efficiently) than by the tools that happen to be available in the shop or popular at the local hardware store.

³⁰ More accurately perhaps, it does not make claims regarding how to change the behaviors aside from the hypothesized relationship of specific beliefs to proximal determinants to behavior, which, of course, has implications for how we perceive of changing behavior (as, in part, changing those determinants and their relationships) but does not, in itself, specify how change should be engendered.

As a result of this perspective, the present effort chose to focus on the implications of overarching theory rather than focus on “closer to the ground” implementation tools and strategies. This in no way denigrates the substantial contribution these strategies and principles for behavior change have made, and will continue to make, to our understanding of how to bring about sought after behaviors. However, by stepping back to the foundational question “what does it mean to understand?” the present effort hoped to embed change efforts within a more encompassing theoretical framework. Such epistemological questions have consumed western philosophy since Plato, Aristotle, and their followers first mapped out the divide between representative and constructive approaches to understanding. Plato’s allegory of the cave remains a strong, thought-provoking presentation of what it means to know, and the epistemological implications of his effort to capture, through a story, our quest for increasingly true forms of knowledge, for its “ideal forms,” have rippled through the past two millennia. Regardless of the strategies used to understand and change behavior, researchers and developers always operate within overarching stories of what it means to understand and to behave. Often these stories are, of course, tacit, but they none-the-less exert powerful influences on decisions regarding behavioral change (this influence may in fact be even stronger as a result of the tacit nature of the stories).

For the present effort, what it means to know was grounded in the constructivist epistemological perspective: understanding is a locally occurring construction influenced as much by the characteristics of the individuals involved and the setting of the events as by the external stimuli that are associated with the events. Understanding is never (merely) a representation of the external world but is always an already culturally and personally embedded interpretive act. Understanding is not, from this perspective, a quest for increasingly true knowledge; the shadows of the cave are not left behind for the more “real” objects themselves, but rather they are all perceptions, none objectively

“truer” than others. From this perspective, however, some perceptions, some interpretations, can be more right than others, where “right” is defined, not by a criterion of isomorphism of the perception to the objective reality, but rather as a criterion of whether the interpretation, perception, the *belief* is more or less adaptive for the individual as he or she attempts to engage in particular activities within particular communities of practice. If these beliefs and their associated stories are more coherent, that is, if they hang together without significant inconsistency, and adaptive, that is, if they allow the individual to engage more successfully in the communities in which they live, then they are more useful; if not, then they are less useful. People make sense of the world and their own actions within it through their stories. From this perspective, the question then becomes how to bring about changes in people’s stories such that they are more able (and willing) to engage in various valued practices within specific communities.

The previous sections on reasoned action theory and constructivism raise a number of issues and suggest many implications for understanding behavior, changing behavior, and designing interventions to support such change. Many of these have been discussed, and some addressed, as part of the overall effort. Here, a final canvassing of some of the issues and implications that arose during the effort seems worthwhile: do reasoned action theory, constructivism, and instructional development fit together? Yes and no. To begin to answer this question, the way each component was realized in the present effort is considered, and then all three components are considered together.

Reasoned Action Theory

Is reasoned action theory useful to informing instructional design?

Yes. Reasoned action theory is useful for informing design. Instructional designers have long been admonished to perform audience analyses to inform the

development of educational goals. Reasoned action theory can be viewed as a particular form of audience analysis, but, more than that, it also provides a strong reminder of the need to include psychosocial components of behavior as vital outcomes of an instructional effort, because, in the end, the valued outcomes of instructional efforts are behavioral outcomes: that is, we want people to engage the world in ways that they did not prior to the effort (or to continue to engage if the purpose of instruction is reinforcement). Beyond this reminder, reasoned action theory provides a framework for understanding the psychosocial components of behavior. By positing various types of psychosocial factors (behavioral, normative, and control beliefs) that operate at various levels (specific beliefs and theoretical constructs) and that are related in theoretically determined ways (beliefs \leftrightarrow attitudes, perceived norms, perceptions of control \leftrightarrow intentions \leftrightarrow behaviors), reasoned action theory provides a useful framework for organizing and addressing psychosocial aspects of behavioral change.

Three issues related to the integration of reasoned action theory in the current development effort will be discussed here. First, when should the theory be used? Second, how should the theory be used? Third, what are the costs?

When Should the Theory Be Used?

Many projects could benefit from the use of reasoned action theory (or a similar approach to understanding the psychosocial aspects of learning and performance). It is hard to imagine a learning situation in which it would not be useful to know what the learners think about the behaviors, what they think other people think about those behaviors, what might inhibit or facilitate engagement in those behaviors, whether they intend to engage in the behavior, and how all of these relate to actual performance. However, there are several caveats.

First, a learning goal needs to be parsed as a specific behavior or an easily understood behavioral class (a set of related behaviors). Research on behavioral change has shown that how people feel about a topic, such as HIV (or its prevention), is not significantly associated with whether they engage in a related behavior, such as condom use in order to prevent HIV (Fisher & Fisher, 2002). Psychosocial determinants should be of the behavior, not the topic, and learning objectives need to be translated into specific valued activities.³¹ Obviously, one could ask learners about goals or topics instead of behaviors and doing so would likely lead to data and results that look similar to those derived from a reasoned action perspective; however, doing so divorces the constructs and procedures from much of the underlying theoretical perspective, and the results would not be correctly considered as “grounded in reasoned action theory.”

Second, ideally the behavior of interest should not change over time. That is, in many instructional efforts, what one thought was the target behavior turned out to be something quite different over the course of the development process. This is hardly surprising. As researchers work with target audience members, they often learn more about the behaviors, about how those behaviors relate to goals, about other behaviors that might also support goal attainment, and about how all of these fit within the participants’ self-stories. These can be simple, potentially semantic, differences or they might be more extensive. In the present project, for example, the behavior of interest shifted over time. Initially it was believed that looking for signs of pressure ulcers and taking active steps to prevent them might be perceived differently, with adoption of one behavior being more or less likely than the other, and that these differential rates might be affected by differences in associated beliefs (e.g. looking for signs of pressure ulcers

³¹ This observation has implications for a wide range of educational activities. Do we really care how someone feels about science, per se, or about learning about science (or about learning about some particular aspect of scientific inquiry), or should we be more concerned about our learner’s attitudes, perceived norms, and perceptions of control regarding particular field-specific, science-related activities, and how these align with, or not, their existing stories, their ways of making sense of the world?

might be considered as more of an invasion of privacy or as less of a standard practice than simply taking certain steps to prevent pressure ulcers). Over the course of the effort, it was decided that these two behaviors were perceived similarly by the audience. As such, the two specific behaviors changed to a single compound behavior: “looking for and taking steps to prevent pressure ulcers.” Such changes are clearly reasonable and can be supported in the data; however, they do pose a concern: the objective has changed from stage to stage: the elicitation may have focused on a slightly different behavior than the survey. If the definition of the behavior again shifts slightly for an evaluation, to what extent can we be sure that the overall results of the elicitation, the survey, and the evaluation are speaking to the “same” behavior? In particular, the regression models of the audience might change across these stages for no other reason than the change in definition. Such an occurrence would preclude the use of the survey data as, for example, a reference model of the audience to which later (post-intervention) audience results might be compared.³² The issue is, of course, broader than this; however, the general concern is that if the definition of the behavior shifts over time, then it is important to consider what the ramifications of such a shift might be.

Third, there cannot be a multiplicity of behaviors. This is not a limitation of the theory per se but of resources (and of participant tolerance). Using reasoned action theory involves significant end-user participation. In the elicitation, a series of open-ended questions is asked of each participant *for every single behavior of interest*. Moreover, at the survey stage, for every behavior, there is a, often quite large, set of individual attitude, subjective norm, perceived control, and behavioral, normative, and control belief items. Clearly, the more behaviors are specified, the more time will be

³² This issue should not affect results within a particular stage as long as researchers adhere to standard evaluation practices of not changing instruments during the course of the evaluation and of ensuring equivalence of instruments over time (use of the same instrument, counterbalancing, etc.)

required of researchers and participants, and the more complex the analysis will become.³³

One way of addressing this issue is the use of a behavioral category: when a particular class of behaviors is of interest, and that class can reasonably be grouped to form a single target, then the behavioral category can be used. In the present project, “taking steps to prevent pressure ulcers from forming on my clients” is a behavioral category. It subsumes ten major and minor steps that aides may perform to reduce the likelihood of pressure ulcers forming on patients in their care. There are several issues related to the use of behavioral categories, the foremost being that participants may, in the absence of a clear definition, differentially interpret what is meant by the category (just what is meant by “steps”). On the other hand, even if the category is well-specified, it will be difficult to tell which aspects of the category may be a problem for specific segments of the audience and which beliefs may be associated with those. If some portion of the category is, in the minds of the target audience, different than others, than clustering the behaviors may lead to spurious results. In this project, before collapsing the behaviors into a single category, the specific steps were determined and formatively evaluated with a small sample of target audience members. Once it was apparent that the aides did not perceive any of the steps as particularly unrelated or more or less likely to be done, the behavior category was used. In other efforts, it might not be reasonable to collapse the behaviors. For example, HIV prevention includes a range of risk reduction behaviors that would not be, from casual inspection, reasonably clustered under a single behavioral category. Regular condom usage, casual partner condom usage, needle bleaching, and other protective behaviors likely arise from quite different psychosocial

³³ The converse should also be noted: for every belief one includes related to a behavior, the instrument length increases by one for each behavior. That is, at some point it will likely be necessary to decide whether multiple behaviors or manifold beliefs per behavior or both are the priority. This observation relates to the discussion of *where* beliefs are obtained (elicitation, elsewhere) and how frequently they must occur within samples in order to merit inclusion in further research and development work.

structures, and treating them as a single behavioral category would surely trigger both of the issues outlined above. In this case, if the resources permit, each behavior should be examined individually. If such examination is not possible, then perhaps reasoned action theory should not be used (as part of the process, although implications of the extensive existing research would almost certainly prove worthwhile). In the end, the question resolves as: can the behavior(s) be specified in a way that reasonably captures the intended activity in the minds of the participants while not requiring more resources than are available.

Finally, the behavior and the associated beliefs should be subject to change. In the context of the literature review in Chapter 2, three criteria for selecting targets for belief change were described (c.f., Hornik and Wolfe, 1999): first, there needs to be room for improvement in the candidate belief(s) among target audiences; second, the belief(s) need to be associated with the behavior of interest; and third, the belief(s) should be amenable to change. Hornik and Wolfe's criteria can, of course, be broadened to apply directly to the behavior of interest, which also needs to have room for improvement (is everyone already doing it?) and to be susceptible to improvement (even if there is room, is it reasonable to believe improvement can in fact be fostered?).³⁴

Whether there is room for improvement among the target audience in the behavior of interest can be determined through careful formative research at the onset of the effort. For example, by including psychosocial questions during the elicitation, performance and intentions among the target audience can be assessed prior to survey work. However, it may, in fact, be more rigorous and valuable to conduct a preliminary survey of the target audience *before the elicitation stage*. Gathering quantitative data regarding actual behavior (say through simple retrospective inferences), intentions,

³⁴ In the case of this extension, the second criteria would need to be reframed from the question of whether a belief is pertinent to a behavior, to whether a behavior is in fact pertinent to a valued outcome. That is, is the targeted behavior the one most suited to accomplishing the goals sought?

attitudes, perceived control, and perceived norms would enable researchers and designers to determine at the onset what the overall model of the behavior looks like among the target audience (and whether there are, in fact, multiple audiences), and whether there is room for improvement among one or more of the constructs among one or more of these audiences. While this can be done, in part, as a component of the elicitation, doing so seems to mix methodologies in a way that is detrimental to the goals and outcomes of each. Instead, if resources permit, it seems an initial survey would help the researchers to understand (1) whether the performance issue in fact exists (that is, is there room to improve the behavior), (2) whether there is room to improve intentions, (3) which psychosocial construct appears to be most closely associated with existing intentions and practices and whether there is room for improvement in these constructs, and (4) whether there appear to be systematic differences in these three areas based on audience characteristics. An elicitation regarding beliefs would follow only if the first three questions were answered affirmatively.³⁵

In the present project, there is room for improvement in the goal (that is, pressure ulcer incidence is higher than goal levels). There also appears to be room for improvement in the behaviors (that is, the higher than goal levels of incidence and sequelae in fact appear to be related to ineffective or unimplemented preventive care behaviors among home health aides). There was not, however, much room for improvement in the home health aides intentions to engage in the behaviors. This lack of room for improvement was noted both at the survey and the evaluation stages of the effort. So, the question arises, in the present project, why should we target beliefs and intentions if it appears intentions are, in fact, already quite high? Following the

³⁵ It is possible researchers would desire to conduct an elicitation nonetheless. For example, see the discussion of using beliefs to reinforce other learning goals (knowledge and skill acquisition, performance support) below.

recommendations of Fishbein (2000), Hornik and Wolfe (1999) and others, it would appear resources would be better spent elsewhere.

As implied in the discussion sections of the survey and evaluation stages, the rationale for including belief and intention change elements in the present effort rests in three related issues: first, there is the potential, as in any project targeting a socially valued goal, that the participants' responses are socially biased toward positive intentions and attitudes. If this prosocial response bias is suspected, then ideally, if behavior has not been assessed directly, it should be so assessed at this point. However, resources, methodological issues, and accessibility may hamper such assessment, in which case a considered decision must be made by the developers as to the likelihood and extent of prosocial bias, and from this, the decision to target (or not) beliefs and intentions despite apparent ceiling effects must be made.³⁶

Second, the samples used in the present effort do not include large numbers of individuals who are new to home health care. In seeking representative samples of the entire home health care population, the current samples may not adequately represent these new and less experienced individuals who are most in need of the intervention, at least from an intentions and beliefs perspective. Ideally, if such an omission is perceived as part of a project, the researchers would conduct a more focused elicitation and survey among the narrower target audience(s). Again, however, this may not always be possible given real-world resource constraints. The question then becomes whether or not to include the beliefs that are known to be associated with intentions in the instructional content nonetheless? The decision in this regard will be influenced by whether such inclusion is perceived as competing with (and diluting) other content (such as skills development) or not. If such inclusion is not likely to diffuse the effects of the other

³⁶ Moreover, moving forward, care should be taken regarding potentially recrafting survey items to increase the variability of the various constructs and to decrease the perceived prosocial bias.

aspects of an intervention, then it appears reasonable to do so, especially since inclusion is likely to affect those who do not intend to engage in the behavior, regardless of how few in number those individuals may be.

Finally, there is the question of whether including elements to reinforce positive (and address negative) beliefs and intentions in an intervention, when there is no room for improvement in those, is valuable as an engagement and reinforcement tool. That is, from the perspective of story frameworks that are meaningful to the participants, it seems that even if skills (or the use of performance support tools for that matter) are the primary emphasis, the inclusion of beliefs and intentions, that is, the inclusion of belief testimonials and in situ belief events in the instructional media, serves an important framing purpose irrespective of whether those beliefs can be *changed* among the target audiences. If the beliefs can be changed among some members of the target audience, then the instructional materials have embedded the beliefs in a manner that may lead to such change, which is, of course, a good thing. If they cannot be changed among particular members of the target audience, then those beliefs are likely already high and should serve, from the perspective of authenticity and engagement, to further *transport*, to use Green's (2004) term, the learners into the story framework in which the skills and information may be more readily perceived as useful and adopted.

Taken together, these three issues show the decision to include belief and intention components within interventions as being more complex than a simple flow chart, yes or no, decision point based on a sample of the target audience. In the present effort, the decision to include beliefs and intentions in the objectives and materials, and to continue research regarding psychosocial aspects of the behaviors of interest, was grounded in each of these three concerns. Other researchers could reasonably decide, faced with the apparently high and invariant attitude and intention constructs, to cease all aspects of the effort related to reasoned action theory and to focus exclusively on

whatever other deficiencies have been identified.³⁷ While reasonable perhaps to exclude them, inclusion of the belief and intention elements facilitates engagement and identification, and, even if this were not true, leads to no harm (no dilution of other elements) as long as it does not detract from the resources available to other aspects of the effort.³⁸

How Should the Theory Be Used?

Reasoned action theory can be used in a variety of ways: it can be used to inform early goals and strategies; it can be used to inform content selection as part of design; and it can be used to evaluate the results. Each of these uses has been clearly set forth in the previous chapters. The extent to which the theories are used at each stage of development will likely vary based on perceived resource availability. That is, whether one gathers information about the individual beliefs, the proximal determinants of behavior (intentions, attitudes, perceived norms, and perceptions of control, measured directly), the behavior itself, or some subset of these at both the design and evaluation stages of development will be determined in part by the time and effort required, the perceived willingness of participants to engage in the work, and the perceived benefits of measuring each aspect. If the overall effort identified specific beliefs associated with particular psychosocial constructs and then proceeded to create instruction to address those beliefs, it would be reasonable, although a significant limitation, to assess only the psychosocial constructs in an evaluation of the materials.

³⁷ Because Fishbein's (2000) integrative behavioral prediction model includes skills and actual control issues and is a variant on reasoned action theory, it is not, strictly speaking, accurate to say that if the psychosocial components are not subject to change, the reasoned action theory efforts may cease since that particular model in fact includes those non-psychosocial components directly.

³⁸ There does not appear to be any research to date to support or refute the claim that such inclusion leads to increases in effectiveness (or decreases), although clearly there are myriad ways that this issue could be investigated and a number of evaluative dimensions upon which such an investigation could rest.

Of course, it would be ideal to know if the specific beliefs changed, but if those beliefs were many, and the time available short, then because reasoned action theory stipulates the relationships of the beliefs to the constructs and because those relationships for the specific audience and behaviors should be known based on prior work (either previously reported research or through elicitation and survey work conducted specific for the project), it is reasonable to suggest that any changes in the construct occurred as a result of changes in the targeted beliefs (assuming, of course, all conditions of valid research have been met). Assessing the psychosocial constructs directly, and ignoring the individual beliefs, is, in fact, a common approach in existing studies and is a significant limitation of them. By choosing not to evaluate specific beliefs, the researcher will lose any ability to identify impact effects: that is, it will be impossible to ascertain whether and which specific beliefs changed, how, and through what mechanism (e.g. did the value change, the expectancy, the correlation with intention?).

One particular issue that arose in the present project concerned the processes by which derivation of specific beliefs occurs. Reasoned action theory suggests a process for identifying specific beliefs to target. Specifically, researchers interview a number of audience members and generate a set of themes related to participants' beliefs associated with the behavior of interest. From this list, those items that occur most frequently are used to create a survey in order to quantify the relationships among the beliefs and psychosocial constructs within the target population. Frequently occurring beliefs are sometimes referred to as "modal" beliefs. The present research suggests that modal beliefs, while useful for describing and predicting behavior, may not be sufficient when the purpose of the effort is to create interventions that change that behavior. Reasoned action theory has, since its inception, acknowledged the potential efficacy of non-modal

beliefs for changing behavior, although the acknowledgement has seldom, if ever, been clearly delineated and translated into actual intervention development efforts.

Beliefs may be accessible or non-accessible. That is, when asked a series of questions about a behavior, some beliefs will come to mind, others will not. This does not indicate that things that are not mentioned are not important. A person may not mention, in an interview, some beliefs for a variety of reasons, ranging from lack of conscious awareness of the belief, to conceiving of one belief to be entailed by another, to shame or stigma associated with a thought. These “inaccessible” beliefs, however, may be just as important as the accessible ones.

Moreover, beliefs may be salient to the behavior for some individuals and non-salient for others. That is, some individuals may perceive a particular belief to be related to a behavior while others may not. As noted above, beliefs may be modal or non-modal; that is, they may occur frequently in the population or infrequently. Selection of beliefs based on the frequency of their occurrence implies that the audience is homogenous in their beliefs. This may be the case; however, often it is not, and current applications of reasoned action theory examine how, for example, demographic or relational characteristics may be associated with different belief structures.

In the present effort, initially inaccessible, non-salient, and non-modal beliefs were included in the survey alongside those beliefs that were both salient and modal. The inaccessible, non-salient beliefs were derived from research efforts concerned with *prima facie* similar, but not the same, audiences and behaviors, and from subject matter experts. Although a careful analysis of how this inclusion of non-modal and non-salient beliefs affected the various stages of the effort is beyond the scope of this report, a few observations are worth noting.

First, there is at least one example of a belief derived from a subject matter expert, and not mentioned by the target audience during elicitation, that became salient

when it was included in the survey stage. Moreover, this belief was also one of the few to emerge as an independent predictor of intentions when intentions were regressed upon the individual beliefs. Additionally, several beliefs that were identified through a review of literature applying reasoned action theory to other, substantially similar but superficially quite distinct provider practices (HIV counseling behaviors), also emerged as salient (significantly correlated with intentions) when included in the survey stage. The implication of these results is that certain beliefs may not be accessible to participants but may become salient when directly addressed. Of course, it is still an open question as to whether these originally inaccessible (or unheld) beliefs are as predictive of behavior as those that emerge through audience elicitation, and, moreover, whether changing these beliefs leads to changes in behaviors (that is, such beliefs may serve more as indicants of intention and behavior than as predictors).

Furthermore, for behavioral change efforts, it is possible that some beliefs are not held but could be fostered. That is, someone may not mention a belief when asked an open-ended question, and the belief may not be strongly associated with intention in a survey (i.e. it is not “recognized” and does not become salient), yet the belief may still be a reasonable target for change if the association can be fostered. These various “types” of beliefs and their appropriateness to particular instructional design efforts is not carefully examined in the present project; however, the results suggest that using more than the modal beliefs derived in elicitation studies may be worthwhile.

Second, the inclusion of non-modal and non-salient beliefs may cause problems for certain aspects of the underlying reasoned action approach. Specifically, inclusion of (initially) non-modal and non-salient beliefs may lead to an attenuation of the correlation between direct and indirect indices of each of the proximal determinants of behavior. By theory (and established research), direct and indirect indices for a particular psychosocial construct (e.g. attitudes) should be highly correlated. Since any

given indirect index is the mean of all the associated weighted beliefs, any beliefs that are included in that particular index that are not modal, may attenuate the correlations. Moreover, since the association of a particular belief with a particular construct is generally determined by the questions in the elicitation stage, the addition of beliefs that were not so generated increases the risk that the researchers have “miscategorized” a belief. Such miscategorization may have an effect on construct correlations.

In fact, it appears that the inclusion of non-modal and non-salient beliefs in the present project may have led to precisely this type of attenuation because the observed correlations among the constructs, while significant, were frequently less than expected from an examination of previous applications of the theory. A careful analysis of different models, including and not including the various types of belief (modal/non-modal, accessible/inaccessible, and salient/non-salient) would be worthwhile in order to examine how such inclusion impacts the observed relationships. In particular, it may be that beliefs that are included from sources other than the elicitation function more as indicants than predictors of intention. Careful delineation of these issues merits further attention.

What Are the Costs?

Finally, as has already been noted, there is a significant cost in terms of time and resources when integrating reasoned action theory within instructional design, especially if there is no existing descriptive research to draw upon. First, an elicitation study needs to be conducted among target audience members; the study needs to involve sufficient numbers and diversity to ensure that all relevant beliefs related to the target behavior have been identified. A survey should then be conducted among a sufficient number of the target audience to quantify the relationships among the beliefs and psychosocial constructs. Finally, an evaluation that incorporates the psychosocial constructs and the

associated specific beliefs must be conducted. This evaluation should ideally have a longitudinal behavioral component to ensure that intentions to engage in the behavior in fact lead to behavior and, if not, why not. Power is always an issue for studies, and detecting changes in psychosocial constructs and beliefs over time may increase the required number of participants for an evaluation study. Psychosocial constructs may be less amenable to change, and the changes that do occur may be smaller than other constructs, such as knowledge and skills, thereby exacerbating power concerns. In the present study, for example, the number of participants per group required to ensure reasonable power to detect differences in the knowledge construct was nowhere near sufficient to detect differences in several of the psychosocial constructs.

In spite of these “costs,” it should be noted that efforts grounded in reasoned action theory likely require no more resources than other fully implemented instructional design methodologies (e.g. audience and task analyses, formative research and development, and summative evaluation). That is, it is not the use of a particular health behavior theory that is expensive but rather the use of a careful, highly detailed methodology that increases costs. Can projects justifiably allocate resources to such an effort given perceptions of gain associated with integrating the theory—that is, is it really worth it? Unfortunately, there is no clear cut answer: it depends on the importance of the issue being addressed, the availability of resources, and the perspectives of those engaged in the research. In many cases, yes, such use is valuable and, in the end, is worth the additional expenditures in time and dollars.

Constructivism

In addition to integration of reasoned action theory, a constructivist epistemological framework informed the design of the pressure ulcer preventive care video. One of the primary implications drawn from constructivism was that people make

sense of the world through ongoing storytelling, to themselves and to others, and that meaningful stories have important implications for behavior and, by extension, for efforts to change behavior. Behavioral change efforts are, from this perspective, at least in part about changing participants' story construction. Moreover, if understanding is indeed a construction, then the designer's role is to facilitate appropriate, adaptive stories—stories that help the learner engage the world in viable ways. To do so, instructional designers must not only find ways to tie into participants' existing stories, but also find ways that encourage participants to adopt, to assimilate, aspects of the instruction, our stories if you will, within their own. This effort sought to accomplish this by framing the instruction with story elements, using modeling and mentoring, and providing various forms of scaffolding.

There were a number of limitations and issues that emerged; three will be briefly discussed here: the extent to which the narrative perspective on understanding was integrated, a potential tension between engagement and learning, and the possibilities and implications of more fully considering “attitudes” as constructed.

Integration of Narrative

Dramatic elements, including a plot and characters, were used to create both an overarching story and to develop individual “plot events.” Steps were taken to ensure that the elements of the story, including the characters, the depicted situations, and the settings, were authentic. That is, both novice and experienced members of the target audience would recognize the people, places, and events depicted as being similar to those they experience (or would experience) in pressure ulcer prevention. The narrative served to place these elements in a story wrapper, a wrapper that was designed to engage learners by allowing them to see themselves in the people and situations shown in order to engender affiliation, recognition, and by extension, learning. In this sense, the

narrative served the goal, noted above, of finding ways to tie into the stories of the learners. In many ways this goal is about engagement, and the narrative served to engage the learners in the program by presenting a story, and a problem, with which they would be both familiar and, it is hoped, interested. The narrative also served to foster assimilation of the factual, procedural, and psychosocial content. That is, it served to foster learning by addressing specific beliefs and presenting specific skills and information in contexts that would increase the likelihood of their relevance being perceived and their usefulness recognized, and that would also increase the likelihood of transfer to actual practice insofar as the depicted situations were similar to those in which actual performance is desired. There are some notable limitations to how narrative was used.

First, the narrative was about learning something, not about engaging in the behavior itself. That is, the narrative depicted a young woman as she gathered information about preventing pressure ulcers; it did not depict the actual problems (and their resolutions) that might occur when care provision is attempted on one's own. Moreover, in general, the integration of narrative primarily provided "eye-candy" to a presentational approach to instruction as opposed to leading to what could be termed a more narrative approach to instruction. That is, instruction was framed by story elements, but learning as occurring through changes in people's stories was not explicitly and fully approached; more careful consideration of how to generate Bruner's "trouble" in the minds of the viewers merits further attention. That is, an investigation of how and when to engender moments of discord between the viewed events and the personal stories of the viewers, and how to more fully capitalize on those events, could yield important insights into how stories may be used to bring about behavior change.

The present approach to using narrative also did not capitalize on the learning that can occur through generalizing across a set of stories. That is, one way that narrative

can be used is to provide several examples and have participants generalize similarities and differences across the examples in order to develop frameworks for thinking about a particular field or type of activity. Such a perspective suggests that rather than being walked through a process or simply presented with information, learners should be shown multiple examples and asked what they think works and doesn't work, is reasonable and not reasonable, within and across the examples. Such an approach is similar to case-based reasoning and would likely entail longer and more varied media.

Tension between Engagement and Learning

One question that arises when considering the use of story to engage the learner is the extent to which such engagement is, in fact, compatible with learning. Engagement is generally conceived of as a good thing. The more engaged one is by a story, game, or activity, the better. Green (2004; 2006; 2000) suggests that transportation, one's level of engagement in an environment, may have a direct effect on whether one's beliefs are changed during any given experience. The more one is engaged by, suspends disbelief regarding, or is transported into the narrative, the more likely it is that belief change will occur. Is this really possible? Does learning occur when someone is fully engaged in an experience, and, if so, to what extent? Are certain types of engagement bad? If the story is not pertinent to the learning, as is the case with many instructional narratives, does engagement in the narrative detract from the overall learning experience?

If one is fully engaged in story, a story that features participants with views that are contrary to one's own, does such engagement truly affect one's own views or does it merely allow suspension of disagreement for the time being? That is, does engagement foster accommodation or assimilation of the beliefs? If the former, does such accommodation disappear when the engagement ends? What happens to such suspension of disagreement when one is specifically asked, as we often do in education,

to reflect on the disagreement, that is, when we specifically focus attention on the disagreement, making the issue overt?

Perhaps the more engaged a person is in a particular narrative-based learning experience, the more important overt reflection is to solidify, extend, and make accessible the tacit learning that may have occurred. In the present project, wherein the overall instructional activity was less fully embedded in the narrative mode than it could otherwise be, the issue appears to be less pertinent. But if the same factual, procedural, and affective information were embedded in a soap opera-esque format or a large story-based virtual world wherein engagement, and transportation, might be greater, the use of narrative may need to be differently conceptualized in order to support learning. In the end, a potentially useful question for future research is: when it comes to educational activities, are engagement and learning mutually exclusive? If so, so what? If not, when and under what conditions?

Consideration of “Attitude”

Finally, although a constructivist epistemology was drawn upon to suggest ways to engender behavioral change, specifically to engender changes in factual, procedural, and affective aspects of participants’ understanding, the affective elements were not themselves considered fully as constructions. That is, while the constructivist epistemology suggested the use of narrative, the use of mentors, and the use of scaffolding, these were embedded in a linear video which was principally presentational in organization. The question is, what happens if we pay more than lip service to the notion that attitudes, other psychosocial constructs, and their associated beliefs are constructions and, more than that, that they are constructions that occur principally through our acts of narrative sense-making? That is, what are the implications of a constructivist epistemological perspective for our views regarding belief formation, over

and above those already mentioned in the present project? Many of the implications are likely similar to those suggested for other types of learning, such as concept formation and problem solving, and the strategies and principles, of which there are many in the learning sciences and instructional design literatures, could likely be successfully applied.

Reasoned Action Theory and Constructivism Together,

Some Final Thoughts

Reasoned action theory can be thought of as a way to “get the story out” of a target audience. It is a way of understanding participants’ beliefs. As such, it aligns with a constructivist epistemological perspective. However, there are some ways in which a reasoned action approach may not be fully compatible with certain flavors of constructivism or, more accurately, with situativity theory. This perspective, when applied to education, holds to greater or lesser extents that all learning is situated, that it occurs in specific contexts among particular learners with particular goals in mind. In fact, some have argued that “since every learner will have a unique perspective entering the learning experience and leaving the learning experience, the concept of [a] global learner is not part of the constructivist perspective” (Bednar et al., 1992, p. 24). Conversely, reasoned action theory assumes that a particular model of the participants, a global participant if you will, can be developed and that this model is applicable across a particular homogeneous population.

If those using reasoned action theory really believe that a single model fully captures the richness of individual participant beliefs and those espousing certain variants on constructivism really adhere to the notion that all activity is fully situated and that no generalizations of such situated experiences are possible, then it would be difficult, if not impossible, for these two groups to agree on instructional approaches and

strategies. Beyond these extremes, however, one would hope there is a place where balance can be found between the validity of participant models and the recognized situatedness of all activity. On the one hand, a model of one person, as richly qualitative as it may be, is not terribly useful to developing instruction. On the other hand, a model of an overly generalized audience is not useful either.

Moving beyond these border skirmishes, two opportunities suggest themselves in terms of additional synergies between the theoretical perspectives, especially as they relate to instructional endeavors. The first regards the use of reasoned action theory as part of instructional activities in addition to its use to inform development of those activities. The second relates to the role constructivism can play in reconsidering the dichotomy between knowledge and behavior that pervades much health behavioral research.

First, how might the processes and constructs of the reasoned action theories be used as part of, not simply to inform, the learning process? That is, what if the learning activity itself is comprised of the types of investigations that reasoned action researchers conduct? Would this not be a way to access and perhaps perturb the stories of the individual participants? What if learners engage in elicitation, brainstorm their beliefs, organize them, consider and debate them? What if scaffolding serves to engage learners further in questioning these beliefs? What if such scaffolding also introduces new beliefs, directly or through stories?

Such a perspective suggests that it may be useful to involve learners in telling their stories: to make their beliefs and practices accessible to themselves and to others by inscribing them in some public forum. For the present effort, this could be accomplished through something as straightforward as having a facilitator conduct an elicitation among the participants, not as a tool for creating instruction but as a part of the educational experience. Such an activity would lead to a list of positive and negative

behavioral, normative, and control beliefs. These beliefs would likely differ among the audience, and the differences (as well as the similarities) would present opportunities for stories to be re-constructed in efforts to accommodate or assimilate the differences. Beliefs that are not mentioned in these local settings and that are deemed valuable by the instructional designers and the larger community of practice could be introduced through modeling and mentoring, perhaps by drawing upon locally identified normative influences, as is suggested by behavioral support and change strategies as divergent as peer mediation, natural helper models, and, at least in part, social capital theory.

When local group-oriented activities are not feasible, such processes could be supported through simple interactive or traditional media activities. For example, an engaging snippet of dialogue relevant to the performance or non-performance of an activity, (e.g. “I can’t believe she didn’t take steps to prevent ulcers... now look what happened.”) could be presented and the learner asked to respond to elicitation type questions, either on paper, or interactively. Feedback could be provided. Better yet, an elicitation session, such as the one described for this effort, might be modeled in video.

The second synergistic opportunity presents itself as a series of questions: how should “knowledge” be conceived, what is its relationship to performance, and how are these two questions related to issues in health behavior regarding the apparent lack of association between knowledge of a disease or condition and behavior regarding that disease or condition? In the discussion section of the evaluation, the importance of “knowledge about” a disease, condition, or behavior is discussed at some length. Here, the focus is on the implications of a constructivist epistemological framework for what “knowledge” is and how those implications may inform health behavior researchers as to why “knowledge” by itself is ineffective in changing behavior.

Constructivism matters to health behavioral intervention because it reframes how researchers and developers think about the interaction of the learner with the

learning environment. Interventions predicated on information presentation did not fail because they presented information but rather because that information was introduced in ways that did not pay sufficient attention to how participants would adopt and use that information; that is, the interventions did not consider how perceptions of the information would be idiosyncratically constructed by the participants and how those constructions (stories) either would or would not lead to engagement in activity that aligned with the valued outcomes. That is, it is not (totally) relevant whether some piece of information is objectively "about" a disease or "about" a behavior related to a disease, but rather whether participants perceive a piece of information as relevant to their own behavior and whether that perceived relevance either fosters continuance of a valued behavior (reinforcement, through assimilation—the information fits the learners existing story, providing positive feedback: he or she has been getting it right!) or instigates a change of behavior (introduction of something new or redress of mistaken "knowledge"; the new information perturbs the learner's story in ways which lead to recrafting of his or her story...perhaps, one hopes, then bringing behavior into line—of course, the opposite can happen: behavior leads to change in self-story).

A straightforward (if not quite simple) part of the problem is definitional or semantic: "information" is not the same as "knowledge," although they are frequently used interchangeably. Information exists in the world, but perhaps such information may only be considered knowledge when it is available to a person, and used by that person, for some activity. That is, knowledge is information that is both accessible to an individual and perceived as relevant by that individual in terms of a particular goal: the information is both objectively and subjectively "available" to them. Considered in relation to a narrative perspective on meaning making, the information needs to link with, hook into, people's individual stories in such a way that it perturbs those stories in relationship to specific outcomes, if change is desired, or in ways that inform those

stories, if ongoing impact on understanding and performance is the goal. In fact, the gap between the information present(ed) and learners' personal stories could be considered a type of "cognitive overhead," requiring additional effort to overcome the contextual distances among presented information, personal stories, and targeted activities.

A more complex aspect of the issue of how to consider "knowledge" is that it broadens design issues from *what* is included in a learning environment (i.e. what facts, what behaviors, what skills) and *how* it is included (e.g. framed in terms of specific beliefs and behaviors) to also include the *goals* of the learners. That is, the *how* should also include recognition of the goals of the learner, and changes of those goals if needed. The question is not only how the learner perceives the valued behavior but also how the learner perceives the learning experience itself and its relationship to that valued behavior. As Resnick (1987) harshly pointed out two decades ago, if information is presented to learners in a school-like setting and the application of the information (or skills) in the learning situation is test-like, then it hardly seems surprising if the "learned" information fails to transfer to targeted behaviors and environments.

Knowledge, then, can be thought of as information in use for a specific purpose, in a specific setting, by a particular person, at a particular moment in time. Our behavioral change interventions, by extension, should be about engaging people in knowledgeable, goal-based behaviors through which information and skills may be accessed, and perceived as task relevant, toward the accomplishment of goals that are, in fact, representative of those outcomes that are valued by the researchers, developers, and large community for which the intervention is a means of personal and social change. Such a perspective may inform health behavior change efforts generally, and those predicated on reasoned action theory specifically, by serving as a reminder of the centrality of goals and purposes, which are always in part individual, to the educational experience.

Conclusion

Reasoned action theory and constructivism each informed the instructional design process and also each other. The latter provides a perspective regarding how we make sense of the world; the former provides a psychosocial framework for describing and predicting how such sense-making may lead to behavior. Reasoned action theory supported a constructivist approach to changing behavior by providing theoretical and methodological tools for accessing participants' stories. Influencing these stories as a means of influencing behavior is a central implication of the constructivist epistemological framework. The constructivist perspective enriches reasoned action theory by providing a framework for considering what it means to understand, to believe, and to behave.

The present effort examined several aspects of the integration of these two theoretical perspectives as part of the instructional design of behavioral change materials; however, many questions remain and new ones emerged regarding the use of reasoned action theory to inform instructional design, the application of a constructivist perspective toward belief formation and behavioral change, and the intersection of the two. Moreover, capitalization upon existing communications and behavioral change tools and strategies, including those which target "intervention mapping," is an important related effort that naturally arises as theories of understanding and theories of behavior further suggest tools and strategies for behavioral change. In the end, how do we enable participants to tell their own stories, and then what can be done to perturb them—to foster changes in them that align with broader goals and lead to valued behavioral outcomes?

REFERENCES

- Aizen, I. (2002, September). Constructing a TpB Questionnaire: Conceptual and methodological considerations [Revised January 2006]. Retrieved April 07, 2007, from <http://www.people.umass.edu/aizen/pdf/tpb.measurement.pdf>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes. Special Issue: Theories of cognitive self-regulation*, 50(2), 179-211.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior* (Pbk. ed.). Englewood Cliffs, N.J.: Prentice-Hall.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22(5), 453-474.
- Albarracín, D., Johnson, B. T., Fishbein, M., & Muellerleile, P. A. (2001). Theories of reasoned action and planned behavior as models of condom use: a meta-analysis. *Psychological bulletin*, 127(1), 142-161.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471-499.
- Bandura, A. (1977). *Social Learning Theory*. New York, NY: General Learning Press.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Upper Saddle River, NJ: Prentice-Hall.
- Bandura, A. (1992). Self-efficacy mechanism in psychobiologic functioning. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action* (pp. 355-394). Washington, DC: Hemisphere Publishing.
- Barab, S., & Duffy, T. M. (2000). From practice fields to communities of practice. In D. H. Jonassen & S. M. Land (Eds.), *Theoretical foundations of learning environments* (pp. 25-55). Mahwah, NJ: Lawrence Erlbaum.
- Bednar, A. K., Cunningham, D., Duffy, T. M., & Perry, J. D. (1992). Theory into practice: How do we link? In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation* (pp. 17-34). Hillsdale, NJ, England: Lawrence Erlbaum.
- Brega, A. G., Schlenker, R. E., Hijjazi, K., Neal, S., Belansky, E. S., Talkington, S., et al. (2002). *Study of Medicare home health practice variations: Final report* (No. Contract #HHS-100-95-0045): U.S. Department of Health and Human Services (HHS), Office of Disability, Aging and Long-Term Care Policy (DALTCP), and University of Colorado, Center for Health Policy, August 2002.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated Cognition and the Culture of Learning. *Educational Researcher*, 18(1), 32-42.
- Bruner, J. S. (1961). The act of discovery. *Harvard Educational Review*, 31, 21-32.
- Bruner, J. S. (1985). Models of the learner. *Educational Researcher*, 14(6), 5-8.
- Bruner, J. S. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.
- Bruner, J. S. (1990). *Acts of meaning*. Cambridge, MA: Harvard University Press.
- Bruner, J. S. (1996). *The culture of education*. Cambridge, MA: Harvard University Press.
- Brush, T., & Saye, J. (2001). The Use of Embedded Scaffolds with Hypermedia-Supported Student-Centered Learning. *Journal of Educational Multimedia and Hypermedia*, 10(4), 333-356.
- Buckley, G. I., & Malouff, J. M. (2005). Using modeling and vicarious reinforcement to produce more positive attitudes toward mental health treatment. *Journal*

- of Psychology: Interdisciplinary and Applied*, 139(3), 197-209.
- Burak, L. J. (2002). Predicting Elementary School Teachers' Intentions To Teach Health Education: An Application of the Theory of Planned Behavior. *American Journal of Health Education*, 33(1), 4-9.
- Cappella, J. N., Fishbein, M., Hornik, R., Ahern, R. K., & Sayeed, S. (2001). Using theory to select messages in antidrug media campaigns: Reasoned action and media priming. In *Public Communication Campaigns* (3rd ed., pp. 214-230). Thousand Oaks, CA: Sage.
- Centers for Disease Control and Prevention, Guenther-Grey, C. A., Johnson, W. D., Higgins, D. L., Fishbein, M., & Moseley, R. R. (1996). *Community-level prevention of human immunodeficiency virus infection among high-risk populations: The AIDS Community Demonstration Projects*. 45 (No. RR-6): Morbidity And Mortality Weekly Report: Recommendations and Reports, May 10, 1996.
- Chatzisarantis, N. L. D., Hagger, M. S., Smith, B., & Phoenix, C. (2004). The influences of continuation intentions on execution of social behaviour within the theory of planned behaviour. *British Journal of Social Psychology*, 43(Part 4), 551-583.
- Clarke, M., & Kadhom, H. M. (1988). The nursing prevention of pressure sores in hospital and community patients. *Journal of Advanced Nursing*, 13(3), 365-373.
- Cockburn, A. (2000). *Writing effective use cases*. Boston, MA: Addison-Wesley Longman Publishing.
- Cognition and Technology Group at Vanderbilt University (CTGV). (1990). Anchored instruction and its relationship to situated cognition. *Educational Researcher*, 19(6), 2-10.
- Cognition and Technology Group at Vanderbilt University (CTGV). (1993). Anchored instruction and situated cognition revisited. *Educational Technology*, 33(3), 52-70.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ, England: Lawrence Erlbaum Associates.
- Collins, A., Brown, J. S., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 453-494). Hillsdale, NJ, England: Lawrence Erlbaum.
- Conner, M., & Norman, P. (1995). The role of social cognition in health behaviours. In M. Conner & P. Norman (Eds.), *Predicting health behaviour: Research and practice with social cognition models*. (pp. 1-22). Buckingham, England: Open University Press.
- Conner, M., Povey, R., Sparks, P., James, R., & Shepherd, R. (2003). Moderating role of attitudinal ambivalence within the theory of planned behaviour. *British Journal of Social Psychology*, 42(1), 75-94.
- Conner, M., & Sparks, P. (1995). The theory of planned behaviour and health behaviours. In M. Conner & P. Norman (Eds.), *Predicting health behaviour: Research and practice with social cognition models*. (pp. 121-162). Buckingham, England: Open University Press.
- D'Amico, E. J., Neilands, T. B., & Zambano, R. (2001). Power analysis for multivariate and repeated measures designs: A flexible approach using the SPSS MANOVA procedure. *Behavior Research Methods, Instruments & Computers*, 33(4), 479-484.
- Davis, L. E., Ajzen, I., Saunders, J., & Williams, T. (2002). The Decision of African

- American Students To Complete High School: An Application of the Theory of Planned Behavior. *Journal of Educational Psychology*, 94(4), 810-819.
- Dennett, D. C. (1987). *The intentional stance*. Cambridge, MA: MIT Press.
- Dennett, D. C. (1989). Cognitive ethology: Hunting for bargains or a wild goose chase? In A. Montefiore & D. Noble (Eds.), *Goals, no-goals and own goals: A debate on goal-directed and intentional behaviour* (pp. 320). London: Unwin Hyman.
- Dennett, D. C. (1991). Two contrasts: Folk craft versus folk science, and belief versus opinion. In J. D. Greenwood (Ed.), *The future of folk psychology: Intentionality and cognitive science* (pp. 135-148). New York, NY: Cambridge University Press.
- Dennett, D. C. (1998). *Brainchildren: Essays on designing minds [Representation and mind]*. Cambridge, MA: MIT Press.
- Derry, S. J. (1992). Beyond symbolic processing: Expanding horizons for educational psychology. *Journal of Educational Psychology*, 84(4), 413-418.
- Díaz, R. M., Neal, C. J., & Amaya-Williams, M. (1992). The social origins of self-regulation. In L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 127-154). New York, NY: Cambridge University Press.
- Duffy, T. M., & Cunningham, D. J. (1996). Constructivism: Implications for the design and delivery of instruction. In D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 170-199). New York: Simon & Schuster Macmillan.
- Duffy, T. M., & Jonassen, D. H. (Eds.). (1992). *Constructivism and the technology of instruction: A conversation*. Hillsdale, NJ, England: Lawrence Erlbaum.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace College Publishers.
- Fazio, R. H., & Zanna, M. P. (1981). Direct experience and attitude-behavior consistency. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 14, pp. 161-202). New York, NY: Academic Press.
- Ferrell, B. A., Josephson, K., Norvid, P., & Alcorn, H. (2000). Pressure ulcers among patients admitted to home care. *Journal of the American Geriatrics Society*, 48(9), 1042-1047.
- Fischer, E. H., & Turner, J. I. (1970). Orientations to seeking professional help: Development and research utility of an attitude scale. *Journal of Consulting and Clinical Psychology*, 35(1, Pt. 1), 79-90.
- Fishbein, M. (2000). The role of theory in HIV prevention. *AIDS Care*, 12(3), 273-278.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior : an introduction to theory and research*. Reading, Mass.: Addison-Wesley Pub. Co.
- Fishbein, M., & Cappella, J. N. (2006). The role of theory in developing effective health communications. *Journal of Communication*, 56(Supp. 1), S1-S17.
- Fishbein, M., & Middlestadt, S. E. (1987). Using the theory of reasoned action to develop educational interventions: applications to illicit drug use. *Health Education Research*, 2(4), 361-371.
- Fishbein, M., von Haften, I., & Appleyard, J. (2001). The role of theory in developing effective interventions: Implications from Project SAFER. *Psychology, Health & Medicine*, 6(2), 223-228.
- Fishbein, M., & Yzer, M. C. (2003). Using theory to design effective health behavior interventions. *Communication Theory*, 13(2), 164-183.

- Fisher, J. D., & Fisher, W. A. (2002). The Information-Motivation-Behavioral Skills Model. In R. J. DiClemente, R. A. Crosby & M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research* (pp. 40-70). San Francisco, CA: Jossey Bass.
- Francis, J. J., Johnston, M., Eccles, M. P., Grimshaw, J., & Kaner, E. F. S. (2004, May). *Measurement issues in the Theory of Planned Behaviour: A supplement to the manual for constructing questionnaires based on the Theory of Planned Behaviour*. Newcastle upon Tyne, UK: University of Newcastle, Centre for Health Services Research.
- Freire, P. (1970). *Pedagogy of the oppressed*. New York: Herder and Herder.
- Giles, M., & Larmour, S. (2000). The theory of planned behavior: A conceptual framework to view the career development of women. *Journal of Applied Social Psychology, 30*(10), 2137-2157.
- Godin, G., Conner, M., & Sheeran, P. (2005). Bridging the intention-behaviour 'gap': the role of moral norm. *British Journal of Social Psychology, 44*(4), 497-512.
- Goldenberg, D., & Laschinger, H. (1991). Attitudes and normative beliefs of nursing students as predictors of intended care behaviors with AIDS patients: a test of the Ajzen-Fishbein Theory of Reasoned Action. *Journal of Nursing Education, 30*(3), 119-126.
- Goldsworthy, R. (2000). Bridging the gap: Implications of conversation for multimedia development. *Journal of Educational Multimedia and Hypermedia 9*(2), 99-114.
- Goldsworthy, R. (2006, November 4-8). *Using media to support FASD awareness and treatment*. Paper presented at the APHA 134th Annual Meeting and Exposition: Public Health and Human Rights.
- Goldsworthy, R., Fortenberry, J. D., & Sayegh, M. A. (2006, May). *Attitudes and beliefs of pharmacists-in-training regarding HIV/STD counseling*. Paper presented at the National STD Prevention Conference: Beyond *The Hidden Epidemic: Evolution or Revolution?*, Jacksonville, FL.
- Goldsworthy, R., & Kaplan, B. (2006). Warning symbol development: A case study on teratogen symbol design and evaluation. In M. S. Wogalter (Ed.), *Handbook of warnings. Human factors and ergonomics* (pp. 739-754). Mahwah, NJ: Lawrence Erlbaum.
- Goldsworthy, R., & Schwartz, N. (in press). Preliminary development and evaluation of a multimedia enhanced HIVSTD curriculum for middle schools. *Journal of School Health*.
- Grabinger, R. S. (1996). Rich environments for active learning. In D. H. Jonassen (Ed.), *Handbook of Research for Educational Communications and Technology: A Project of the Association for Educational Communications and Technology* (pp. 665-692). New York: Macmillan.
- Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. *Discourse Processes, 38*(2), 247-266.
- Green, M. C. (2006). Narratives and Cancer Communication. *Journal of Communication, 56*, S163-S183.
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701-721.
- Greenfield, P. M. (1984). A theory of the teacher in the learning activities of everyday life. In B. Rogoff & J. Lave (Eds.), *Everyday cognition: Its development in social context* (pp. 117-138). Cambridge, MA: Harvard University Press.

- Guzdial, M. (1994). Software-realized scaffolding to facilitate programming for science learning. *Interactive Learning Environments*, 4(1), 1-44.
- Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H. (2002). A Meta-Analytic Review of the Theories of Reasoned Action and Planned Behavior in Physical Activity: Predictive Validity and the Contribution of Additional Variables. *Journal of Sport & Exercise Psychology*, 24(1), 3-32.
- Hair, J. F., Black, B., Babin, B., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.
- Hardeman, W., Johnston, M., Johnston, D. W., Bonetti, D., Wareham, N. J., & Kinmonth, A. L. (2002). Application of the Theory of Planned Behaviour in behaviour change interventions: a systematic review. *Psychology & Health*, 17(2), 123-158.
- Heidegger, M. (1962). *Being and time* (J. Macquarrie & E. Robinson, Trans.). New York: Harper and Row.
- Highhouse, S., Lievens, F., & Sinar, E. F. (2003). Measuring attraction to organizations. *Educational and Psychological Measurement*, 63(6), 986.
- Hogben, M., Lawrence, J. S. S., Hennessy, M. H., & Eldridge, G. D. (2003). Using the theory of planned behavior to understand the STD risk behaviors of incarcerated women. *Criminal Justice and Behavior*, 30(2), 187.
- Honebein, P. C., Duffy, T. M., & Fishman, B. J. (1993). Constructivism and the design of learning environments: Context and authentic activities for learning. In T. M. Duffy, J. Lowyck & D. H. Jonassen (Eds.), *Designing environments for constructive learning* (pp. 87-108). Heidelberg, FRG: Springer-Verlag.
- Hornik, R., & Woolf, K. D. (1999). Using cross-sectional surveys to plan message strategies. *Social Marketing Quarterly*, 5(2), 34-41.
- Humphreys, A. S., Thompson, N. J., & Miner, K. R. (1998). Assessment of breastfeeding intention using the Transtheoretical Model and the Theory of Reasoned Action. *Health Education Research*, 13(3), 331-341.
- Jackson, C., Lawton, R., Knapp, P., Raynor, D. K., Conner, M., Lowe, C., et al. (2005). Beyond intention: do specific plans increase health behaviours in patients in primary care? A study of fruit and vegetable consumption. *Social Science & Medicine*, 60(10), 2383-2391.
- Kaiser, F. (2006). A moral extension of the theory of planned behavior: Norms and anticipated feelings of regret in conservationism. *Personality & Individual Differences*, 41(1), 71-81.
- Kamb, M. L., Fishbein, M., Douglas, J. M., Jr., Rhodes, F., Rogers, J., Bolan, G., et al. (1998). Efficacy of risk-reduction counseling to prevent Human Immunodeficiency Virus and sexually transmitted diseases: A randomized controlled trial. *JAMA*, 280(13), 1161-1167.
- Kirk, R. E. (1995). *Experimental design: Procedures for the behavioral sciences* (3rd ed.). Belmont, CA: Thomson Brooks/Cole Publishing.
- Kloebler-Tarver, A. S., Thompson, N. J., & Miner, K. R. (2002). Intent to breast-feed: the impact of attitudes, norms, parity, and experience. *American journal of health behavior*, 26(3), 182-187.
- Koole, S., & Spijker, M. V. t. (2000). Overcoming the planning fallacy through willpower: effects of implementation intentions on actual and predicted task-completion times. *European Journal of Social Psychology*, 30(6), 873-888.
- Kuhn, T. S. (1962). *The structure of scientific revolutions*. Chicago, IL: University of Chicago Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: legitimate peripheral*

- participation*. Cambridge, MA: Cambridge Press.
- Linn, M. C. (2000). Designing the knowledge integration environment [Special issue: The knowledge integration environment]. *International Journal of Science Education*, 22(8), 781-796.
- Manangan, L. P., Pearson, M. L., Tokars, J. I., Miller, E., & Jarvis, W. R. (2002). Feasibility of national surveillance of health-care-associated infections in home-care settings. *Emerging Infectious Diseases*, 8(3), 233-236.
- Michie, S., & Abraham, C. (2004). Interventions to change health behaviours: Evidence-based or evidence-inspired? *Psychology & Health*, 19(1), 29-49.
- Molenda, M. (2003). In search of the elusive ADDIE Model. *Performance Improvement*, 42(5), 34-36.
- Montano, D. E., Kasprzyk, D., & Taplin, S. H. (2002). The Theory of Reasoned Action and the Theory of Planned Behavior. In K. Glanz, B. K. Rimer & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed., pp. 67-98). San Francisco: Jossey-Bass Publishers.
- Moore, Z., & Price, P. (2004). Nurses' attitudes, behaviours and perceived barriers toward pressure ulcer prevention. *Journal of Clinical Nursing*, 13(8), 942-951.
- Muller, K. E., LaVange, L. M., Ramey, S. L., & Ramey, C. T. (1992). Power calculations for general linear multivariate models including repeated measures applications. *Journal of the American Statistical Association*, 87(420), 1209-1226.
- Nash, R., Edwards, H., & Nebauer, M. (1993). Effect of attitudes, subjective norms and perceived control on nurses' intention to assess patients' pain. *Journal of Advanced Nursing*, 18(6), 941-947.
- National Pressure Ulcer Advisory Panel Board of Directors. (1989). Pressure ulcers: Incidence, economics, risk assessment. Consensus development conference statement. *Decubitus*, 2(2), 24-28.
- National Pressure Ulcer Advisory Panel Board of Directors. (2001). Pressure ulcers in America: Prevalence, incidence, and implications for the future: An Executive Summary of the National Pressure Ulcer Advisory Panel Monograph. *Advances in Skin & Wound Care*, 14(4, part 1), 208-115.
- National Pressure Ulcer Advisory Panel Board of Directors., & Cuddigan, J., Ayello, E.A., Sussman, C. (Eds.), (2001). *Pressure ulcers in America: Prevalence, incidence, and implications for the future*. Reston, VA: NPUAP.
- Nielsen, J. (1993). *Usability engineering*. Boston, MA: Academic Press.
- O'Brien, R., & Muller, K. E. (1993). Unified power analysis for t-tests through multivariate hypotheses. In L. K. Edwards (Ed.), *Applied analysis of variance in behavioral science. Statistics: Textbooks and monographs, Vol. 137* (pp. 297-344). New York, NY: Marcel Dekker.
- Orbell, S., Hodgkins, S., & Sheeran, P. (1997). Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin*, 23(9), 945-954.
- Palincsar, A. S. (1986). The role of dialogue in providing scaffolded instruction. *Educational Psychologist*, 21(1&2), 73-98.
- Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1(2), 117-175.
- Partin, M. R. (2006). Commentary: A Challenging But Critical Endeavor: Balancing Responsiveness and Rigor in Community-Based Participatory Research. *Health Education & Behavior*, 33(5), 574-577.

- Petraglia, J. (1998). The real world on a short leash: The (mis)application of constructivism to the design of educational technology. *Educational Technology Research and Development*, 46(3), 53-65.
- Piaget, J., & Inhelder, B. (1969). *The psychology of the child*. New York, NY: Basic Books.
- Poulou, M., & Norwich, B. (2002). Cognitive, emotional and behavioural responses to students with emotional and behavioural difficulties: A model of decision-making. *British Educational Research Journal*, 28(1), 111-138.
- Renfro, D. H., O'Sullivan, P. S., & McGee, G. W. (1990). The relationship of attitude, subjective norm, and behavioral intent to the documentation behavior of nurses. *Scholarly Inquiry for Nursing Practice*, 4(1), 47-60.
- Resnick, L. B. (1987). The 1987 presidential address: Learning in school and out. *Educational Researcher*, 16(9), 13-20, 54.
- Roelands, M., Van Oost, P., Depoorter, A., & Verloo, H. (2005). Knowing the diagnosis and counselling the relatives of a person with dementia: the perspective of home nurses and home care workers in Belgium. *Health & Social Care in the Community*, 13(2), 112-124.
- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Saettler, L. P. (1990). *The evolution of American educational technology* (Revised ed.). Englewood, CO: Libraries Unlimited.
- Salomon, G., Globerson, T., & Guterman, E. (1989). The computer as a zone of proximal development: Internalizing reading-related metacognitions from a reading partner. *Journal of Educational Psychology*, 81(4), 620-627.
- Savery, J. R., & Duffy, T. M. (1996). Problem-Based learning: An instructional model and its constructivist framework. In B. G. Wilson (Ed.), *Constructivist learning environments: Case studies in instructional design* (pp. 135-148). Englewood Cliffs, NJ: Educational Technology Publications.
- Schiffman, S. S. (1995). Instructional systems design: Five views of the field In G. J. Anglin (Ed.), *Instructional technology: Past, present, and future* (2nd ed.). Englewood, CO: Libraries Unlimited.
- Schoenfeld, A. H. (1996). In fostering communities of inquiry, must it matter that the teacher knows "the answer"? *For the Learning of Mathematics*, 16(3), 11-16.
- Schrivers, K. A. (1997). *Dynamics in document design: Creating text for readers*. New York, NY: Wiley.
- Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325-343.
- Simonson, M. R., & Maushak, N. (1996). Instructional technology and attitude change. In D. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 984-1016). New York: Macmillan Library Reference USA.
- Strange, J. J., & Leung, C. C. (1999). How anecdotal accounts in news and in fiction can influence judgments of a social problem's urgency, causes, and cures. *Personality and Social Psychology Bulletin*, 25(4), 436-449.
- Sutton, S. (1987). Social-psychological approaches to understanding addictive behaviours: Attitude-behaviour and decision-making models. *British Journal of Addiction. Special Issue: Psychology and addiction*, 82(4), 355-370.

- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn and Bacon.
- Tharp, R. (1993). Institutional and social context of educational practice and reform. In E. A. Forman, N. Minick & C. A. Stone (Eds.), *Contexts for learning: Sociocultural dynamics in children's development* (pp. 269-282). Cary, NC: Oxford University Press.
- Tolma, E. L., Reininger, B. M., Ureda, J., & Evans, A. (2003). Cognitive motivations associated with screening mammography in Cyprus. *Preventive medicine, 36*(3), 363-373.
- Trafimow, D., Finlay, K. A., Sheeran, P., & Conner, M. (2002). Evidence that perceived behavioural control is a multidimensional construct: Perceived control and perceived difficulty. *British Journal of Social Psychology, 41*(1), 101-121.
- Triandis, H. C. (1977). *Interpersonal behavior*. Belmont, CA: Wadsworth Publishing Company.
- U.S. Department of Health and Human Services. (2000, November). *Healthy People 2010 (2nd ed.) With understanding and improving health and objectives for improving health, 2 vol.* Washington, DC: U.S. Government Printing Office (GPO).
- Vermette, L., & Godin, G. (1996). Nurses' intentions to provide home care: the impact of AIDS and homosexuality. *AIDS Care, 8*(4), 479-488.
- Vitz, P. C. (1990). The use of stories in moral development: New psychological reasons for an old education method. *American Psychologist, 45*(6), 709-720.
- Von Glasersfeld, E. (1989). Cognition, construction of knowledge, and teaching. *Synthese, 80*(1), 121-140. Reprinted in: M. R. Matthews (Ed.) *History, philosophy, and science teaching*. New York: Teachers College Press, 1991.
- Von Glasersfeld, E. (1993). Questions and answers about radical constructivism. In K. Tobin (Ed.), *The practice of constructivism in science education* (pp. 23-38). Washington, DC: AAAS Publications.
- Von Glasersfeld, E. (1995). A constructivist approach to teaching. In L. P. Steffe & J. Gale (Eds.), *Constructivism in education* (pp. 3-15). Hillsdale, NJ: Lawrence Erlbaum.
- von Haften, I., Fishbein, M., Kasprzyk, D., & Montano, D. (2001). Analyzing data to obtain information to design targeted interventions. *Psychology, Health & Medicine, 6*(2), 151-164.
- Vrendenburg, K., Isensee, S., & Righi, C. (2002). *User-centered design: An integrated approach*. Upper Saddle River, NJ: Prentice-Hall.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Webb, T. L., & Sheeran, P. (2005). Integrating concepts from goal theories to understand the achievement of personal goals. *European Journal of Social Psychology, 35*(1), 69-96.
- Webb, T. L., & Sheeran, P. (2006). Does Changing Behavioral Intentions Engender Behavior Change? A Meta-Analysis of the Experimental Evidence. *Psychological Bulletin, 132*(2), 249-268.
- Weinstein, N. D., & Sandman, P. M. (2002). The Precaution Adoption Process Model. In K. Glanz, B. K. Rimer & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed., pp. 121-143). San Francisco, CA: Jossey-Bass.
- Wheeler, S. C., Green, M. C., & Brock, T. C. (1999). Fictional narratives change

- beliefs: Replications of Prentice, Gerrig, & Bailis (1997) with mixed corroboration. *Psychonomic Bulletin and Review*, 6(1), 136-141.
- White, K. M., Terry, D. J., & Hogg, M. A. (1994). Safer sex behavior: The role of attitudes, norms, and control factors. *Journal of Applied Social Psychology*, 24(24), 2164-2192.
- Whitehead, A. N. (1929). *The aims of education and other essays*. New York, NY: MacMillan.
- Winn, W. (1990). Some implications of cognitive theory for instructional design. *Instructional Science*, 19(1), 53-69.
- Wittgenstein, L. (1968). *Philosophical investigations* (G. E. M. Anscombe, Trans. 3rd ed.). Oxford: Blackwell.
- Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17(2), 89-100.

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol.....2

(2) Survey Stage

- a. Intake screening instrument..... 11
- b. Survey Questionnaire..... 15

(3) Evaluation Stage

- a. Intake screening instrument.....24
- b. Pre-evaluation measure 28
- c. Post-evaluation measure (experimental—includes usability) .37
- d. Post-evaluation measure (control—no usability) 46

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol

(2) Survey Stage

- a. Intake screening instrument
- b. Survey Questionnaire

(3) Evaluation Stage

- a. Intake screening instrument
- b. Pre-evaluation measure
- c. Post-evaluation measure (experimental—includes usability)
- d. Post-evaluation measure (control—no usability)

Interviewer: _____

Date: _____

I.D. # _____

**MX#04056 – Home Healthcare Aides
SCREENER AND ELICITATION INTERVIEW GUIDE**

Hello. This is _____ and I'm calling on behalf of The Matrix Group, a market research firm. We are conducting research funded by the National Institutes of Health. We are trying to understand aspects of home health care in order to develop a multimedia-training package for home healthcare workers. Would you be willing to participate in an interview? Based upon your responses to the following questions, you could be asked to participate in a paid research study, upon which you would be compensated for your time. I want you to know your answers are completely confidential, you will never be identified individually and your information will not be used for any purpose other than understanding how to make a good training package. May I ask you a few questions?

1. Do you currently work in the field of home healthcare? (By that I mean do you regularly visit and care for patients in their homes?)

_____ Yes
_____ No **THANK & TERMINATE**

2. Do you provide "hands-on" personal care for homebound patients, for example bathing, repositioning, feeding, dressing, or other ADL (assisted daily living) care?

_____ Yes
_____ No **THANK & TERMINATE**

3. How long have you worked in the home healthcare field? **(RECORD # OF YEARS)** _____
(TERMINATE IF LESS THAN THREE MONTHS)

4. What types of hands-on care do you provide? _____

4. Are you licensed or certified in a field related to your work in home healthcare?

_____ Yes >>**ASK Q4A & 4B** _____ No

4A. What is your licensing or credential? _____

4B. When did you receive or last update the license or credential?

_____ Within 30 days _____ Within 1 year _____ Within 5 years
_____ Within 6 months _____ Within 2 years _____ Longer than 5 years

5. Have you participated in any training for your role as a home health care provider?

_____ Yes >>**ASK Q5A** _____ No

5A. If so, what type of training and how much?	Type	How Much
_____	_____	_____
_____	_____	_____
_____	_____	_____

7. What is the title of your current position? _____

8. How would you describe your job responsibilities? _____

9. Is changing a wound dressing a part of your job responsibilities? (That is, would you ever be called upon to do it?) _____ Yes _____ No _____ Not Sure

10. Have you ever changed a wound dressing? _____ Yes >>>ASK Q10A _____ No

10A. What steps do you take in changing in a wound dressing? _____

11 What company or organization do you work for? _____

12. **FOR ARTICULATION SCREENING:** How did you get involved in this field of work? _____

13. What is your age? (**Mark the category into which the response falls**)

_____ 18-24 _____ 35-44 _____ 55-64
_____ 25-34 _____ 45-54 _____ Over 65

14. Record Gender (**BY OBSERVATION**)

_____ Male _____ Female

15. What is the highest level of education you have completed?

_____ Some high school or less _____ Vocational or technical school
_____ High school graduate _____ College Graduate
_____ Some college _____ Graduate School

16. What is your race or racial identity? **READ IF NECESSARY**

_____ Caucasian/White
_____ African-American/Black
_____ Asian-American
_____ American Indian/Alaskan native
_____ Hawaiian or other pacific islander
_____ Other (Specify: _____)

If response is Hispanic, Which of the above categories they consider their primary heritage other than Hispanic? **If they insist on Hispanic**, put it in other. Mark the next answer as well.

17. Do you consider yourself Hispanic?

_____ Yes
_____ No

- | | | |
|---|--|--|
| <p>18. Do you have access to a computer in your home?
 ___ Yes >>ASK Q16A
 ___ No</p> | | <p>16A. If yes, does it have high-speed Internet?
 ___ Yes
 ___ No</p> |
| <p>19. Do you have access to a computer at work?
 ___ Yes >>ASK Q17A
 ___ No</p> | | <p>17A. If yes, does it have high-speed Internet?
 ___ Yes
 ___ No</p> |

Elicitation Section—CONTINUE OR SET UP TIME FOR INTERVIEW

TIME: _____ DAY: _____ DATE: _____

Thank you for your help so far. The remainder of this interview will ask you a series of open questions. They are about a particular health problem. The information you provide will help the researchers better create educational software that will meet the needs of people like yourself. The questions are designed to find out how you feel about the health problem and what, if anything, you presently do about it. It is perfectly fine if you know nothing about the topic and don't do anything about it. There are NO right or wrong answers, and your responses are completely confidential and will never be shared with anyone.

1. Do you know what a pressure ulcer is? Yes O 1 >>ASK 1A No O 2 >>ASK Q1B

IF YES - 1A. In your own words, please tell me what it is and what causes it. _____

 _____ (GO TO 2)

IF NO - 1B. A pressure ulcer is also known as a bed sore, do you know what a bed sore is?

- Yes O 1 >>ASK 1C No..... O 2 >>ASK Q1D

IF YES 1C - What is it? _____
 _____ (GO TO 2)

IF NO 1D – [ALSO READ FOR ALL] - Pressure ulcers are areas of injured skin and tissue that are caused by sitting or lying in one position for too long. The pressure can cut off the blood supply to the skin and the tissues under the skin, causing them to die. When this happens, a sore can form. Pressure ulcers are also called bed sores, pressure sores and decubitus ulcers.

Now, we want to ask you some questions about pressure ulcers/bed sores

2. Do you look for signs that a patient is at risk for developing a pressure ulcer or actually has a developing pressure ulcer?

- Yes O 1 >>ASK 2A, B, C, D No..... O 2 >>GO TO Q3

2A. Under what circumstances do you look for signs? _____

2B. What, in particular, do you look for? _____

2C. How do you look for signs? _____

2D. How often do check for signs? _____

3. Do you **take steps [action]** to reduce the likelihood of your patients getting pressure ulcers?

Yes O 1 >>**ASK 3A, 3B** No..... O 2 >>**GO TO 4**

3A. Under what circumstances do you take steps? [to reduce the likelihood of your patients getting pressure ulcers]? _____

3B. What types of steps do you take? _____

For the next group of questions, I'll ask you to take various perspectives on some issues. First, I'll ask you to take the point of view of your client or patient. Next, I'll ask for your insight regarding your own point of view (as caregiver) [and/or business owner]. **[Don't read the rest if SELF EMPLOYED]** And finally, I'll ask you a few questions to be answered from the point of view of your employer. So...

4. From your **patient's point of view...**[**PROBE ALL RESPONSES**]

4A. What are some possible **benefits for your patient** that you are **looking for** signs that he or she is at risk or might have a pressure ulcer? That is, why might they want you to do it? _____

PROBE with: Can you think of any other positives or good things? _____

4B. How about the **positives** associated with you **taking steps [action]** to reduce the chances of your patient getting a bed sore? _____

PROBE with: Can you think of any other good things? _____

4C. What are some possible **problems or concerns** your patient might have with you **looking for** signs of a pressure ulcer? That is, why might they **NOT** want you to do it? _____

PROBE with: Anything else? _____

4D. Can you think of any problems your patient might have with you **taking steps [action]** to reduce their likelihood of getting a pressure ulcer? _____

PROBE with: Any other disadvantages [difficulties/issues] you can think of? _____

5. Now from your **own point of view, as a caregiver**, [if self employed – **and business owner**]

5A. By **looking for signs** that your patient is at risk of bed sores, what are some **positive outcomes for you as the caregiver**? That is, why might you want to do it? _____

PROBE with: Any other benefits from your standpoint? _____

5B. What are some of the **positives** that come from you **taking steps [action]** to reduce the likelihood of your patients getting pressure ulcers? _____

PROBE with: Any other benefits? _____

5C. What are some possible **concerns** you have with **looking for** signs that your patient is at risk for or has a pressure ulcer? That is, why might you **NOT** want to do it [what might discourage you from looking]? _____

PROBE with: Any other difficulties [disadvantages or issues] you might have with looking for these sores? _____

5D. How about any problems [concerns or obstacles] you might face with **taking steps [action]** to reduce their likelihood of getting pressure ulcers? _____

PROBE with: Any other disadvantages [difficulties or issues]? _____

SKIP TO Q7 IF SELF-EMPLOYED

6. And finally, from your **employer's point of view...**

6A. If you are to look for signs of pressure ulcers, what are some possible benefits for your employer? That is, why might your employer want you to do it? _____

PROBE with: Any other plusses or positive outcomes? _____

6B. What are the positives for your employer with you taking steps [action] toward reducing the chances your patient might get a pressure ulcer? _____

PROBE with: Any other benefits to your employer? _____

6C. For your employer, what problems or issues might arise if you were to look for signs that your patient is at risk? That is, why might they NOT want you to do it? _____

PROBE with: Any other disadvantages? _____

6D. Now if you were to take steps [action] toward reducing the chances that your patient might acquire a pressure ulcer, what problems could arise for your employer? _____

PROBE with: Anything else [difficulties, disadvantages or issues]? _____

INFLUENCES

7A. Now, thinking about people, groups, or organizations, who might encourage or increase the likelihood you would look for signs that your patient is at risk for developing a pressure ulcer? PROBE

7B. How about those who might **positively** influence your likelihood of **taking steps [action]** to head off this problem? **PROBE** _____

8A. How about those who might **negatively influence** or discourage you from **looking for** signs?

PROBE _____

8B. And who might keep you from **taking steps [action]** to reduce the chances of this problem? **PROBE**

BARRIERS

9A. Thinking of the environment where you work, what type of **surroundings or situations** make it **easier to look for** signs? **PROBE** _____

9B. Which ones make it **easier to take steps [action]** to reduce the chances of your patient getting bed sores? **PROBE** _____

10A. Now which **surroundings or situations** make it **harder to look for** signs of pressure ulcers?

PROBE _____

10B. Which ones make it **harder to take steps [action]** to reduce the chances of your patients getting pressure ulcers? **PROBE** _____

11. And finally, is there anything else you would like to add to or change regarding your responses? _____

Okay, the next step in this process involves you giving us feedback on a copy of the summarized results of this survey. We would like you to review it and comment on whether you think it covers everything you had in mind. When you have reviewed the material and given us your input, please send the material back to us in the postage paid envelope we provide. Once we receive your feedback, we will be sending you a \$25 dollar check as a thank you for your input and assistance with our research.

In order to do this, may I please have your address and contact information?

Name: _____		
Address: _____		
City: _____	State: _____	Zip: _____
Home phone: _____	Work / Cell phone: _____	
Email: _____		

We will be conducting an evaluation of the interactive module in approximately 6 months. Would you be willing to try the program and provide feedback? You will receive additional compensation and have the option of receiving continuing education credits.

Yes 1

No..... 2

Thank you and have a great day!

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol

(2) Survey Stage

- a. **Intake screening instrument**
- b. Survey Questionnaire

(3) Evaluation Stage

- a. Intake screening instrument
- b. Pre-evaluation measure
- c. Post-evaluation measure (experimental—includes usability)
- d. Post-evaluation measure (control—no usability)

I.D. # _____

Interviewer: _____

Date: _____

AEI – Home Healthcare Aides Survey Screener

Hello. This is _____ and I'm calling on behalf of The Matrix Group, a market research firm. We are conducting a research study funded by the National Institutes of Health. The research will help us build a multimedia training package for home health care workers like yourself, and we need your help to understand your needs. If you are eligible to participate, you will be compensated for your time. Your answers are completely confidential and you will not be identified individually. May I ask you a few background questions to see if you qualify?

1. Do you currently work in the field of home healthcare? (By that I mean do you regularly visit and care for patients in their homes?)

Yes..... O 1 No..... O 2 **THANK & TERMINATE**

2. Do you provide "hands-on" personal care for homebound patients, for example bathing, repositioning, feeding, dressing, or other assistance with daily living (ADL)?

Yes..... O 1 No..... O 2 **THANK & TERMINATE**

3. What types of hands-on care do you provide? **CHECK ALL THAT APPLY**

- Bathing/Personal hygiene O 1
- Transferring from one place to another O 2
- Repositioning..... O 3
- Check vital signs..... O 4
- Dressing/Change clothes O 5
- Feeding/Cooking..... O 6
- Assist with wound care/Replace dressing.. O 7
- Change linens/Make bed..... O 8
- Cleaning/Laundry..... O 9
- Cooking..... O 10
- Run errands O 11
- Help patient walk/move around O 12
- Give medication O 13
- Drive them places..... O 14
- Exercise range of motion..... O 15
- Massage/Rub lotion into skin..... O 16

Other (Specify: _____)

4. Do you consider yourself Hispanic?

Yes..... O 1 No..... O 2

5. What is your race or racial identity? **IF HISPANIC FOR Q4 - ASK: Which, if any, of the following categories do you consider your primary heritage other than Hispanic?**

- Caucasian/White..... O 1
- African-American/Black..... O 2
- Asian-American..... O 3
- American Indian/Alaskan native O 4
- Hawaiian or other pacific islander..... O 5
- Other (Specify: _____)

6. How long have you worked in the home healthcare field? **(RECORD # OF YEARS)** _____

7. What is the title of your current position? **DO NOT READ**

- Home health aide/Certified home health aide..... O 1
- Home care aide O 2
- Certified Nurse's Assistant/Technician O 3

Other (Specify: _____)

8. **FOR ARTICULATION SCREENING:** How did you get involved in this field of work? _____

9. Are you licensed or certified in a field related to your work in home healthcare?

Yes O 1 >>ASK Q9A & 9B No O 2

9A. What is your licensing or credential? _____

9B. When did you receive or last update the license or credential? DO NOT READ

Within 30 days..... O 1 Within 1 year..... O 3 Within 5 years..... O 5
Within 6 months O 2 Within 2 years O 4 More than 5 years ago... O 6

10. Have you participated in any training for your role as a home healthcare provider?

Yes O 1 >>ASK Q10A No..... O 2

10A. What type of training and how much? Type How Much

11. How would you describe your job responsibilities? DO NOT READ - CHECK ALL THAT APPLY

Taking care of/Providing care for patient.. O 1 Provide assistance with daily living (ADL) O 4
Companionship/Friendship..... O 2 Personal care (bathing, dressing, feeding, etc.) O 5
Social worker O 3 Housekeeping..... O 6
Medical care (wound care, looking for pressure ulcers)..... O 7

Other (Specify: _____)

12. How satisfied are you with this occupation? Would you say you are... READ LIST

Extremely Satisfied..... O 1 Somewhat Dissatisfied O 4
Somewhat Satisfied O 2 Extremely Dissatisfied O 5
Neither Satisfied No Opinion..... O 0 DO NOT READ
nor Dissatisfied..... O 3

13. Do you consider your current position or occupation...READ LIST

Short-term employment O 1
A transitional position (eventually moving on to something else) .. O 2
A long-term career..... O 3

14. Which of the following categories best describes your income from this occupation in 2004? READ LIST

Under \$10,000 O 1 \$20,001-\$30,000..... O 3 \$40,001-\$50,000 O 5
\$10,001 to \$20,000 O 2 \$30,001-\$40,000..... O 4 \$50,000 or more O 6
Refused O 0
DO NOT READ

15. What company or organization do you work for? _____

16. Into which of the following categories does your age fall? READ LIST

Under 18 O 1 35-44 O 4 Over 65 O 7
18-24..... O 2 45-54 O 5
25-34..... O 3 55-64 O 6

17. Record Gender (BY OBSERVATION)

Male..... O 1 Female..... O 2

18. What is the highest level of education you have completed? **DO NOT READ**

- Some high school or less 1 Vocational or technical school .. 4
High school graduate 2 College Graduate 5
Some college 3 Graduate School 6
Other (Specify: _____)

19. Which of the following do you have access to *in your home*? **READ LIST-MARK ALL THAT APPLY**

- Computer 1 A VCR..... 4
High-speed internet..... 2 A DVD player..... 5
Dial-up internet (slow)..... 3

20. Which of the following do you have access to *at your work place*? **READ LIST-MARK ALL THAT APPLY**

- Computer 1 A VCR..... 4
High-speed internet..... 2 A DVD player..... 5
Dial-up internet (slow)..... 3

According to your responses, we would like to invite you to participate in this project. You have two options with which you can complete the survey. On paper or on-line. Which would you prefer?

- On paper 1 On-line..... 2

IF ON PAPER: We will be mailing out a survey to you in the near future. We ask that you complete the survey and return it to us in the postage paid envelope we will provide. When we have received your completed survey, we will mail out your \$20 compensation. It's important to remember that if we don't receive your completed survey, you will not receive any compensation. In order to contact you, may I please have your full name...**GET CONTACT INFORMATION.**

IF ON-LINE: If you go to <http://> _____, **(MAKE SURE THEY WRITE DOWN THE WEBSITE)** you can fill out the survey on-line. Once you have completed the survey, you will be asked for your contact information. It is necessary that you give us correct information, for this is where we will be sending your \$20 compensation. I will need to take down your contact information now as well, so that I can verify your information when you submit it on-line.

Name: _____		
Address: _____		
City: _____	State: _____	Zip: _____
Home phone: _____	Work / Cell phone: _____	
Email: _____		

We will be conducting an evaluation of the interactive module in approximately 3 months. Would you be willing to try the program and provide feedback? You would receive additional compensation.

- Yes..... 1 No..... 2

Thank you and have a great day!

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol

(2) Survey Stage

- a. Intake screening instrument
- b. Survey Questionnaire

(3) Evaluation Stage

- a. Intake screening instrument
- b. Pre-evaluation measure
- c. Post-evaluation measure (experimental—includes usability)
- d. Post-evaluation measure (control—not usability)

Home Health Aide Questionnaire

Thank you for your help with this very important research. This questionnaire will ask you a series of questions regarding the prevention and care of pressure ulcers. The information you provide will help the researchers better create educational software that will meet the needs of people like yourself. Please answer the questions honestly - there are NO right or wrong answers. Your responses are completely confidential and will never be shared with anyone.

1. Please indicate, on a 7 to 1 scale, with 7 meaning you Strongly Agree, 4 meaning you Neither Agree nor Disagree and 1 meaning you Strongly Disagree, the extent to which you agree with the following statements.

	Strongly Agree	6	5	Neither Agree nor Disagree	4	3	2	Strongly Disagree	1
a. I intend to look for signs of a pressure ulcer on my patients.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I intend to take steps to prevent pressure ulcers from forming on my patients.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Using the scales below, please indicate how you feel regarding the following statements.

a. My looking for signs of a pressure ulcer on my patients is...

	Extremely Good	7	6	5	Neither Good nor Bad	4	3	2	1	Extremely Bad
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Extremely Important	7	6	5	Neither Important nor Unimportant	4	3	2	1	Extremely Unimportant
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Extremely Pleasant	7	6	5	Neither Pleasant nor Unpleasant	4	3	2	1	Extremely Unpleasant
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

b. My taking steps to prevent pressure ulcers from occurring in my patients is...

	Extremely Good	7	6	5	Neither Good nor Bad	4	3	2	1	Extremely Bad
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Extremely Important	7	6	5	Neither Important nor Unimportant	4	3	2	1	Extremely Unimportant
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Extremely Pleasant	7	6	5	Neither Pleasant nor Unpleasant	4	3	2	1	Extremely Unpleasant
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Please indicate, on a 7 to 1 scale, with 7 meaning you Strongly Agree, 4 meaning you Neither Agree nor Disagree and 1 meaning you Strongly Disagree, the extent to which you agree with the following statements.

Looking for signs of pressure ulcers and taking steps to prevent them...

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. Would cause me to feel uncomfortable and awkward.....	0	0	0	0	0	0	0
b. Is something that I feel competent and knowledgeable enough to do	0	0	0	0	0	0	0
c. Would protect me from liability	0	0	0	0	0	0	0
d. Would protect my employer from liability.....	0	0	0	0	0	0	0
e. Would take time and resources away from other patient needs.....	0	0	0	0	0	0	0
f. Would waste time because I have few patients at risk for pressure ulcers	0	0	0	0	0	0	0
g. Would be a service that I will not be compensated or reimbursed for	0	0	0	0	0	0	0
h. Would lead me to spend more time on pressure ulcers and discussing them with patients	0	0	0	0	0	0	0
i. Would lead me to spend more time on pressure ulcers and discussing them with the patient's family.....	0	0	0	0	0	0	0
j. Is a standard of practice/is required for my job	0	0	0	0	0	0	0
k. Would make me feel that I am providing comprehensive health care.....	0	0	0	0	0	0	0
l. Would be viewed by patients as unnecessary because they feel they are NOT at risk for pressure ulcers.....	0	0	0	0	0	0	0
m. Is viewed by my employer as unnecessary.....	0	0	0	0	0	0	0
n. Is viewed by my patient's family as unnecessary.....	0	0	0	0	0	0	0
o. Would help develop a good relationship with patients.....	0	0	0	0	0	0	0
p. Would cause my patients to feel embarrassed or uncomfortable.....	0	0	0	0	0	0	0
q. Is viewed by patients as intrusive or an invasion of privacy	0	0	0	0	0	0	0
r. Is a topic patients do not want to discuss.....	0	0	0	0	0	0	0
s. Would cause patients to feel worried and anxious	0	0	0	0	0	0	0
t. Is an opportunity to provide reliable information and to educate patients	0	0	0	0	0	0	0
u. Would provide an opportunity to change patient behavior and reduce their risk	0	0	0	0	0	0	0
v. Would cause the patient's family anxiety.....	0	0	0	0	0	0	0
w. Would require additional paperwork and documentation	0	0	0	0	0	0	0
x. Would reduce my overall workload	0	0	0	0	0	0	0
y. Would lead to complaints from the patient because of inconvenience of the treatment.....	0	0	0	0	0	0	0
z. Would increase compliments and positive referrals.....	0	0	0	0	0	0	0
aa. Would avoid trouble with state and/or regulatory agencies	0	0	0	0	0	0	0
bb. Shows compassion.....	0	0	0	0	0	0	0
cc. Is appreciated by the patient	0	0	0	0	0	0	0
dd. Is appreciated by the patient's family.....	0	0	0	0	0	0	0
ee. Reduces long-term consequences.....	0	0	0	0	0	0	0
ff. Could increase my risk of an infection.....	0	0	0	0	0	0	0
gg. Makes me feel good.....	0	0	0	0	0	0	0
hh. Makes me look good to my employer	0	0	0	0	0	0	0

4. Using a 7-point scale where 7 is Extremely Good, 4 is Neither Good nor Bad and 1 is Extremely Bad, please rate each of the following statements as they relate to your position in home health care.

	Extremely Good		Neither Good nor Bad			Extremely Bad	
	7	6	5	4	3	2	1
a. My feeling uncomfortable or awkward	0	0	0	0	0	0	0
b. My feeling competent and knowledgeable	0	0	0	0	0	0	0
c. Protecting myself from liability.....	0	0	0	0	0	0	0
d. Protecting my company from liability.....	0	0	0	0	0	0	0
e. Taking time and resources away from other patient needs	0	0	0	0	0	0	0
f. Spending time on tasks for which I have few patients at risk	0	0	0	0	0	0	0
g. Being compensated or reimbursed for my efforts	0	0	0	0	0	0	0
h. Spending more time on pressure ulcers and discussing them with patients.....	0	0	0	0	0	0	0
i. Spending more time on pressure ulcers and discussing them with patients' families	0	0	0	0	0	0	0
j. Following standards of practice for my job.....	0	0	0	0	0	0	0
k. Feeling that I am providing comprehensive health care...	0	0	0	0	0	0	0
l. Patients viewing something I do as unnecessary.....	0	0	0	0	0	0	0
m. My employer viewing something I do as unnecessary.....	0	0	0	0	0	0	0
n. My patient's family viewing something that I do as unnecessary	0	0	0	0	0	0	0
o. Developing a good relationship with patients	0	0	0	0	0	0	0
p. Causing my patients to feel embarrassed or uncomfortable.....	0	0	0	0	0	0	0
q. Patients viewing what I do as intrusive or an invasion of privacy	0	0	0	0	0	0	0
r. Patients not wanting to discuss a topic	0	0	0	0	0	0	0
s. Causing patients to feel worried and anxious	0	0	0	0	0	0	0
t. Providing reliable information and educating patients.....	0	0	0	0	0	0	0
u. Changing patient behavior and reducing their risk.....	0	0	0	0	0	0	0
v. Causing the patient's family anxiety	0	0	0	0	0	0	0
w. Having to complete additional paperwork and documentation	0	0	0	0	0	0	0
x. Reducing my overall workload	0	0	0	0	0	0	0
y. Increased complaints from the patient because of inconvenience of the treatment.....	0	0	0	0	0	0	0
z. Increased compliments and positive referrals	0	0	0	0	0	0	0
aa. Avoiding trouble with state and/or regulatory agencies ...	0	0	0	0	0	0	0
bb. Showing compassion	0	0	0	0	0	0	0
cc. Being appreciated by the patient	0	0	0	0	0	0	0
dd. Being appreciated by the patient's family	0	0	0	0	0	0	0
ee. Reducing long-term consequences	0	0	0	0	0	0	0
ff. Increasing my risk of an infection	0	0	0	0	0	0	0
gg. Feeling good about myself and my work	0	0	0	0	0	0	0
hh. Looking good to my employer	0	0	0	0	0	0	0

5. Please indicate the extent to which you agree with the following statements.

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. Most people who are important to me think I should look for signs of pressure ulcers on my patients	0	0	0	0	0	0	0
b. Most people who are important to me think I should take steps to prevent pressure ulcers on my patients	0	0	0	0	0	0	0

6. By inserting the individuals' and other entities' names in the space indicated, please rate the extent to which you agree with the following:

(INSERT NAME FROM LIST BELOW) think(s) or tell(s) me I should look for signs of pressure ulcers and take steps to prevent them.

Name To Be Inserted	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. My co-workers	0	0	0	0	0	0	0
b. My employer	0	0	0	0	0	0	0
c. My patients	0	0	0	0	0	0	0
d. My patients' families	0	0	0	0	0	0	0
e. My patients' guardian	0	0	0	0	0	0	0
f. Experts	0	0	0	0	0	0	0
g. Advocacy groups	0	0	0	0	0	0	0
h. Professional organizations in my field	0	0	0	0	0	0	0
i. Health insurance companies	0	0	0	0	0	0	0
j. National or local health organizations (e.g. Centers for Disease Control, National Institutes of Health, local and state Public Health departments)	0	0	0	0	0	0	0
k. My supervisor/case manager/nursing manager	0	0	0	0	0	0	0
l. Websites on health care	0	0	0	0	0	0	0
m. School/Professional training	0	0	0	0	0	0	0
n. Aides/Nurses who have worked previously with a patient	0	0	0	0	0	0	0
o. State inspectors	0	0	0	0	0	0	0

7. Please indicate your agreement with the following statements.

Generally speaking...

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. I want to do what my co-workers think I should do	0	0	0	0	0	0	0
b. I want to do what my employer thinks I should do	0	0	0	0	0	0	0
c. I want to do what my patients think I should do	0	0	0	0	0	0	0
d. I want to do what my patient's family thinks I should do	0	0	0	0	0	0	0
e. I want to do what my patient's guardian thinks I should do	0	0	0	0	0	0	0
f. I want to do what experts think I should do	0	0	0	0	0	0	0
g. I want to do what advocacy groups think I should do	0	0	0	0	0	0	0
h. I want to do what professional organizations in my field think I should do	0	0	0	0	0	0	0
i. I want to do what health insurance companies think I should do	0	0	0	0	0	0	0

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
j. I want to do what local and national health organizations think I should do.....	0	0	0	0	0	0	0
k. I want to do what my supervisor thinks I should do.....	0	0	0	0	0	0	0
l. I want to do what websites think/tell me I should do	0	0	0	0	0	0	0
m. I want to do what school/training thinks/tells me I should do	0	0	0	0	0	0	0
n. I want to do what previous aides/nurses think I should do.....	0	0	0	0	0	0	0
o. I want to do what state inspectors think I should do	0	0	0	0	0	0	0

8. Using the scales below, please indicate how you feel regarding the following statements.

a. My looking for signs of a pressure ulcer on my patients is...

Absolutely Up To Me	Neither			Not At All Up To Me		
7	6	5	4	3	2	1
0	0	0	0	0	0	0
Extremely Easy	Neither			Extremely Difficult		
7	6	5	4	3	2	1
0	0	0	0	0	0	0

b. My taking steps to prevent pressure ulcers from occurring in my patients is...

Absolutely Up To Me	Neither			Not At All Up To Me		
7	6	5	4	3	2	1
0	0	0	0	0	0	0
Extremely Easy	Neither			Extremely Difficult		
7	6	5	4	3	2	1
0	0	0	0	0	0	0

9. How likely are you to...

	Extremely Likely		Neither Likely nor Unlikely			Extremely Unlikely	
	7	6	5	4	3	2	1
a. Have enough time to look for and prevent pressure ulcers	0	0	0	0	0	0	0
b. Encounter a patient of the opposite sex	0	0	0	0	0	0	0
c. Encounter shame or embarrassment related to pressure ulcers	0	0	0	0	0	0	0
d. Have an established professional relationship with a patient	0	0	0	0	0	0	0
e. Encounter a new patient	0	0	0	0	0	0	0
f. Encounter established rules and procedures regarding pressure ulcers in your workplace	0	0	0	0	0	0	0
g. Encounter patients with significant cultural, religious, or linguistic differences from your own	0	0	0	0	0	0	0

	Extremely Likely		Neither Likely nor Unlikely			Extremely Unlikely	
	7	6	5	4	3	2	1
h. See a patient without family or friends present	0	0	0	0	0	0	0
i. Have knowledge or intuition that a given patient is at risk	0	0	0	0	0	0	0
j. Encounter a patient who is significantly overweight.....	0	0	0	0	0	0	0
k. Have privacy when working with a patient.....	0	0	0	0	0	0	0
l. Encounter an uncooperative patient during a visit	0	0	0	0	0	0	0
m. Encounter an uncooperative family during a visit.....	0	0	0	0	0	0	0
n. Feel at-risk/unsafe at a patient's location	0	0	0	0	0	0	0
o. Be exclusively responsible for a patient's care/not sharing care responsibilities with others.....	0	0	0	0	0	0	0
p. Visit the patient in their home	0	0	0	0	0	0	0
q. Visit the patient in an institution or other non "home" setting	0	0	0	0	0	0	0
r. Have tools/supplies/equipment available	0	0	0	0	0	0	0
s. Have ample space in a room.....	0	0	0	0	0	0	0
t. Encounter family support	0	0	0	0	0	0	0
u. Encounter family resistance	0	0	0	0	0	0	0
v. Have a patient who is mentally altered (Alzheimer's, dementia, forgetful)	0	0	0	0	0	0	0
w. Encounter a patient who is quad/paralegic or immobile	0	0	0	0	0	0	0
x. Encounter a clean environment	0	0	0	0	0	0	0
y. Have a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
z. Have a patient family that does not follow your instructions during the time between visits	0	0	0	0	0	0	0
aa. Encounter a dirty environment	0	0	0	0	0	0	0
bb. Encounter a cluttered environment.....	0	0	0	0	0	0	0
cc. Encounter a neat environment.....	0	0	0	0	0	0	0
dd. Be able to help a patient understand what you are doing.	0	0	0	0	0	0	0
ee. Be able to convince a patient to accept what you are doing	0	0	0	0	0	0	0
ff. Be able to help a family understand what you are doing..	0	0	0	0	0	0	0
gg. Be able to convince a family to accept what you are doing	0	0	0	0	0	0	0
hh. Encounter a patient that wants to die.....	0	0	0	0	0	0	0

10. Please indicate the extent to which each of the following things would make it easier or harder to look for and take steps to prevent pressure ulcers.

	A Lot Easier		Neither			A Lot Harder	
	7	6	5	4	3	2	1
a. Having the time available to work with a patient.....	0	0	0	0	0	0	0
b. Encountering a patient of the opposite sex.....	0	0	0	0	0	0	0
c. Encountering shame or embarrassment related to pressure ulcers	0	0	0	0	0	0	0
d. Having an established professional relationship with a patient.....	0	0	0	0	0	0	0
e. Encountering a new patient	0	0	0	0	0	0	0
f. Having established rules and procedures regarding pressure ulcers in your workplace	0	0	0	0	0	0	0
g. Encountering patients with significant cultural, religious, or linguistic differences from your own	0	0	0	0	0	0	0

	A Lot Easier		Neither			A Lot Harder	
	7	6	5	4	3	2	1
h. Seeing a patient without family or friends present.....	0	0	0	0	0	0	0
i. Having knowledge or intuition that a given patient is at risk.....	0	0	0	0	0	0	0
j. Encountering a patient who is significantly overweight ..	0	0	0	0	0	0	0
k. Having privacy when working with a patient.....	0	0	0	0	0	0	0
l. Encountering an uncooperative patient during a visit	0	0	0	0	0	0	0
m. Encountering an uncooperative family during a visit.....	0	0	0	0	0	0	0
n. Feeling at-risk/unsafe at a patient's location	0	0	0	0	0	0	0
o. Being exclusively responsible for a patient's care/not sharing care responsibilities with others.....	0	0	0	0	0	0	0
p. Visiting the patient in their home	0	0	0	0	0	0	0
q. Visiting the patient in an institution or other non-home setting	0	0	0	0	0	0	0
r. Having tools/supplies/equipment available.....	0	0	0	0	0	0	0
s. Having ample space in a room	0	0	0	0	0	0	0
t. Encountering family support	0	0	0	0	0	0	0
u. Encountering family resistance	0	0	0	0	0	0	0
v. Having a patient who is mentally altered (Alzheimer's, dementia, forgetful)	0	0	0	0	0	0	0
w. Encountering a patient who is quad/paraplegic or immobile.....	0	0	0	0	0	0	0
x. Encountering a clean environment	0	0	0	0	0	0	0
y. Having a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
z. Having a patient family that does not follow your instructions during the time between visits	0	0	0	0	0	0	0
aa. Encountering a dirty environment	0	0	0	0	0	0	0
bb. Encountering a cluttered environment.....	0	0	0	0	0	0	0
cc. Encountering a neat environment.....	0	0	0	0	0	0	0
dd. Being able to help a patient understand what you are doing	0	0	0	0	0	0	0
ee. Being able to convince a patient to accept what you are doing	0	0	0	0	0	0	0
ff. Being able to help a family understand what you are doing.....	0	0	0	0	0	0	0
gg. Being able to convince a family to accept what you are doing.....	0	0	0	0	0	0	0
hh. Encountering a patient that wants to die.....	0	0	0	0	0	0	0

11. Considering *each and every visit you make to every patient*, please indicate, on a 7 to 1 scale, with 7 being Always and 1 being Never, the extent to which have looked for pressure ulcers and taken steps to prevent them *in the past*.

I have...	Always		Sometimes			Never	
	7	6	5	4	3	2	1
a. Looked for signs of a pressure ulcer on my patients	0	0	0	0	0	0	0
b. Taken steps to prevent pressure ulcers from forming on my patients	0	0	0	0	0	0	0

12. Using the scales below, please indicate how you feel regarding the following statements.

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. All pressure ulcers can be avoided	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Pressure ulcer care is primarily important for bed-ridden or fully immobile patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Extremely Serious					Not at all Serious	
	7	6	5	4	3	2	1
c. Pressure ulcers are	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions are for classification purposes only.

13. Into which of the following categories does your age fall?

Under 18	<input type="radio"/>	1	35-44.....	<input type="radio"/>	4	65 or over	<input type="radio"/>	7
18-24	<input type="radio"/>	2	45-54.....	<input type="radio"/>	5			
25-34	<input type="radio"/>	3	55-64.....	<input type="radio"/>	6			

14. Do you consider yourself Hispanic?

Yes..... 1 No..... 2

15. What is your race or racial identity?

Caucasian/White	<input type="radio"/>	1	American Indian/Alaskan native	<input type="radio"/>	4
African-American/Black.....	<input type="radio"/>	2	Hawaiian or other pacific islander.....	<input type="radio"/>	5
Asian-American	<input type="radio"/>	3	Other (Specify: _____)		

16. How long have you worked in the home healthcare field? (Write number of years) _____

17. What is your gender?

Male..... 1 Female..... 2

Thank you for completing the questionnaire! We greatly value your input as a professional in the field of home health care. Please mail the completed survey back to us in the postage paid envelope we have provided you.

I.D. # _____

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol

(2) Survey Stage

- a. Intake screening instrument
- b. Survey Questionnaire

(3) Evaluation Stage

- a. Intake screening instrument
- b. Pre-evaluation measure
- c. Post-evaluation measure (experimental—includes usability)
- d. Post-evaluation measure (control—no usability)

I.D. # _____

Interviewer: _____

Date: _____

AEI – Home Healthcare Aides Screener

Hello. This is _____ and I'm calling on behalf of The Matrix Group, a market research firm. We are currently conducting a research study funded by the National Institutes of Health. A multimedia training tool for the prevention and care of pressure ulcers has been created after gathering information from home health aid workers in previous phases of research. We now have a need for home health care workers like yourself to test the training tool and provide feedback. If you are eligible to participate, you will be compensated for your time. Your answers are completely confidential and you will not be identified individually. May I ask you a few background questions to see if you qualify?

1. Do you currently work in the field of home healthcare? (By that I mean do you regularly visit and care for patients in their homes?)

Yes..... 1 No..... 2 **THANK & TERMINATE**

2. Do you provide "hands-on" personal care for homebound patients, for example bathing, repositioning, feeding, dressing, or other assistance with daily living (ADL)?

Yes..... 1 No..... 2 **THANK & TERMINATE**

3. What types of hands-on care do you provide? **CHECK ALL THAT APPLY**

- Bathing/Personal hygiene 1
- Cleaning/Laundry..... 9
- Transferring from one place to another 2
- Cooking..... 10
- Repositioning..... 3
- Run errands 11
- Check vital signs..... 4
- Help patient walk/move around 12
- Dressing/Change clothes 5
- Give medication 13
- Feeding/Cooking..... 6
- Drive them places..... 14
- Assist with wound care/Replace dressing.. 7
- Exercise range of motion..... 15
- Change linens/Make bed..... 8
- Massage/Rub lotion into skin..... 16

Other (Specify: _____)

4. Do you consider yourself Hispanic?

Yes..... 1 No..... 2

5. What is your race or racial identity? **IF HISPANIC FOR Q4 - ASK: Which, if any, of the following categories do you consider your primary heritage other than Hispanic?**

- Caucasian/White 1
- American Indian/Alaskan native 4
- African-American/Black..... 2
- Hawaiian or other pacific islander..... 5
- Asian-American..... 3
- Other (Specify: _____)

6. How long have you worked in the home healthcare field? (**RECORD # OF YEARS**) _____

7. What is the title of your current position? **DO NOT READ**

- Home health aide/Certified home health aide..... 1
- Home care aide 2
- Certified Nurse's Assistant/Technician 3

Other (Specify: _____)

8. **FOR ARTICULATION SCREENING:** How did you get involved in this field of work? _____

9. Are you licensed or certified in a field related to your work in home healthcare?

Yes O 1 >>ASK Q9A & 9B No O 2

9A. What is your licensing or credential? _____

9B. When did you receive or last update the license or credential? DO NOT READ

Within 30 days..... O 1 Within 1 year..... O 3 Within 5 years..... O 5
Within 6 months O 2 Within 2 years O 4 More than 5 years ago... O 6

10. Have you participated in any training for your role as a home healthcare provider?

Yes O 1 >>ASK Q10A No..... O 2

10A. What type of training and how much? Type How Much

11. How would you describe your job responsibilities? DO NOT READ - CHECK ALL THAT APPLY

Taking care of/Providing care for patient.. O 1 Provide assistance with daily living (ADL) O 4
Companionship/Friendship..... O 2 Personal care (bathing, dressing, feeding, etc.) O 5
Social worker O 3 Housekeeping..... O 6
Medical care (wound care, looking for pressure ulcers)..... O 7

Other (Specify: _____)

12. How satisfied are you with this occupation? Would you say you are... READ LIST

Extremely Satisfied..... O 1 Somewhat Dissatisfied O 4
Somewhat Satisfied O 2 Extremely Dissatisfied O 5
Neither Satisfied No Opinion..... O 0 DO NOT READ
nor Dissatisfied..... O 3

13. Do you consider your current position or occupation...READ LIST

Short-term employment O 1
A transitional position (eventually moving on to something else) .. O 2
A long-term career..... O 3

14. Which of the following categories best describes your income from this occupation in 2004? READ LIST

Under \$10,000 O 1 \$20,001-\$30,000..... O 3 \$40,001-\$50,000 O 5
\$10,001 to \$20,000 O 2 \$30,001-\$40,000..... O 4 \$50,000 or more O 6
Refused O 0
DO NOT READ

15. What company or organization do you work for? _____

16. Into which of the following categories does your age fall? READ LIST

Under 18 O 1 35-44 O 4 Over 65 O 7
18-24..... O 2 45-54 O 5
25-34..... O 3 55-64 O 6

17. Record Gender (BY OBSERVATION)

Male..... O 1 Female..... O 2

18. What is the highest level of education you have completed? **DO NOT READ**

- Some high school or less 1 Vocational or technical school .. 4
- High school graduate 2 College Graduate 5
- Some college 3 Graduate School 6
- Other (Specify: _____)

19. Which of the following do you have access to *in your home*? **READ LIST-MARK ALL THAT APPLY**

- Computer 1 A VCR..... 4
- High-speed internet..... 2 A DVD player..... 5
- Dial-up internet (slow)..... 3

20. Which of the following do you have access to *at your work place*? **READ LIST-MARK ALL THAT APPLY**

- Computer 1 A VCR..... 4
- High-speed internet..... 2 A DVD player..... 5
- Dial-up internet (slow)..... 3

According to your responses, we would like to invite you to participate in this research study. We will be sending you two separate surveys. The first will be mailed out in the next couple of days and we ask that you fill it out as soon as you get it and then return it to us in the postage paid envelope we will provide. Once we have received your completed first survey, we will be sending your out a second survey. After we have received BOTH of your completed surveys, we will mail you two \$20 gift cards to Wal-mart as a thank you for your participation. Would you be willing to help us out?

_____ Yes

_____ No

So that I can send you materials for this study, may I please have your contact information?

Name: _____		
Address: _____		
City: _____	State: _____	Zip: _____
Home phone: _____	Work / Cell phone: _____	
Email: _____		

Ask for referrals:

Name: _____

Telephone Number: _____

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol

(2) Survey Stage

- a. Intake screening instrument
- b. Survey Questionnaire

(3) Evaluation Stage

- a. Intake screening instrument
- b. Pre-evaluation measure
- c. Post-evaluation measure (experimental—includes usability)
- d. Post-evaluation measure (control—no usability)

*Your Input Will Help Make A Positive Impact
In The Field Of Home Health Care*

HOME HEALTH CARE RESEARCH PROJECT

Research sponsored and supported by:

Grant # R43AR05031 from the
National Institute of Arthritis and Musculoskeletal and Skin Diseases,
a part of the National Institutes of Health.



*Please complete the survey contained in this booklet
and return it in the postage-paid envelope provided **within one week of receiving this survey.***

**FOR EACH QUESTION, PLEASE FILL IN THE CIRCLE WHICH BEST
REPRESENTS YOUR ANSWER OR OPINION. SEE EXAMPLE BELOW.**

Correct: ● Incorrect: ○ ✗ ✓

*The incentive has been increased to \$40 for your participation in this research. You must **complete** this preliminary questionnaire **AND** the final phase of the study to receive the \$40 incentive. You will be receiving the materials for the final phase of the study in the mail.*

The \$40 incentive includes two \$20 gift cards to Wal-Mart that can be used for in-store and online purchases. The incentive will be delivered to you in the mail once we have received your completed materials from the final phase of the research.

If you have any questions or need any assistance with filling out this survey, please contact:
The Matrix Group, Inc.
501 Darby Creek Road, Suite #25
Lexington, KY 40509
1-800-558-6941

Thank you for your help with this very important research. This questionnaire contains a series of questions regarding the prevention of pressure ulcers. The information you provide will help create educational materials that better meet the needs of professionals like you. Please answer the questions honestly. Your responses are completely confidential.

1. Please respond to **each** of the following statements using the scales provided:

a. I intend to take steps to prevent pressure ulcers from forming on my patients.

On Every Visit						Never		
7	6	5	4	3	2	1		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

b. People who are important to me think I SHOULD/SHOULD NOT take steps to prevent pressure ulcers.

Should						Should Not		
7	6	5	4	3	2	1		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

c. I am LIKELY/UNLIKELY to take steps to prevent pressure ulcers while working with my patients.

Likely						Unlikely		
7	6	5	4	3	2	1		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Please rate the following statement using **each** of the scales provided.

My taking steps to prevent pressure ulcers from forming on my patients is:

	Extremely...		Neither			Extremely...		
	7	6	5	4	3	2	1	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a. Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Bad
b. Beneficial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Harmful
c. Pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unpleasant
d. Enjoyable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unenjoyable
e. Wise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Foolish

3. Please indicate the extent to which you agree with the following statements on a 7 to 1 scale, with 7 meaning you Strongly Agree and 1 meaning you Strongly Disagree.

My looking for signs of pressure ulcers and taking steps to prevent them...

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree		
	7	6	5	4	3	2	1	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a. Is something that I feel competent to do.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Would protect me and my employer from liability.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Is a standard of practice/is required for my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Makes me feel that I am providing comprehensive health care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Would cause patients to feel worried and anxious.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Is an opportunity to educate patients and provide reliable information to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Is an opportunity to change patient behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Would increase compliments and positive referrals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Avoids trouble with state and/or regulatory agencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Shows compassion.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Is appreciated by the patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. May be perceived as <u>unnecessary</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Is appreciated by the patient's family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Reduces long-term consequences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Using a 7-point scale where 7 means it is Extremely Important to you and 1 means it is Extremely Unimportant to you, please rate **each** of the following statements as they relate to your position in home health care.

	Extremely Important		Neither Important nor Unimportant			Extremely Unimportant	
	7	6	5	4	3	2	1
a. Feeling competent and knowledgeable.....	0	0	0	0	0	0	0
b. Protecting myself from liability.....	0	0	0	0	0	0	0
c. Following standards of practice for my job.....	0	0	0	0	0	0	0
d. Feeling that I am providing comprehensive health care.....	0	0	0	0	0	0	0
e. Causing patients to feel worried and anxious.....	0	0	0	0	0	0	0
f. To educate patients and provide reliable information to them...	0	0	0	0	0	0	0
g. Changing patient behavior.....	0	0	0	0	0	0	0
h. Increasing compliments and positive referrals.....	0	0	0	0	0	0	0
i. Avoiding trouble with state and/or regulatory agencies.....	0	0	0	0	0	0	0
j. Showing compassion.....	0	0	0	0	0	0	0
k. Being appreciated by the patient.....	0	0	0	0	0	0	0
l. Having others perceive the things I do as <u>necessary</u>	0	0	0	0	0	0	0
m. Being appreciated by the patient's family.....	0	0	0	0	0	0	0
n. Reducing long-term consequences.....	0	0	0	0	0	0	0

5. Please rate how you feel about **each** of the following statements using the scales provided:

a. Other people like me usually DO/DO NOT take steps to prevent pressure ulcers with their patients.

Do						Do Not
7	6	5	4	3	2	1
0	0	0	0	0	0	0

b. I DO/DO NOT feel under pressure from others to take steps to prevent pressure ulcers.

Do						Do Not
7	6	5	4	3	2	1
0	0	0	0	0	0	0

c. I would like to take steps to prevent pressure ulcers while working with my patients.

Definitely YES						Definitely NO
7	6	5	4	3	2	1
0	0	0	0	0	0	0

6. Please rate the extent to which you agree with **each** of the following:

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. My co-workers think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
b. My employers think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
c. My patients think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
d. My patients' families think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
e. Experts think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
f. Professional organizations in my field tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
g. Health insurance companies tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
h. National or local health organizations (e.g. Centers for Disease Control, National Institutes of Health, local and state Public Health Departments) tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0

Please rate the extent to which you agree with each of the following:							
	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
i. My supervisor/case manager/nursing manager thinks/tells me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
j. School/training tells me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
k. Aides who have worked previously with a patient think/tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
l. State inspectors think/tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
7. Please indicate your agreement or disagreement with each of the following statements.							
Generally speaking...							
	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. I want to do what my co-workers think I should do	0	0	0	0	0	0	0
b. I want to do what my employer thinks I should do.....	0	0	0	0	0	0	0
c. I want to do what my patients think I should do.....	0	0	0	0	0	0	0
d. I want to do what my patient's family thinks I should do.....	0	0	0	0	0	0	0
e. I want to do what experts think I should do.....	0	0	0	0	0	0	0
f. I want to do what professional organizations in my field think I should do	0	0	0	0	0	0	0
g. I want to do what insurance companies think I should do	0	0	0	0	0	0	0
h. I want to do what health organizations think I should do	0	0	0	0	0	0	0
i. I want to do what my supervisor thinks I should do	0	0	0	0	0	0	0
j. I want to do what my previous training tells me I should do.....	0	0	0	0	0	0	0
k. I want to do what previous aides think I should do.....	0	0	0	0	0	0	0
l. I want to do what state inspectors think I should do.....	0	0	0	0	0	0	0
8. Using the scale below, please indicate your level of agreement with the following statements.							
	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. I am confident I could take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
b. Whether I take steps to prevent pressure ulcers is entirely up to me	0	0	0	0	0	0	0
c. I feel I know how to take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0

(Please continue to the next page)

9. Using the scale below, please indicate how likely are you to...							
	Extremely Likely		Neither Likely nor Unlikely			Extremely Unlikely	
	7	6	5	4	3	2	1
a. Have time to look for and prevent pressure ulcers.....	0	0	0	0	0	0	0
b. Have an established professional relationship with a patient.....	0	0	0	0	0	0	0
c. Encounter established rules and procedures regarding pressure ulcers in your workplace.....	0	0	0	0	0	0	0
d. Have privacy when working with a patient	0	0	0	0	0	0	0
e. Have tools/supplies/equipment available.....	0	0	0	0	0	0	0
f. Have ample space in a room.....	0	0	0	0	0	0	0
g. Encounter family resistance.....	0	0	0	0	0	0	0
h. Have a patient who is mentally altered (Alzheimer's, dementia, forgetful)	0	0	0	0	0	0	0
i. Have a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
j. Have a patient's family that does not follow your instructions during the time between visits.....	0	0	0	0	0	0	0
k. Encounter a dirty or cluttered environment	0	0	0	0	0	0	0
l. Be able to convince a patient to accept what you are doing	0	0	0	0	0	0	0
m. Be able to help a family understand what you are doing	0	0	0	0	0	0	0
n. Encounter a patient who wants to die	0	0	0	0	0	0	0
10. Please indicate the extent to which each of the following things would make it easier or harder to look for and take steps to prevent pressure ulcers:							
	A Lot Easier		Neither			A Lot Harder	
	7	6	5	4	3	2	1
a. Having the time available to work with a patient	0	0	0	0	0	0	0
b. Having an established professional relationship with a patient .	0	0	0	0	0	0	0
c. Having established rules and procedures regarding pressure ulcers in your workplace.....	0	0	0	0	0	0	0
d. Having privacy when working with a patient	0	0	0	0	0	0	0
e. Having tools/supplies/equipment available	0	0	0	0	0	0	0
f. Having ample space in a room.....	0	0	0	0	0	0	0
g. Encountering family resistance.....	0	0	0	0	0	0	0
h. Having a patient who is mentally altered.....	0	0	0	0	0	0	0
i. Having a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
j. Having a patient's family that does not follow your instructions during the time between visits.....	0	0	0	0	0	0	0
k. Encountering a dirty or cluttered environment	0	0	0	0	0	0	0
l. Being able to convince a patient to accept what you are doing.....	0	0	0	0	0	0	0
m. Being able to help a family understand what you are doing	0	0	0	0	0	0	0
n. Encountering a patient who wants to die	0	0	0	0	0	0	0

11. Considering all of your patient visits over the past month, how frequently have you taken steps to prevent pressure ulcers?

	Every Visit		5	Sometimes		2	Never
	7	6	5	4	3	2	1
I have taken steps to prevent pressure ulcers from forming on my patients	0	0	0	0	0	0	0

12. All pressure ulcers can be avoided.

	Strongly Agree		Don't Know		Strongly Disagree
	7	6	5	4	3
	0	0	0	0	0

13. Pressure ulcers are:

	Extremely Serious		Not At All Serious
	7	6	5
	0	0	0

The following questions are designed to determine some of what you already know about pressure ulcers and whether the instructional materials you will see later are effective in conveying the information. Your answers will be kept completely confidential and you should not feel as though you should know all of this information.

14. Have you ever heard about preventing pressure ulcers? 1 Yes 2 No >>>**IF NO, GO TO Q16**

15. Have you ever taken steps to prevent pressure ulcers?

1 Yes >>>**IF YES, GO TO Q16** 2 No >>>**IF NO, GO TO Q15A**

15A. Which of the following best describes your thoughts about preventing pressure ulcers? (**SELECT ONE ANSWER**)

- 1 I've never thought about preventing pressure ulcers.
- 2 I'm undecided about preventing pressure ulcers.
- 3 I don't want to take steps to prevent pressure ulcers.
- 4 I want to take steps to prevent pressure ulcers.

16. A pressure ulcer is a sore: (**SELECT ONE ANSWER**)

- 1 Inside the mouth
- 2 Where the skin or tissue has died from lack of circulation
- 3 On a vein caused by diabetes or circulation problems
- 4 Inside the stomach
- 5 All of the above

17. One cause of pressure ulcers is: (**SELECT ONE ANSWER**)

<input type="radio"/> 1 Infection with a virus	<input type="radio"/> 4 Shearing force
<input type="radio"/> 2 Stress	<input type="radio"/> 5 Incontinence
<input type="radio"/> 3 Diabetes	

18. The most common reason people get pressure ulcers is: (**SELECT ONE ANSWER**)

<input type="radio"/> 1 Depression	<input type="radio"/> 4 Immobility
<input type="radio"/> 2 Incontinence	<input type="radio"/> 5 Weight loss
<input type="radio"/> 3 Advanced age	

19. Skin is made up of two layers called the: (**SELECT ONE ANSWER**)

<input type="radio"/> 1 Vascular and outer skin	<input type="radio"/> 4 Epidermis and the dermis
<input type="radio"/> 2 Subcutaneous and dermis	<input type="radio"/> 5 Dermis and the nervous
<input type="radio"/> 3 Cutaneous and subcutaneous	

20. The most common places where pressure ulcers form are the: (**SELECT ONE ANSWER**)

- 1 Shins, face, stomach and forearms
- 2 Elbows, back of head, and shoulder blades
- 3 Tailbone, sitting bones, heels, and sides of hips
- 4 Palms of the hands and soles of the feet
- 5 Neck, hands and stomach

21. To monitor for early signs of pressure ulcers, I should inspect every square inch of my client's skin at least: **(SELECT ONE ANSWER)**

- 1 Once per month
- 2 Once per week
- 3 Once per day
- 4 Once per hour
- 5 Every 15 minutes

22. Which of the following are useful for preventing pressure ulcers: **(SELECT ONE ANSWER)**

- 1 **A** - Donut cushions
- 2 **B** - Wheel-chair pushups
- 3 **C** - Turning schedules
- 4 **A & B**
- 5 **B & C**
- 6 **A, B & C**

23. In the United States, approximately how many people suffer with pressure ulcers every year? **(SELECT ONE ANSWER)**

- 1 50,000
- 2 500,000
- 3 2 million
- 4 7.5 million
- 5 None

24. The first sign of a pressure ulcer is a: **(SELECT ONE ANSWER)**

- 1 Black scab
- 2 Red area
- 3 Purple open area
- 4 Yellow shiny area
- 5 Sharp sulfur odor

25. Vigorous scrubbing or massage increases circulation in areas susceptible to pressure ulcers.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

26. Pressure ulcers can form from the inside-out.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

27. Pressure ulcers occur when something was done wrong.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

28. What are the three primary causes of pressure ulcers?

1. _____
2. _____
3. _____

29. List as many risk factors for pressure ulcers that you can think of: _____

30. Please list as many things that you can think of that you could do to prevent pressure ulcers: _____

To make sure our records are accurate and updated – please answer the following classification questions...

31. Do you currently work in the field of home healthcare? 1 Yes 2 No

32. Do you provide "hands-on" personal care for homebound patients, for example bathing, repositioning, feeding, dressing, or assistance with other activities of daily living (ADL)? 1 Yes 2 No

33. How long have you worked in the home healthcare field? (**WRITE # OF YEARS**) _____
34. On average, how many clients do you provide care to on a monthly basis? (**WRITE # OF PATIENTS**) _____
35. What is the title of your current position? _____
36. Are you licensed or certified in a field related to your work in home healthcare?
 1 Yes >>>**IF YES, GO TO Q36A & 36B** 2 No >>>**IF NO, GO TO Q37**
- **36A.** What is your licensing or credential? _____
- **36B.** When did you receive or last update the license or credential?
 1 Within 30 days 3 Within 1 year 5 Within 5 years
 2 Within 6 months 4 Within 2 years 6 More than 5 years ago
37. What company or organization do you work for? _____
38. Please estimate the percentage of your patient visits during which you take steps to prevent pressure ulcers: _____%
39. Do you know anyone who has developed a pressure ulcer? 1 Yes 2 No
40. Approximately how many clients in your care have developed a pressure ulcer? (**WRITE NUMBER**) _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Home #: _____ Work / Cell #: _____

Thank you for completing the questionnaire! We greatly value your input as a professional in the field of home health care.

*Please mail the completed survey back to us in the postage paid envelope we have provided **within one week of receiving this survey.***

*The incentive has been increased to \$40 for your participation in this research. You must **complete** this preliminary questionnaire **AND** the final phase of the study to receive the \$40 incentive. You will be receiving the materials for the final phase of the study in the mail.*

The \$40 incentive includes two \$20 gift cards to Wal-Mart that can be used for in-store and online purchases. The incentive will be delivered to you in the mail once we have received your completed materials from the final phase of the research.

If you have any questions or need any assistance with filling out this survey, please contact:

The Matrix Group, Inc.
 501 Darby Creek Road, Suite #25
 Lexington, KY 40509
 1-800-558-6941

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol

(2) Survey Stage

- a. Intake screening instrument
- b. Survey Questionnaire

(3) Evaluation Stage

- a. Intake screening instrument
- b. Pre-evaluation measure
- c. Post-evaluation measure (experimental—includes usability)
- d. Post-evaluation measure (control—no usability)

I.D. _____

HOME HEALTH CARE RESEARCH PROJECT PART 2 (CONTROL)

Research sponsored and supported by:

Grant # R43AR05031 from the
National Institute of Arthritis and Musculoskeletal and Skin Diseases,
a part of the National Institutes of Health.



*Please complete the survey and return it in the postage-paid envelope provided **within one week of receiving this survey.***

FOR EACH QUESTION, PLEASE FILL IN THE CIRCLE WHICH BEST REPRESENTS YOUR ANSWER OR OPINION. SEE EXAMPLE BELOW.

Correct: ● Incorrect: ○ ~~○~~ ~~○~~

If you have any questions or need any assistance with filling out this survey, please contact:
The Matrix Group, Inc.
501 Darby Creek Road, Suite #25, Lexington, KY 40509
1-800-558-6941

*This questionnaire contains a series of questions regarding the prevention of pressure ulcers. You have answered these questions previously. Please answer **all** of the questions contained in this packet as best you can based on how you feel and what you know **now**. Please answer the questions honestly. Your responses are completely confidential.*

1. Please respond to **each** of the following statements using the scales provided:

a. I intend to take steps to prevent pressure ulcers from forming on my patients.

On Every Visit						Never	
7	6	5	4	3	2	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

b. People who are important to me think I SHOULD/SHOULD NOT take steps to prevent pressure ulcers.

Should						Should Not	
7	6	5	4	3	2	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

c. I am LIKELY/UNLIKELY to take steps to prevent pressure ulcers while working with my patients.

Likely						Unlikely	
7	6	5	4	3	2	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Please rate the following statement using **each** of the scales provided.

My taking steps to prevent pressure ulcers from forming on my patients is:

	Extremely...			Neither			Extremely...	
	7	6	5	4	3	2	1	
a. Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Bad
b. Beneficial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Harmful
c. Pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unpleasant
d. Enjoyable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unenjoyable
e. Wise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Foolish

3. Please indicate the extent to which you agree with the following statements on a 7 to 1 scale, with 7 meaning you Strongly Agree and 1 meaning you Strongly Disagree.

My looking for signs of pressure ulcers and taking steps to prevent them...

		Strongly Agree		Neither Agree nor Disagree		Strongly Disagree		
		7	6	5	4	3	2	1
a.	Is something that I feel competent to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b.	Would protect me and my employer from liability.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c.	Is a standard of practice/is required for my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d.	Makes me feel that I am providing comprehensive health care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e.	Would cause patients to feel worried and anxious.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f.	Is an opportunity to educate patients and provide reliable information to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g.	Is an opportunity to change patient behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h.	Would increase compliments and positive referrals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i.	Avoids trouble with state and/or regulatory agencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j.	Shows compassion.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k.	Is appreciated by the patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l.	May be perceived as <u>unnecessary</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m.	Is appreciated by the patient's family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n.	Reduces long-term consequences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Using a 7-point scale where 7 means it is Extremely Important to you and 1 means it is Extremely Unimportant to you, please rate **each** of the following statements as they relate to your position in home health care.

	Extremely Important		Neither Important nor Unimportant			Extremely Unimportant	
	7	6	5	4	3	2	1
a. Feeling competent and knowledgeable.....	0	0	0	0	0	0	0
b. Protecting myself from liability.....	0	0	0	0	0	0	0
c. Following standards of practice for my job.....	0	0	0	0	0	0	0
d. Feeling that I am providing comprehensive health care.....	0	0	0	0	0	0	0
e. Causing patients to feel worried and anxious.....	0	0	0	0	0	0	0
f. To educate patients and provide reliable information to them...	0	0	0	0	0	0	0
g. Changing patient behavior.....	0	0	0	0	0	0	0
h. Increasing compliments and positive referrals.....	0	0	0	0	0	0	0
i. Avoiding trouble with state and/or regulatory agencies.....	0	0	0	0	0	0	0
j. Showing compassion.....	0	0	0	0	0	0	0
k. Being appreciated by the patient.....	0	0	0	0	0	0	0
l. Having others perceive the things I do as <u>necessary</u>	0	0	0	0	0	0	0
m. Being appreciated by the patient's family.....	0	0	0	0	0	0	0
n. Reducing long-term consequences.....	0	0	0	0	0	0	0

5. Please rate how you feel about **each** of the following statements using the scales provided:

a. Other people like me usually DO/DO NOT take steps to prevent pressure ulcers with their patients.

Do						Do Not
7	6	5	4	3	2	1
0	0	0	0	0	0	0

b. I DO/DO NOT feel under pressure from others to take steps to prevent pressure ulcers.

Do						Do Not
7	6	5	4	3	2	1
0	0	0	0	0	0	0

c. I would like to take steps to prevent pressure ulcers while working with my patients.

Definitely YES						Definitely NO
7	6	5	4	3	2	1
0	0	0	0	0	0	0

6. Please rate the extent to which you agree with **each** of the following:

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. My co-workers think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
b. My employers think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
c. My patients think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
d. My patients' families think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
e. Experts think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
f. Professional organizations in my field tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
g. Health insurance companies tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0

Please rate the extent to which you agree with **each** of the following:

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
h. National or local health organizations (e.g. Centers for Disease Control, National Institutes of Health, local and state Public Health Departments) tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
i. My supervisor/case manager/nursing manager thinks/tells me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
j. School/training tells me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
k. Aides who have worked previously with a patient think/tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
l. State inspectors think/tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0

7. Please indicate your agreement or disagreement with **each** of the following statements.

Generally speaking...	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. I want to do what my co-workers think I should do	0	0	0	0	0	0	0
b. I want to do what my employer thinks I should do.....	0	0	0	0	0	0	0
c. I want to do what my patients think I should do.....	0	0	0	0	0	0	0
d. I want to do what my patient's family thinks I should do.....	0	0	0	0	0	0	0
e. I want to do what experts think I should do.....	0	0	0	0	0	0	0
f. I want to do what professional organizations in my field think I should do	0	0	0	0	0	0	0
g. I want to do what insurance companies think I should do	0	0	0	0	0	0	0
h. I want to do what health organizations think I should do	0	0	0	0	0	0	0
i. I want to do what my supervisor thinks I should do	0	0	0	0	0	0	0
j. I want to do what my previous training tells me I should do	0	0	0	0	0	0	0
k. I want to do what previous aides think I should do.....	0	0	0	0	0	0	0
l. I want to do what state inspectors think I should do	0	0	0	0	0	0	0

8. Using the scale below, please indicate your level of agreement with the following statements.

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. I am confident I could take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
b. Whether I take steps to prevent pressure ulcers is entirely up to me	0	0	0	0	0	0	0
c. I feel I know how to take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0

(Please continue to the next page)

9. Using the scale below, please indicate how likely are you to...							
	Extremely Likely		Neither Likely nor Unlikely			Extremely Unlikely	
	7	6	5	4	3	2	1
a. Have time to look for and prevent pressure ulcers.....	0	0	0	0	0	0	0
b. Have an established professional relationship with a patient.....	0	0	0	0	0	0	0
c. Encounter established rules and procedures regarding pressure ulcers in your workplace.....	0	0	0	0	0	0	0
d. Have privacy when working with a patient	0	0	0	0	0	0	0
e. Have tools/supplies/equipment available.....	0	0	0	0	0	0	0
f. Have ample space in a room.....	0	0	0	0	0	0	0
g. Encounter family resistance.....	0	0	0	0	0	0	0
h. Have a patient who is mentally altered (Alzheimer's, dementia, forgetful)	0	0	0	0	0	0	0
i. Have a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
j. Have a patient's family that does not follow your instructions during the time between visits.....	0	0	0	0	0	0	0
k. Encounter a dirty or cluttered environment	0	0	0	0	0	0	0
l. Be able to convince a patient to accept what you are doing	0	0	0	0	0	0	0
m. Be able to help a family understand what you are doing	0	0	0	0	0	0	0
n. Encounter a patient who wants to die	0	0	0	0	0	0	0
10. Please indicate the extent to which each of the following things would make it easier or harder to look for and take steps to prevent pressure ulcers:							
	A Lot Easier		Neither			A Lot Harder	
	7	6	5	4	3	2	1
a. Having the time available to work with a patient	0	0	0	0	0	0	0
b. Having an established professional relationship with a patient .	0	0	0	0	0	0	0
c. Having established rules and procedures regarding pressure ulcers in your workplace.....	0	0	0	0	0	0	0
d. Having privacy when working with a patient	0	0	0	0	0	0	0
e. Having tools/supplies/equipment available	0	0	0	0	0	0	0
f. Having ample space in a room.....	0	0	0	0	0	0	0
g. Encountering family resistance.....	0	0	0	0	0	0	0
h. Having a patient who is mentally altered.....	0	0	0	0	0	0	0
i. Having a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
j. Having a patient's family that does not follow your instructions during the time between visits.....	0	0	0	0	0	0	0
k. Encountering a dirty or cluttered environment	0	0	0	0	0	0	0
l. Being able to convince a patient to accept what you are doing.....	0	0	0	0	0	0	0
m. Being able to help a family understand what you are doing	0	0	0	0	0	0	0
n. Encountering a patient who wants to die	0	0	0	0	0	0	0

11. Considering all of your patient visits over the past month, how frequently have you taken steps to prevent pressure ulcers?

	Every Visit		Sometimes			Never	
	7	6	5	4	3	2	1
I have taken steps to prevent pressure ulcers from forming on my patients	O	O	O	O	O	O	O

12. All pressure ulcers can be avoided.

Strongly Agree	Don't Know			Strongly Disagree		
7	6	5	4	3	2	1
O	O	O	O	O	O	O

13. Pressure ulcers are:

Extremely Serious				Not At All Serious		
7	6	5	4	3	2	1
O	O	O	O	O	O	O

14. Have you ever heard about preventing pressure ulcers? O 1 Yes O 2 No >>>**IF NO, GO TO Q16**

15. Have you ever taken steps to prevent pressure ulcers?
O 1 Yes >>>**IF YES, GO TO Q16** O 2 No >>>**IF NO, GO TO Q15A**

15A. Which of the following best describes your thoughts about preventing pressure ulcers? (**SELECT ONE ANSWER**)

- O 1 I've never thought about preventing pressure ulcers.
- O 2 I'm undecided about preventing pressure ulcers.
- O 3 I don't want to take steps to prevent pressure ulcers.
- O 4 I want to take steps to prevent pressure ulcers.

The following questions are designed to determine some of what you already know about pressure ulcers and whether or not you have gathered any additional information on your own since the time you took the first survey.

16. A pressure ulcer is a sore: (**SELECT ONE ANSWER**)

- O 1 Inside the mouth
- O 2 Where the skin or tissue has died from lack of circulation
- O 3 On a vein caused by diabetes or circulation problems
- O 4 Inside the stomach
- O 5 All of the above

17. One cause of pressure ulcers is: (**SELECT ONE ANSWER**)

- O 1 Infection with a virus
- O 2 Stress
- O 3 Diabetes
- O 4 Shearing force
- O 5 Incontinence

18. The most common reason people get pressure ulcers is: (**SELECT ONE ANSWER**)

- O 1 Depression
- O 2 Incontinence
- O 3 Advanced age
- O 4 Immobility
- O 5 Weight loss

19. Skin is made up of two layers called the: (**SELECT ONE ANSWER**)

- O 1 Vascular and outer skin
- O 2 Subcutaneous and dermis
- O 3 Cutaneous and subcutaneous
- O 4 Epidermis and the dermis
- O 5 Dermis and the nervous

20. The most common places where pressure ulcers form are the: (**SELECT ONE ANSWER**)

- O 1 Shins, face, stomach and forearms
- O 2 Elbows, back of head, and shoulder blades
- O 3 Tailbone, sitting bones, heels, and sides of hips
- O 4 Palms of the hands and soles of the feet
- O 5 Neck, hands and stomach

21. To monitor for early signs of pressure ulcers, I should inspect every square inch of my client's skin at least: **(SELECT ONE ANSWER)**

- 1 Once per month
- 2 Once per week
- 3 Once per day
- 4 Once per hour
- 5 Every 15 minutes

22. Which of the following are useful for preventing pressure ulcers: **(SELECT ONE ANSWER)**

- 1 **A** - Donut cushions
- 2 **B** - Wheel-chair pushups
- 3 **C** - Turning schedules
- 4 **A & B**
- 5 **B & C**
- 6 **A, B & C**

23. In the United States, approximately how many people suffer with pressure ulcers every year? **(SELECT ONE ANSWER)**

- 1 50,000
- 2 500,000
- 3 2 million
- 4 7.5 million
- 5 None

24. The first sign of a pressure ulcer is a: **(SELECT ONE ANSWER)**

- 1 Black scab
- 2 Red area
- 3 Purple open area
- 4 Yellow shiny area
- 5 Sharp sulfur odor

25. Vigorous scrubbing or massage increases circulation in areas susceptible to pressure ulcers.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

26. Pressure ulcers can form from the inside-out.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

27. Pressure ulcers occur when something was done wrong.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

28. What are the three primary causes of pressure ulcers?

1. _____
2. _____
3. _____

29. List as many risk factors for pressure ulcers that you can think of: _____

30. Please list as many things that you can think of that you could do to prevent pressure ulcers: _____

Thank you for completing the questionnaire!

*We greatly value your input as a professional
in the field of home health care.*

*Please mail the completed survey back to us
in the postage paid envelope we have provided you
within one week of receiving this survey.*

*Once we have received your completed survey, we will be mailing you the \$40 incentive
(two \$20 gift cards to Wal-Mart) as a token of our appreciation.*

*Because we realize many of you would like to see the results of your participation so far,
we will also send you a copy of the prototype instructional video. A short survey will accompany the video we send you
and we ask that you complete the survey in order that we might gain insight into the usability of the material.*

If you have any questions, please contact:

The Matrix Group, Inc.
501 Darby Creek Road, Suite #25
Lexington, KY 40509
1-800-558-6941

APPENDIX A
Instruments and measures

(1) Elicitation Stage

- a. Interview Protocol

(2) Survey Stage

- a. Intake screening instrument
- b. Survey Questionnaire

(3) Evaluation Stage

- a. Intake screening instrument
- b. Pre-evaluation measure
- c. Post-evaluation measure (experimental—includes usability)
- d. Post-evaluation measure (control—no usability)

I.D. _____

HOME HEALTH CARE RESEARCH PROJECT PART 2

Research sponsored and supported by:

Grant # R43AR05031 from the
National Institute of Arthritis and Musculoskeletal and Skin Diseases,
a part of the National Institutes of Health.



*Please watch the entire video that was sent with this survey
before completing the questionnaire.
You may review the video as often as you like.*

*This is a “beta” or draft version. Some imagery is temporary, please focus on the content.
Additionally, if you have any problems with the VHS or DVD,
please contact The Academic Edge, Inc. at 877.506.0811.*

**FOR EACH QUESTION, PLEASE FILL IN THE CIRCLE WHICH BEST
REPRESENTS YOUR ANSWER OR OPINION. SEE EXAMPLE BELOW.**

Correct:



Incorrect:



*Please complete the survey contained in this booklet
and return it in the postage-paid envelope provided
no later than one week from receiving this survey.*

*Once we have received your completed survey – we will mail you your \$40 incentive. (The incentive includes
two \$20 gift cards to Wal-Mart that can be used for in-store and online purchases.)*

If you have any questions or need any assistance with filling out this survey, please contact:

The Matrix Group, Inc.
501 Darby Creek Road, Suite #25, Lexington, KY 40509
1-800-558-6941

*This questionnaire contains a series of questions regarding the prevention of pressure ulcers that you may or may not have answered previously. Please answer **all** of the questions contained in this packet. The information you provide will help create educational materials that better meet the needs of professionals like you. Please answer the questions honestly. Your responses are completely confidential.*

1. Please respond to **each** of the following statements using the scales provided:

a. I intend to take steps to prevent pressure ulcers from forming on my patients.

On Every Visit						Never	
7	6	5	4	3	2	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

b. People who are important to me think I SHOULD/SHOULD NOT take steps to prevent pressure ulcers.

Should						Should Not	
7	6	5	4	3	2	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

c. I am LIKELY/UNLIKELY to take steps to prevent pressure ulcers while working with my patients.

Likely						Unlikely	
7	6	5	4	3	2	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

2. Please rate the following statement using **each** of the scales provided.

My taking steps to prevent pressure ulcers from forming on my patients is:

	Extremely...			Neither			Extremely...	
	7	6	5	4	3	2	1	
a. Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Bad
b. Beneficial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Harmful
c. Pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unpleasant
d. Enjoyable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unenjoyable
e. Wise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Foolish

3. Please indicate the extent to which you agree with the following statements on a 7 to 1 scale, with 7 meaning you Strongly Agree and 1 meaning you Strongly Disagree.

My looking for signs of pressure ulcers and taking steps to prevent them...

		Strongly Agree		Neither Agree nor Disagree		Strongly Disagree		
		7	6	5	4	3	2	1
a.	Is something that I feel competent to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b.	Would protect me and my employer from liability.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c.	Is a standard of practice/is required for my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d.	Makes me feel that I am providing comprehensive health care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e.	Would cause patients to feel worried and anxious.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f.	Is an opportunity to educate patients and provide reliable information to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g.	Is an opportunity to change patient behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h.	Would increase compliments and positive referrals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i.	Avoids trouble with state and/or regulatory agencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j.	Shows compassion.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k.	Is appreciated by the patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l.	May be perceived as <u>unnecessary</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m.	Is appreciated by the patient's family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n.	Reduces long-term consequences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Using a 7-point scale where 7 means it is Extremely Important to you and 1 means it is Extremely Unimportant to you, please rate **each** of the following statements as they relate to your position in home health care.

	Extremely Important		Neither Important nor Unimportant			Extremely Unimportant	
	7	6	5	4	3	2	1
a. Feeling competent and knowledgeable.....	0	0	0	0	0	0	0
b. Protecting myself from liability.....	0	0	0	0	0	0	0
c. Following standards of practice for my job.....	0	0	0	0	0	0	0
d. Feeling that I am providing comprehensive health care.....	0	0	0	0	0	0	0
e. Causing patients to feel worried and anxious.....	0	0	0	0	0	0	0
f. To educate patients and provide reliable information to them...	0	0	0	0	0	0	0
g. Changing patient behavior.....	0	0	0	0	0	0	0
h. Increasing compliments and positive referrals.....	0	0	0	0	0	0	0
i. Avoiding trouble with state and/or regulatory agencies.....	0	0	0	0	0	0	0
j. Showing compassion.....	0	0	0	0	0	0	0
k. Being appreciated by the patient.....	0	0	0	0	0	0	0
l. Having others perceive the things I do as <u>necessary</u>	0	0	0	0	0	0	0
m. Being appreciated by the patient's family.....	0	0	0	0	0	0	0
n. Reducing long-term consequences.....	0	0	0	0	0	0	0

5. Please rate how you feel about **each** of the following statements using the scales provided:

a. Other people like me usually DO/DO NOT take steps to prevent pressure ulcers with their patients.

Do						Do Not
7	6	5	4	3	2	1
0	0	0	0	0	0	0

b. I DO/DO NOT feel under pressure from others to take steps to prevent pressure ulcers.

Do						Do Not
7	6	5	4	3	2	1
0	0	0	0	0	0	0

c. I would like to take steps to prevent pressure ulcers while working with my patients.

Definitely YES			Definitely NO			
7	6	5	4	3	2	1
0	0	0	0	0	0	0

6. Please rate the extent to which you agree with **each** of the following:

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. My co-workers think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
b. My employers think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
c. My patients think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
d. My patients' families think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
e. Experts think/tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
f. Professional organizations in my field tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
g. Health insurance companies tell me I should take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0

Please rate the extent to which you agree with **each** of the following:

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
h. National or local health organizations (e.g. Centers for Disease Control, National Institutes of Health, local and state Public Health Departments) tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
i. My supervisor/case manager/nursing manager thinks/tells me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
j. School/training tells me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
k. Aides who have worked previously with a patient think/tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0
l. State inspectors think/tell me I should take steps to prevent pressure ulcers	0	0	0	0	0	0	0

7. Please indicate your agreement or disagreement with **each** of the following statements.

Generally speaking...	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. I want to do what my co-workers think I should do	0	0	0	0	0	0	0
b. I want to do what my employer thinks I should do.....	0	0	0	0	0	0	0
c. I want to do what my patients think I should do.....	0	0	0	0	0	0	0
d. I want to do what my patient's family thinks I should do.....	0	0	0	0	0	0	0
e. I want to do what experts think I should do.....	0	0	0	0	0	0	0
f. I want to do what professional organizations in my field think I should do	0	0	0	0	0	0	0
g. I want to do what insurance companies think I should do	0	0	0	0	0	0	0
h. I want to do what health organizations think I should do	0	0	0	0	0	0	0
i. I want to do what my supervisor thinks I should do	0	0	0	0	0	0	0
j. I want to do what my previous training tells me I should do	0	0	0	0	0	0	0
k. I want to do what previous aides think I should do.....	0	0	0	0	0	0	0
l. I want to do what state inspectors think I should do	0	0	0	0	0	0	0

8. Using the scale below, please indicate your level of agreement with the following statements.

	Strongly Agree		Neither Agree nor Disagree			Strongly Disagree	
	7	6	5	4	3	2	1
a. I am confident I could take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0
b. Whether I take steps to prevent pressure ulcers is entirely up to me	0	0	0	0	0	0	0
c. I feel I know how to take steps to prevent pressure ulcers.....	0	0	0	0	0	0	0

(Please continue to the next page)

9. Using the scale below, please indicate how likely are you to...

	Extremely Likely		Neither Likely nor Unlikely			Extremely Unlikely	
	7	6	5	4	3	2	1
a. Have time to look for and prevent pressure ulcers.....	0	0	0	0	0	0	0
b. Have an established professional relationship with a patient.....	0	0	0	0	0	0	0
c. Encounter established rules and procedures regarding pressure ulcers in your workplace.....	0	0	0	0	0	0	0
d. Have privacy when working with a patient	0	0	0	0	0	0	0
e. Have tools/supplies/equipment available.....	0	0	0	0	0	0	0
f. Have ample space in a room.....	0	0	0	0	0	0	0
g. Encounter family resistance.....	0	0	0	0	0	0	0
h. Have a patient who is mentally altered (Alzheimer's, dementia, forgetful)	0	0	0	0	0	0	0
i. Have a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
j. Have a patient's family that does not follow your instructions during the time between visits.....	0	0	0	0	0	0	0
k. Encounter a dirty or cluttered environment	0	0	0	0	0	0	0
l. Be able to convince a patient to accept what you are doing	0	0	0	0	0	0	0
m. Be able to help a family understand what you are doing	0	0	0	0	0	0	0
n. Encounter a patient who wants to die	0	0	0	0	0	0	0

10. Please indicate the extent to which each of the following things would make it **easier or harder** to look for and take steps to prevent pressure ulcers:

	A Lot Easier		Neither			A Lot Harder	
	7	6	5	4	3	2	1
a. Having the time available to work with a patient	0	0	0	0	0	0	0
b. Having an established professional relationship with a patient .	0	0	0	0	0	0	0
c. Having established rules and procedures regarding pressure ulcers in your workplace.....	0	0	0	0	0	0	0
d. Having privacy when working with a patient	0	0	0	0	0	0	0
e. Having tools/supplies/equipment available	0	0	0	0	0	0	0
f. Having ample space in a room.....	0	0	0	0	0	0	0
g. Encountering family resistance.....	0	0	0	0	0	0	0
h. Having a patient who is mentally altered.....	0	0	0	0	0	0	0
i. Having a patient who does not follow your instructions during the time between visits	0	0	0	0	0	0	0
j. Having a patient's family that does not follow your instructions during the time between visits.....	0	0	0	0	0	0	0
k. Encountering a dirty or cluttered environment	0	0	0	0	0	0	0
l. Being able to convince a patient to accept what you are doing.....	0	0	0	0	0	0	0
m. Being able to help a family understand what you are doing	0	0	0	0	0	0	0
n. Encountering a patient who wants to die	0	0	0	0	0	0	0

11. Considering all of your patient visits over the past month, how frequently have you taken steps to prevent pressure ulcers?
- | | Every Visit | 6 | 5 | Sometimes | 3 | 2 | Never |
|---|-------------|---|---|-----------|---|---|-------|
| | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| I have taken steps to prevent pressure ulcers from forming on my patients | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
12. All pressure ulcers can be avoided.
- | | Strongly Agree | | Don't Know | | Strongly Disagree |
|--|----------------|---|------------|---|-------------------|
| | 7 | 6 | 5 | 4 | 3 |
| | 0 | 0 | 0 | 0 | 0 |
13. Pressure ulcers are:
- | | Extremely Serious | | Not At All Serious |
|--|-------------------|---|--------------------|
| | 7 | 6 | 5 |
| | 0 | 0 | 0 |
14. Have you ever heard about preventing pressure ulcers? 1 Yes 2 No >>>IF NO, GO TO Q16
15. Have you ever taken steps to prevent pressure ulcers?
 1 Yes >>>IF YES, GO TO Q16 2 No >>>IF NO, GO TO Q15A
- 15A.** Which of the following best describes your thoughts about preventing pressure ulcers? (**SELECT ONE ANSWER**)
- 1 I've never thought about preventing pressure ulcers.
 - 2 I'm undecided about preventing pressure ulcers.
 - 3 I don't want to take steps to prevent pressure ulcers.
 - 4 I want to take steps to prevent pressure ulcers.

The following questions are designed to determine whether the educational video program effectively conveys information and ideas about pressure ulcers and their prevention.

16. A pressure ulcer is a sore: (**SELECT ONE ANSWER**)
- 1 Inside the mouth
 - 2 Where the skin or tissue has died from lack of circulation
 - 3 On a vein caused by diabetes or circulation problems
 - 4 Inside the stomach
 - 5 All of the above
17. One cause of pressure ulcers is: (**SELECT ONE ANSWER**)
- 1 Infection with a virus
 - 2 Stress
 - 3 Diabetes
 - 4 Shearing force
 - 5 Incontinence
18. The primary risk factor for pressure ulcers is: (**SELECT ONE ANSWER**)
- 1 Depression
 - 2 Incontinence
 - 3 Advanced age
 - 4 Immobility
 - 5 Weight loss
19. Skin is made up of two layers called the: (**SELECT ONE ANSWER**)
- 1 Vascular and outer skin
 - 2 Subcutaneous and dermis
 - 3 Cutaneous and subcutaneous
 - 4 Epidermis and the dermis
 - 5 Dermis and the nervous
20. The most common places where pressure ulcers form are the: (**SELECT ONE ANSWER**)
- 1 Shins, face, stomach and forearms
 - 2 Elbows, back of head, and shoulder blades
 - 3 Tailbone, sitting bones, heels, and sides of hips
 - 4 Palms of the hands and soles of the feet
 - 5 Neck, hands and stomach

21. To monitor for early signs of pressure ulcers, I should inspect every square inch of my client's skin at least: **(SELECT ONE ANSWER)**

- 1 Once per month
- 2 Once per week
- 3 Once per day
- 4 Once per hour
- 5 Every 15 minutes

22. Which of the following are useful for preventing pressure ulcers: **(SELECT ONE ANSWER)**

- 1 **A** - Donut cushions
- 2 **B** - Wheel-chair pushups
- 3 **C** - Turning schedules
- 4 **A & B**
- 5 **B & C**
- 6 **A, B & C**

23. In the United States, approximately how many people suffer with pressure ulcers every year? **(SELECT ONE ANSWER)**

- 1 50,000
- 2 500,000
- 3 2 million
- 4 7.5 million
- 5 None

24. A common early sign of a pressure ulcer is a: **(SELECT ONE ANSWER)**

- 1 Black scab
- 2 Reddened area
- 3 Purple open area
- 4 Yellow shiny area
- 5 Sharp sulfur odor

25. Vigorous scrubbing or massage reduces pressure ulcer risk by increasing circulation in areas susceptible to pressure ulcers.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

26. Pressure ulcers can form from the inside-out.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

27. Pressure ulcers occur when something was omitted or done wrong.

- | Strongly Agree | | Don't Know | | | Strongly Disagree | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

28. What are the three primary causes of pressure ulcers?

1. _____
2. _____
3. _____

29. List as many risk factors for pressure ulcers that you can think of: _____

30. Please list as many things that you can think of that you could do to prevent pressure ulcers: _____

Your feedback in this section will help us improve these materials and create a more effective training tool.

31. Please rate the extent to which you agree with **each** of the following statements:

	Strongly Agree 5	4	Neither Agree nor Disagree 3	2	Strongly Disagree 1
a. I feel better prepared to prevent pressure ulcers after using the program	0	0	0	0	0
b. The program has been useful	0	0	0	0	0
c. The program increased my understanding of pressure ulcer issues	0	0	0	0	0
d. The program was engaging.....	0	0	0	0	0
e. The program was of high-quality appearance.....	0	0	0	0	0
f. The program was comprehensive	0	0	0	0	0
g. The program was well-organized.....	0	0	0	0	0
h. The program was easy to understand.....	0	0	0	0	0
i. I will use information from the program in my work	0	0	0	0	0
j. I would recommend this program to other care providers like myself	0	0	0	0	0

32. Using the scale below, please rate your overall impression of the program.

Excellent 5	Very Good 4	Average 3	Below Average 2	Poor 1
0	0	0	0	0

33. For the following questions, on a scale of 1-5, with 5 being very useful, please rate how useful each item would be IF it were to be developed. Your answers will help us prioritize the continuing development of materials.

	Very Useful 5	4	3	2	Not At All Useful 1
a. Computer-based lessons and activities to practice what I've seen.....	0	0	0	0	0
b. Segments portraying special situations and outcomes	0	0	0	0	0
c. Segments on working with families and guardians.....	0	0	0	0	0
d. Segments demonstrating detailed steps to prevent pressure ulcers.....	0	0	0	0	0
e. A reference guide of tools available to reduce pressure ulcer risk.....	0	0	0	0	0
f. Web-based discussions, references and "Ask-the-Expert" features.....	0	0	0	0	0
g. Materials and a video to help patients and families understand what I do.....	0	0	0	0	0

34. For training activities and materials, given a choice, please **rank** your preference for the following - numbering each of the choices from 1 to 5 (1 being Most Preferred to 5 being Least Preferred) *Please use each number only once.*

___ Face-to-face seminars ___ CD-ROM ___ Web-based activities ___ VHS tape ___ DVD

35. What are the strongest or most useful segments of the program for you? Why? _____

(Please continue to the next page)

36. What are the weakest or least useful segments of the program? Why? _____

37. What could be changed or added to the program to make it better? _____

38. Please elaborate on any of your answers from the previous page or discuss anything else you would like regarding the materials.

39. Overall, for me, the video included...

All New Information					All Review Information	
5	4	3	2	1		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Thank you for completing the questionnaire! We greatly value your input as a professional in the field of home health care.

Please mail the completed survey back to us in the postage paid envelope we have provided you within one week of receiving this survey.

Once we have received your completed survey – we will be mailing you the \$40 incentive (two \$20 gift cards to Wal-Mart) as a token of our appreciation.

NOTE: You may keep the educational video. If you would like, we will send you a free copy of the final version, as well as the second module on prevention.

___ Yes, please do. ___ No thank you.

If you have any questions or need any assistance with filling out this survey, please contact:
The Matrix Group, Inc.
501 Darby Creek Road, Suite #25, Lexington, KY 40509
1-800-558-6941

APPENDIX B

Materials

The video program used in this study is entitled Every Square Inch: Preventing Pressure Ulcers. This appendix contains the scripts for all aspects of the video as well as screen shots of the interface.

(1) Every Square Inch: Main Module Video Script	B02
(2) Every Square Inch: Animation Scripts	B62
(3) Every Square Inch: Belief Statements Script	B68
(4) Every Square Inch: DVD screen shots.....	B74

APPENDIX B

Materials

The video program used in this study is entitled Every Square Inch: Preventing Pressure Ulcers. This appendix contains the scripts for all aspects of the video as well as screen shots of the interface.

- (1) Every Square Inch: Main Module Video Script
- (2) Every Square Inch: Animation Scripts
- (3) Every Square Inch: Belief Statements Script
- (4) Every Square Inch: DVD screen shots

BLACK SCREEN:

SUPERIMPOSE MAIN TITLE:

"EVERY SQUARE INCH"

A GUIDE TO THE PREVENTION OF
PRESSURE ULCERS FOR
THE HOME HEALTH CARE AIDE

MODULE 1: INTRODUCTION TO PRESSURE ULCERS

FADE IN:

EST. SHOT - ST. JOSEPH HOSPITAL -- DAY

NARRATOR

Welcome to "*Every Square Inch*," your guide to pressure ulcer prevention. This is the first module in a series on pressure ulcer prevention in home health care. In this module, you will follow a day in the life of Lorraine, a newcomer to home health care, as she strives to understand pressure ulcers. She will learn how serious they are, how they form, where they form, and what puts some clients at greater risk than others.

In the second module, also available from The Academic Edge, Lorraine learns more about specific steps she can take to prevent pressure ulcers, including the Big Ten Steps for Pressure Ulcer Prevention.

Now, let's join Lorraine and her friends. And keep in mind that pressure ulcers can be terrible and yet they are almost entirely preventable, with our help.

FADE OUT:

SEGMENT 1: INTRODUCTION

FADE IN:

EST. SHOT - ST. JOSEPH HOSPITAL -- DAY

DOROTHY'S VOICE

So, the bottom line is:
Looking out for pressure
ulcers...

DISSOLVE TO:

INT. CLASSROOM - DAY

The room is dark. The CAMERA IS CLOSE on a screen on which is projected a GRUESOME PHOTOGRAPH OF A STAGE IV PRESSURE ULCER, beside which is printed this statistic:

2.1 MILLION WILL SUFFER FROM PRESSURE ULCERS THIS YEAR IN THE U.S.

DOROTHY'S VOICE

... and taking steps to
prevent them are vitally
important to our clients'
well-being.

A SECOND SLIDE APPEARS, also of a Stage IV pressure ulcer. The statistic printed beside it is:

60,000 WILL DIE FROM PRESSURE ULCER COMPLICATIONS

DOROTHY'S VOICE

They're painful, they're
debilitating, and they often
lead to death. But the good
news is: most pressure ulcers
are preventable.

CUT TO:

WIDER ANGLE

The seminar conductor is DOROTHY HORNE, an African-American woman in her late 40s or early 50s. She stands at a podium beside the projection screen. Using a remote switch to turn on the lights, she reveals A DOZEN OR SO INDIVIDUALS, MOSTLY WOMEN, seated around the room.

DOROTHY

Watch for them, take
preventive steps, and

document, document, document.
And study the material I gave
you, because there will be a
test on pressure ulcers next
Thursday.

DOROTHY (CONT'D)

Thank you for your time and
remember: Always check every
square inch of skin.

REACTION SHOT

Revealed are LORRAINE, an African-American woman
in her 40s; SARAH, a Latina in her 50s; MICHAEL, an
African-American man in his 20s; and GAIL, a white
woman in her 50s.

They close their notebooks and gather up their
belongings, along with the other seminar
participants, and begin talking with each other.

*Casting note: One of these people must be
Hispanic.*

FADE TO BLACK.

FADE IN:

BLACK SCREEN.

Superimpose:

SEGMENT 2: HOW DO PRESSURE ULCERS AFFECT ME?

DISSOLVE TO:

INT. CLASSROOM - DAY

Lorraine, Sarah, Michael and Gail emerge from the
classroom and cross slowly to the seating area.

LORRAINE

Those wounds are really nasty,
but it seems like it takes a
whole lot of work to prevent
them. And I've always got
about more than I can handle
during my home visits, what
with trying to make room to
work, cleaning up messes,
never having the tools and
supplies I need. I don't see

how I can fit all this stuff
in, too.

SARAH

It's not that big a deal, even
with the documentation. And it
can really help your client. I
mean, have you ever seen
anything so gross as those
Stage IV bedsores?

GAIL

Well, my clients don't want me
checking their private parts
all the time. And don't get me
started on families. They're
almost never any help.
Frankly, I've never seen a
pressure ulcer develop. So, I
don't think all that stuff in
the seminar's really worth our
time.

As the group reaches the seating area and Sarah
and Lorraine sit, Michael says:

MICHAEL

You're forgettin' somethin'.
We can get sued and lose our
job if a client develops a
pressure ulcer. The state
and the feds watch for those
suckers like hawks.

SARAH

As for families, when I
explain what I'm going to do,
or what I'm doing and why, my
clients *and* their families
really appreciate it.

GAIL

All right, all right. You know
I'll keep looking for pressure
ulcers. But I still think it's
an imposition on the client
and an invasion of their
privacy.

MICHAEL

Maybe it is, but if it keeps
'em from gettin' a pressure
ulcer, they'll go for it, man.
Big time.

GAIL
(glancing at her
watch)
You should have been a
salesman.

MICHAEL
I've been thinkin' about that
-- or maybe becomin' a brain
surgeon.

Gail rolls her eyes and shakes her head in mock
exasperation as she walks away.

SARAH
Don't take her seriously,
guys. She's a very good care
provider who just likes to run
her mouth.

MICHAEL
Does a good job of it, too.

SARAH
The reason she hasn't ever
seen a pressure ulcer develop
is because she really watches
for them. She does. And she's
actually very good about
working with families. She
just gets frustrated
sometimes, like we all do, and
this is one of her frustrated
periods.

MICHAEL
Well, there's always gonna be
things that get in the way of
our takin' super care of our
clients, but they can all be
overcome. And we sure don't
want a client to develop one
of those ugly bed sores.

LORRAINE
I certainly don't, but--I'm
still too new to all this to
know for sure what causes bed
sores and which of my clients
I need to watch closely, and
exactly what I'm supposed to
do to prevent the things. And
I'm sure not ready for a test.

MICHAEL

Then you need to talk with your supervisor, or Dorothy, or a doc, if you can pin one down long enough.

SARAH

Dorothy just left. If you hurry, I'll bet you can still catch her.

Lorraine rushes to catch up with Dorothy.

ANGLE ON LORRIANE & DOROTHY

As Lorraine catches up with Dorothy, she says:

LORRAINE

Dorothy.

Dorothy pauses and says.

DOROTHY

Yes?

LORRAINE

I'm Lorraine Shepherd, one of the newbies.

DOROTHY

I know who you are. What's up?

LORRAINE

Well, I just want you to know that I really enjoyed the seminar and I learned a lot, but - I'm still unsure about some things.

Dorothy looks at her watch.

DOROTHY

Well, I'll tell you what: I have to run up to my office to grab some things for a two o'clock meeting. So, why don't you come with me and I'll try to fill in your blanks? Can you do that?

LORRAINE

Sure. You don't mind?

DOROTHY

Not at all.

LORRAINE

All right.

Dorothy and Lorraine continue along the hallway toward the elevators.

DOROTHY

In fact, I'm glad you asked, Lorraine. This pressure ulcer stuff is vitally important and you home health aids need to know it inside out and backwards. And that's how I know it, because all I did for years before this job was take care of wounds, especially pressure ulcers.

FADE TO
BLACK:

FADE IN:

BLACK SCREEN.

Superimpose:

SEGMENT 3: PRESSURE ULCERS & WHO'S AT RISK

INT. HOSPITAL CORRIDOR - DAY

The CAMERA IS CLOSE on the sign on the door of Dorothy's office. It reads: DOROTHY HORNE, RN, CNS, COWCN, DIRECTOR, HOME HEALTH SERVICES.

DOROTHY'S VOICE

As you know, pressure ulcers are also called bedsores and decubitus ulcers, or sometimes 'decubes' for short.

CUT TO:

INT. DIRECTOR'S OFFICE - DAY

Dorothy sits behind her desk. A computer monitor is nearby. Lorraine sits opposite her, removing a NOTE PAD from her backpack or purse.

DOROTHY

It's extremely important to learn how to prevent them, because they're one of the most painful wounds a person can have, and they can be fatal. Plus, the incidence of pressure ulcers, that is, how many happen under our watch, is often used to gauge the quality of care we provide.

Lorraine removes a notebook from her backpack. She will make notes throughout this module.

DOROTHY

So, let's begin with what a pressure ulcer is and what causes it.

(turning to her computer and mousing around)

To do that, we should look at some healthy skin first and, somewhere, I have a program that will let us do that. Ah-ha, here it is. And -- blast off.

And as the CAMERA DOLLIES IN TO A CLOSE SHOT OF THE MONITOR:

ANIMATED ILLUSTRATION OF SKIN #1

AEI animators will provide video for these segments. Audio should be recorded. As a NARRATOR addresses the aspects of the illustration, they are highlighted in some way.

The program is paused and we:

CUT TO:

INT. DIRECTOR'S OFFICE -- DAY

Dorothy turns to Lorraine and explains further.

DOROTHY

So, healthy skin has several layers and each one performs an important function. But when part of the skin is under constant pressure, from, say, lying in bed, sitting in a

chair, or wearing a cast for a long period of time, a pressure ulcer can form.

Pressure ulcers also form when the body is exposed to friction and shear, for example from sliding around in bed, much like a rug burn. In each case, the tissue dies from lack of blood flow. And sometimes, it does so from the inside out.

LORRAINE

Where do these sores form? Can they develop anywhere on the body?

DOROTHY

They can, but they commonly occur in just a few locations, places where rubbing and pressure are likely.

(turning back to her computer)

There's a module on that in this program. Right - there.

ANIMATED ILLUSTRATION OF SKIN #2

Resume animated illustration of skin.

CUT TO:

INT. DIRECTOR'S OFFICE -- DAY

Again, the program is paused and the cursor of Dorothy's mouse goes to a pull-down menu.

DOROTHY

Well, that wasn't exactly what I was looking for, but it is important information. I think this is the right part.

She clicks on a title and:

RESUME ANIMATED ILLUSTRATION OF SKIN

LORRAINE (V.O.)

So, you take healthy skin, add
unrelieved pressure...

CUT TO:

INT. DIRECTOR'S OFFICE -- DAY

LORRAINE

... shear, or friction, and my
client could develop an ulcer.
And because they usually occur
where pressure or rubbing are
likely, those are the places I
should concentrate on, right?

DOROTHY

(pausing the
program)

A qualified yes. But remember:
these ulcers can happen
surprisingly fast, so you need
to check every square inch of
your client's skin regularly,
particularly those pressure
points.

(rummaging for
something on her
desk)

And somewhere in this mess -
ah, yes - is this handy card
on the common pressure points.

(handing it to
Lorraine)

Keep it with you. It might be
useful.

LORRAINE

Yeah, thanks.

DOROTHY

I know you already know from
the seminar what pressure
ulcers look like, but do you
know they exist in four
stages, from least to most
serious?

LORRAINE

The worst is Stage 4, right?

DOROTHY

Right, and their appearance
can be very deceptive. A
pressure ulcer might not look

bad at all, and yet it may
very well be life threatening.
(turning back to her
computer)

There's a segment on their
formation and staging in this
program. And there it is.

And as she clicks on the pull-down menu, we:

CUT TO:

RESUME ANIMATED ILLUSTRATION OF SKIN

CUT TO:

INT. DIRECTOR'S OFFICE - DAY - BOWL OF FRUIT ON
DESK WITH BRUISED BANANA

Dorothy turns back to Lorraine, saying:

DOROTHY

You know, the ones that form
from the inside out are a bit
like this banana here--there is
just a little brownish spot
here on the skin. When you
peel the banana, you see that
beneath the spot of the skin
is all damaged and mushy, even
though the skin was intact.

(handwaves back to the
computer)

And we don't want to see
wounds like those develop in
anyone ever. Any questions?

LORRAINE

No, but I would have never
guessed that some of those
stage three and four wounds
were that bad. They didn't
look so bad on the surface.
It's scary how they can form
from the inside out like that.

DOROTHY

Scary's a good word for it.
And that's why we have to try
our best to prevent them and
why we have to monitor
carefully by examining every
square inch of our client's

skin, especially those who are at increased risk.

LORRAINE

Aren't all our clients at risk?

Dorothy rises and crosses to a small conference table on which there is a pile of PATIENT FILES and MANILA ENVELOPES.

DOROTHY

No, not really. Some people are much more likely to get pressure ulcers than others. But we should never let our guard down. Monitor, monitor, monitor.

DOROTHY

That raises an important issue: we've already talked about the causes of pressure ulcers. Let's talk about what factors put our patients at risk. And, the single most important risk factor is not being able to move, or immobility. People who can't get up, or change positions without assistance, are very much at risk, even if the immobility is temporary and limited.

In addition to the big one, immobility, there are other things that can make a client more likely to develop a pressure ulcer. Some of these risk factors we have some control over, others are mostly beyond our control. The more risk factors an immobile client has, the greater his or her risk for developing pressure ulcers.

She begins shuffling through the folders.

DOROTHY

I have some notes I made when debriefing one of your colleagues. Let's look first

at the factors you have some control over because reducing these risks will go a long way toward prevention.

Lorraine rises and crosses to the conference table for a closer look; this as Dorothy opens a folder. Clipped to one corner is a PHOTOGRAPH OF RALPH NEWMAN, late 60s.

INSERT LIST

Below the photograph is a list that reads thusly:
Risk factors you can control: Unrelieved pressure, friction, and shear; macerated skin; poor nutrition; and dehydration.

As Dorothy continues, the CAMERA ZOOMS IN FOR A TIGHT SHOT OF THE PHOTOGRAPH AND HAND-WRITTEN LIST.

DOROTHY (V.O.)

Controllable risk factors include unrelieved pressure, friction, and shear; macerated skin; poor nutrition; and dehydration. These are all things that, if you are doing your job correctly, should never become an issue. Maybe we should talk about each of them a bit more...

PHOTOGRAPH BECOMES LIVE-ACTION SEQUENCE.

INT. BEDROOM OF WORKING-CLASS HOME - DAY

Sarah turns Ralph Newman in a manner that conforms with the narration. She also uses A PRESSURE-RELIEVING DEVICE AND PADDING. RISK FACTORS APPEAR ON SCREEN AS THEY ARE NAMED.

DOROTHY (V.O.)

Unrelieved pressure, friction and sheer, for instance, are all primary causes of pressure ulcers, as we saw in the animated program. If we don't take aggressive steps to prevent these causes in immobile clients, we are putting them at risk for pressure ulcers.

The problem of unrelieved pressure is more likely in clients who can't move on their own, because of illness, injury, or a physical or mental disability.

As for friction, some clients have spasms when their body moves or tightens on its own, some have tremors or have other conditions that put them at greater risk for friction injury, especially confusion, agitation, or pain.

Shear can occur in older people or those who have lost large amounts of weight because loose skin is easily pulled and stretched against surfaces. People who are chair-bound or bedfast are also at risk as gravity pulls them down in the furniture, or when well-meaning caregivers slide them across the bed or chair when moving them.

VIDEO OF MACERATED SKIN TREATMENT FROM PROF. BLACK

List the three on screen.

DOROTHY (V.O.)

There are three more risk factors we can control.

Text graphic of "Maceration"

DOROTHY (V.O.)

Skin that's exposed to constant moisture becomes degraded, spongy, and very fragile; a condition known as maceration. Clients who are incontinent or who are obese are at greatest risk for macerated skin, which in turn puts them at risk for pressure ulcers.

INT. BEDROOM OF WORKING-CLASS HOME - DAY

Sarah feeds Mr. Newman SOME FORM OF PROTEIN from a platter. MRS. NEWMAN, his 60-ish wife, looks on approvingly.

Text graphic of "poor nutrition."

DOROTHY (V.O.)

Poor nutrition is a very important risk factor for pressure ulcers. Poor food intake, particularly a lack of protein, affects the healing process and the ability of soft tissue to tolerate stress. Wounds can't heal if the body is malnourished. So, get your clients to eat.

INT. BEDROOM OF WORKING-CLASS HOME - MINUTES LATER

Each holds a glass of water. They toast one another and drink.

Text graphic of "dehydration."

DOROTHY (V.O.)

Dehydration causes blood volume to decrease, which lowers blood flow to the skin. It also makes the skin less able to withstand pressure, because it isn't plumped up and cushioned by enough water. So, be sure to have a glass of water with your client at every opportunity, unless restricted.

INT. DIRECTOR'S OFFICE - DAY

Dorothy looks up from the folder.

DOROTHY

You'll both feel better for it.

LORRAINE

OK, so: The risk factors I can control are unrelieved pressure...

RESUME PATIENT FOLDER

The list of risk factors is featured.

LORRAINE (V.O.)
... friction, and shear – I
got those from the segment on
causes – macerated skin from
constant exposure to moisture,
poor nutrition...

INT. DIRECTOR'S OFFICE – DAY

Lorraine refers to her notes.

LORRAINE
... and dehydration. I can
reduce our clients' risk by
working on them. I can
certainly see that. What else?

DOROTHY
Well, some risk factors,
unlike the ones we've just
discussed, are because of
certain things about the
individual client. And you may
not have much control over
them. But they're important in
identifying which clients are
more likely to get pressure
ulcers.

She shuffles through the files and finds what
she's looking for, A MANILA ENVELOPE.

DOROTHY
(removing the
envelope's contents)
These are some of my lecture
materials. There are some good
illustrations in here.

ANGLE ON ENVELOPE'S CONTENTS

It consists of A LIST OF RISK FACTORS and a number
of STOCK PHOTOS. Dorothy will first read the list
aloud, then comment on one photograph after
another.

DOROTHY V.O.
The intrinsic risk factors,
the risk factors we have
little control over, are:
advanced age, obesity or
underweight, prescription
medications, depression and
other mental conditions,

spinal cord injuries, chronic medical conditions, chronic or acute pain, incontinence, loose skin, and terminal illness.

PHOTO 1: AN ELDERLY WOMAN IN A WHEEL CHAIR.

PHOTO 2: AN ELDERLY MAN IN A HOSPITAL BED.

DOROTHY (V.O.)

Advanced age can increase an immobile person's risk for pressure ulcers because, as we age, our skin gets thinner and looser and less able to tolerate pressure. Keep in mind, though, that being elderly by itself is not a risk, but being immobile and older is a big risk.

PHOTO 3: AN OBESE MAN, SHIRTLESS, BEING EXAMINED BY A PHYSICIAN.

PHOTO 4: AN OVERWEIGHT WOMAN.

DOROTHY (V.O.)

Obesity, or being overweight, can increase risk. Obesity can contribute to immobility and make it hard to provide care. It also creates excess skin folds that trap moisture and are prone to friction damage from rubbing together. Also, excess weight puts more pressure on points of contact with surfaces, and increases the risk of friction and shear from transfers.

PHOTO 5: AN UNDERNOURISHED WOMAN.

DOROTHY (V.O.)

Being underweight can be a problem too. It can mean inadequate nutrition for wound healing and less protective padding in the bony areas of the body.

PHOTO 6: MEDICINE CONTAINERS OF ALL KINDS.

DOROTHY (V.O.)

Many prescription medications can increase risk for pressure ulcers. Sedatives and pain medicines reduce mobility, which we know is a risk. Blood pressure medications, steroids, and some other medicines cause reduced circulation, which means that the skin isn't getting the oxygen and nutrients it needs to be healthy and to resist pressure damage.

PHOTOS 7, 8 AND 9: ELDERLY PERSONS IN WHEELCHAIRS, STARING INTO OBLIVION (WHICH IS IN IOWA).

DOROTHY (V.O.)

Alzheimer's disease, dementia, mental disability or illness, or brain injuries, like stroke, can cause behavioral problems and immobility that increase the risk of pressure ulcers.

Clients with such problems can be stubborn or hard to motivate, making prevention especially challenging. Sometimes, they must be restrained or sedated, which can increase risk.

And then there's depression. It seems to be a risk factor for pressure ulcers too, partially because clients who are depressed are less likely to eat well, exercise, or follow doctor's orders. Clients who are angry or anxious may be similarly affected.

PHOTO 10: Paraplegic in chair/X-RAY OF SPINE.

DOROTHY'S VOICE

Loss of sensation due to paralysis or other neurological problems is a big risk for pressure-ulcer formation. Clients who have

poor sensation for any reason, particularly those who have had spinal cord injuries, are at high risk for pressure ulcers because they cannot feel discomfort or pressure and must rely on others to reposition them.

PHOTO 11: YOUNG MAN RECEIVING PHYSICAL THERAPY.

PHOTO 12: ELDERLY WOMAN RECEIVING PHYSICAL THERAPY.

PHOTO 13: WHEELCHAIR ATHLETE OR PATIENT USING HAND BRACES

DOROTHY (V.O.)

Chronic medical conditions that increase risk include conditions that affect circulation or the amount of oxygen in the blood, conditions that limit mobility, and conditions that cause involuntary movements, like tremors. Acute pain from injury or surgery, or chronic pain from injury or disease, also increase risk, as does a terminal illness that severely limits mobility.

INT. DIRECTOR'S OFFICE – DAY

As Dorothy continues, she opens ANOTHER MANILA ENVELOPE and removes its contents, which are MORE STOCK PHOTOGRAPHS.

DOROTHY

If any of your clients has a chronic condition, make sure you find out if it might increase the risk of pressure ulcers. Now, let's talk a little bit about incontinence.

PHOTOS 14, 15, 16, 17: REAR VIEW OF PATIENT BEING CLEANSED BY CARING HANDS, CLIENT WITH DEPENDS, AID USING PERISPRAY, RED BOTTOM FROM INCONTINENCE.

DOROTHY (V.O.)

Incontinence, particularly stool, or fecal, incontinence,

is a major risk for pressure ulcer formation. The greatest risk occurs in clients who have both stool and urinary incontinence. The waste products in stool and urine can cause chemical burns to the skin and maceration. The damaged skin is very fragile and can't withstand much pressure. The danger of infection is very high when pressure ulcers develop in these clients.

PHOTOS 21, 22, 23, 24: TERMINAL PATIENTS IN A HOSPICE SETTING, SOME WITH RELATIVES, SOME WITH MEDICAL PERSONNEL, PASTOR OR RABBI.

DOROTHY (V.O.)

Terminal illnesses can dramatically increase the risk of pressure ulcers for many reasons. Because of the tissue breakdown that's associated with body shutdown at the end of life, prevention may not be realistic or in the best interest of the near-death client. This is the only time when prevention might take a back seat to client comfort. Individual needs and wishes should be addressed carefully and with sensitivity, with the input of loved ones and medical personnel.

INT. DIRECTOR'S OFFICE - DAY

LORRAINE

(referring to her notes)

Okay, that was a lot of info, so let me see if I got everything: Advanced age, unhealthy bodyweight, many prescription medications, mental health issues, spinal cord injuries, chronic medical conditions, pain, incontinence, both urinary and fecal, and terminal illness are all risk factors that can

increase the risk of a pressure ulcer. I may not be able to control these risks, but knowing about them will help me recognize when I need to be especially careful about prevention.

DOROTHY

(glancing at her wrist watch)

Right, and the most important thing you can do about pressure ulcers is prevent them from happening in the first place. Most, if not all, pressure ulcers are preventable, so their development is often regarded as evidence of neglect or abuse.

DIFFERENT ANGLE ON DOROTHY AND LORRAINE.

DOROTHY

If you ever see a red or open area of skin, or suspect for any other reason that a client may be developing a pressure ulcer, contact your supervising nurse immediately. Then take whatever steps you can to reposition the client so that the area in question is not in direct contact with the bed or chair. And by all means, don't wait until your next visit to see if it gets better, because pressure ulcers don't get better all by themselves; they get worse and they'll get worse very quickly.

She glances at her watch again, picks up her briefcase, and rises, saying:

DOROTHY

I'm sorry, Lorraine, but I've got to get to that meeting. I hope this has been helpful.

LORRAINE

(rising)

Yes, it has, very. I appreciate your taking time to talk with me.

DOROTHY
(crossing to and opening the door)
Not a problem. Stop by, or e-mail me, anytime. I'm here to help.

They both turn to leave, and we:

FADE TO BLACK:

FADE IN:

BLACK SCREEN.

Superimpose:

SEGMENT 4: SUMMARY

EST. SHOT - ST. JOSEPH HOSPITAL -- DAY

The following will be illustrated with images from the associated learning modules and will have appropriate bullets.

NARRATOR (V.O.)
Lorraine has certainly learned a lot so far, and in a very short time, and I hope you have as well.

She's learned what a pressure ulcer is and how dangerous they often are.

She's learned they can form anywhere, especially on pressure points, but really on every square inch of the body. She's learned that pressure, friction and shear are the primary causes.

And, Lorraine has learned that immobility is the primary risk factor. Other things she has some control over that can increase risk include unrelieved pressure, friction,

and shear; maceration; poor nutrition; and dehydration.

She can't control other risk factors, such as advanced age or chronic conditions, but they are important to monitor and document.

Lorraine still has more to learn. She hasn't really learned the steps she can take to prevent ulcers, although I think she has a much better idea now.

In our second module, Lorraine and her friends learn about the Big Ten steps to preventing pressure ulcers as well as some tools and techniques for putting those steps into practice.

Lorraine now knows how important it is to check her patients every day, and to check every square inch of skin for those at risk. She cares, her employers care, and her clients care. How about you?

Will you take steps to prevent pressure ulcers with your clients?

(pause)

I hope so, because by doing so – you could save a life.

(pause)

Thank you for your time.

FADE TO BLACK:

FADE IN:

BLACK SCREEN

Superimpose:

EVERY SQUARE INCH

**A Guide to the Prevention of
Pressure Ulcers for
the Home Health Care Aide**

**Module 2: Pressure Ulcer Prevention,
Techniques and Tools**

EST. SHOT - ST. JOSEPH HOSPITAL - DAY

NARRATOR

Welcome to Module 2 of "Every Square Inch," your guide to pressure ulcer prevention in home healthcare.

In the first module, Lorraine, a newcomer to home healthcare, learns about pressure ulcers: how serious they are – very; how they form – quickly and from pressure, friction, and shear; where they form - often at pressure points but really almost anywhere - thus the need to regularly check every square inch of skin; and what puts some clients at greater risk than others – including risk factors she has control over, and those she has less control of.

In this module, Lorraine learns more about specific steps she can take to reduce the risk of pressure ulcers, including the Big Ten Steps for Pressure Ulcer Prevention.

Pressure ulcer prevention is easy to do. It's truly a part of our comprehensive care, shows compassion, and is appreciated by the patient and the patient's family.

NARRATOR (CONT'D)

Preventing pressure ulcers is good for us, for our employers, and especially for our clients.

Now, let's join Lorraine and her friends
as they discuss pressure ulcer
prevention.

FADE TO BLACK:

BLACK SCREEN.

Superimpose:

SEGMENT 1: PREVENTION: THE BIG TEN, STEPS 1-5

EST. SHOT - ST. JOSEPH HOSPITAL - DAY

LORRAINE'S VOICE

Yeah, Dorothy was really helpful.

INT. HALLWAY - DAY

Lorraine, Sarah, Gail, and Michael APPROACH THE
CAMERA, then stop and continue chatting. OTHER
HOSPITAL EMPLOYEES are visible in the b.g.

LORRAINE

But she ran out of time before she could
explain exactly what I'm supposed to do
to prevent my clients from getting
pressure ulcers. I can guess some of the
things based on what she told me about
risk factors, but I'm not sure and I've
got a five o'clock visit with a woman
who I think is at risk.

MICHAEL

Well, Sarah's the pro when it comes to
preventin' pressure ulcers.

GAIL

Yeah, she's been coaching me, but I
won't admit it.

LORRAINE

(to Sarah)

How about a little coaching for me?

SARAH

Do I look like a coach?

MICHAEL

Yeah, football. For the Steelers.

SARAH

Michael, you are so obnoxious.

LORRAINE

But I'm not. I'm a nice, compassionate, slow learner who's in need of some fast coaching. So, how about it?

GAIL

Help her out so we don't have to listen to her whining.

SARAH

(fishing a LEGAL PAD from her BRIEFCASE)

OK, OK. Here's a list I made for Michael – which he's no longer going to get – of the most important things we can do with our clients.

MICHAEL

You're a hard woman, Sarah.

SARAH

(handing the pad to Lorraine)

Just keep running your mouth and you'll see just how hard I can be.

He reacts with mock terror.

LORRAINE

(reading from the list)

Pressure Ulcer Prevention. The Big 10:
(1) Clear out the workspace and establish a routine; (2) Relieve localized pressure and shear; (3) Reduce pressure and friction; (4) Inspect pressure-relieving devices;

LORRAINE (CONT'D)

(5) Monitor for skin changes and inspect pressure points; (6) Practice good skin care; (7) Encourage adequate nutrition and exercise; (8) Follow patient care plan; (9) Monitor and mitigate risk factors; and (10) Document, document, document.

SARAH

Exactly. And everything begins with the establishment of a safe and effective environment on the very first visit. Assess the living areas, remove clutter, and make sure you have everything you need to do your job, especially the cooperation of the client and family members.

DISSOLVE TO:

INT. BEDROOM OF WORKING-CLASS HOME - DAY

This is the bedroom of the Newman home, which we saw earlier. However, this scene obviously took place prior to the previous scene, because the room is cluttered.

Sarah, picking up clutter, talks with Mrs. Newman and Mr. Newman, who lies in a HOSPITAL-TYPE BED, about the necessity for a clean, safe environment. OTHER MEDICAL EQUIPMENT is in evidence, as are dirty dishes, stacks of books, magazines and newspapers, etc. And a BIG CAT is perched on a chair beside the bed.

NOTE FROM RICK: Each time a new item from the Big 10 Checklist is introduced, a forge stamp # for the item # with circle around it, accompanied by a ka-chunk noise - think law and order 'du-dun' transition - and the name of the checklist item should be placed on screen, always in the same location.

#1: CLEAR THE WORKSPACE AND ESTABLISH A ROUTINE

SARAH (V.O.)

So, first, you need to create a clean, safe space in which you can work with your client. This usually necessitates removing all the things that clients tend to accumulate for their convenience: clutter that will get in your way.

ANOTHER ANGLE - LATER

Sarah and Mrs. Newman clear away the "command center" that Mr. Newman has created for himself. This involves the removal of the cat by Mrs. Newman.

SARAH (V.O.)

Be especially mindful of objects that could injure your client or you, including hard objects that would cause pressure if your client were to lie on them. Scissors, a lighter, even a remote control, could become wedged against the skin. And be sure to rid the space of small children, dogs, and cats. Cats can be a real problem, because they like to

jump right into the middle of things
when you least expect it.

Sarah removes the shade from a bedside lamp.

SARAH (V.O.)

You won't always be able to change the
physical arrangement of the room, but
you can at least brighten things up so
you can see better.

DIFFERENT ANGLE ON THE ROOM - LATER

Sarah enters the now-clutter-free bedroom with
several items in hand: PILLOWS, DRAW SHEET, AND A
BLUE PLASTIC, PROTECTIVE LINER (CHUX).

SARAH (V.O.)

After your initial assessment of your
client, you'll know what things you'll
need to help you move and bathe him or
her. And if your client has an
infection, you'll want to bring gloves,
masks, aprons, and trash bags for soiled
items. You don't want soiled
things to contaminate the carpet,
furniture, or clothing.

NEW ANGLE ON SARAH AND THE NEWMAN'S - LATER

Sarah tells them that she will be there every
afternoon at two, except on weekends, when another
aide will substitute for her.

SARAH (V.O.)

It's also very important to establish a
daily or weekly routine to streamline
care needs. A routine is usually a great
comfort to many home-bound individuals
and a real convenience to you.

MICHAEL (V.O.)

It's also appreciated by the client's
family, right?

INT. HOSPITAL CORRIDOR - DAY

SARAH

That's right, Michael. And once the
routine is established, you can follow
it without thinking about it and,
instead, focus on doing a great job for
your clients.

Suddenly, the ALARM ON SARAH'S WRIST WATCH GOES OFF.

SARAH

Yikes! Time flies.

(gathering up her things and rising)
I've got to go check on a client with a spinal cord injury. You guys want to come along? Her name's Debbie and she won't mind the company. It'll be a good opportunity to show you a few of the Big Ten.

Lorraine, Michael and Gail exchange approving glances, utter words of appreciation.

SARAH

Great. By the way, if you encounter a situation that's challenging in some way, don't hesitate to get help from a nurse, doctor, or social worker.

Let's go check on this patient...

FADE OUT:

FADE IN:

INT. HOSPITAL ROOM - DAY

DEBBIE, a 20-ish woman, lies in a HOSPITAL BED.

Sarah, Gail, Michael and Lorraine surround the bed. Sarah concludes her introductions, saying:

SARAH

And last, and certainly least, is Michael, who's only been an aide for about six months.

DEBBIE

(chuckling)
Hi, Michael.

MICHAEL

Nice to meet you, Debbie.

SARAH

If you don't mind, Debbie, I'd like you to help me teach some techniques of bedsore prevention.

DEBBIE

You mean, use me to show them how its done?

SARAH

Well --

DEBBIE

That's very cool. I've always wanted to be a guinea-pig.

She then sticks her front teeth out like a rodent and few times, evoking laughter from her company.

#2: Relieve Localized Pressure and Shear

SARAH

Then you now are one.

(to her students)

OK, with Debbie in place, the first thing on our list is relieving localized pressure and shear. Remember: pressure ulcers are caused primarily by unrelieved pressure, friction, and shear. With pressure, skin becomes trapped between the bones of the body and another surface, such as furniture, and it dies. Friction damage is caused by skin rubbing a surface. With shear, deep tissue connected to bone is pulled one way, while the skin is pulled another, causing damage.

DEBBIE

Gross!

SARAH

It certainly can be, Debbie. And the easiest and most effective means of relieving local pressure and shear is frequent turning and repositioning of the client on a regular and documented schedule.

DEBBIE

Then turn me, baby, turn me.

SARAH (SMILING)

I will, if you'll be quiet.

(to her students)

Turning the client relieves localized pressure and allows the blood to flow to areas that haven't gotten much blood while the patient was lying on them.

When turning and repositioning clients, pillows, cotton blankets, and small towels are useful and inexpensive prevention devices.

When properly used, these items can be used to keep one body surface off of others, such as knees or ankles touching.

SARAH

(facing her students)

In fact, there are a lot of tools available to us for relieving pressure and turning our clients, including draw sheets, trapezes, and hydraulic lifts for beds and chairs.

The single most important tool at your disposal, however, is a simple, written turning schedule, or turn clock. It's used to remind both caregivers and clients of when it's time to reposition the client to relieve pressured areas.

CLOSE UP OF A TURNING SCHEDULE, PARTIALLY COMPLETED.

SARAH (V.O.)

This tool costs virtually nothing and can make a huge difference in prevention efforts, assuming that the schedule is followed closely. It also helps with maintaining documentation of client care because, as turning is documented, other aspects of care can quickly be jotted down so they're not forgotten.

RESUME SARAH

DISSOLVE TO:

ANOTHER ANGLE ON DEBBIE AND COMPANY - LATER

Sarah is repositioning Debbie. AN ANIMATION will be superimposed on the scene to depict the rule of 30.

SARAH

When repositioning a client, the "Rule of 30" is always used. This means that the head of the bed must be elevated 30 degrees, or less. The rule of 30 helps prevent injury from shear, by preventing

the client from sliding down the bed or chair.

When placed on her side, the client's hips and shoulders are tilted 30 degrees from flat on the back, and pillows or foam wedges are used to keep her properly positioned so that pressure does not occur on the side of the hips. It is also important to pull the patient off the points of her shoulder and hip bone, and double-check the position of the legs.

The prone or face-down position may also be used, if the patient can tolerate it.

If the head of the bed is elevated higher than 30 degrees, for meals, or visiting with friends, the duration of this position needs to be limited to 30 minutes or less to minimize both pressure and shearing forces. This time limit should be followed for watching tv too, unless you move the bed or tv so that the patient can watch while lying flat or on the side.

DEBBIE

Hey, speaking of meals, I deserve something really special for letting you use me as a guinea-pig.

MICHAEL

How 'bout pizza with double cheese?

DEBBIE

Bingo!

DISSOLVE TO:

DIFFERENT ANGLE ON DEBBIE AND COMPANY - LATER

#3: Reduce pressure and friction

GAIL

. . . But even with a regular repositioning schedule, folks who are at very high risk for developing pressure ulcers may still be in danger. Depending on the condition of the patient, just 15 minutes of unrelieved pressure can be enough to cause a pressure ulcer. Even

under the best conditions, 60 minutes of unrelieved pressure will do it.

Of course, it's not realistic for caregivers to reposition a client every 10 minutes, or so, around the clock. So, in such cases, or in the case of a client who already has a pressure ulcer, highly specialized pressure-relieving devices and surfaces can be very helpful, such as static and dynamic overlays—essentially mattress toppers, mattresses, beds, and cushions. These include memory foam, air mattresses, low air-loss mattresses, air-fluidized mattresses, and alternating and pulsating mattresses and beds.

SARAH

That's true Gail. And, in addition to relieving pressure and shear through repositioning and transfers, there are some things we can do in general to further reduce pressure and friction, which is Big Ten Number 2.

Title on screen. Sarah is repositioning Debbie's legs.

SARAH

If the client's legs are completely immobile, elevation is a useful way to minimize pressure on the heels and knees.

Elevate the patient's calf on a pillow, small towel, or folded bath blanket to suspend the heel above the surface of the bed. Make sure you place it under the muscle area of the calf and not under the Achilles tendon, which can be damaged by pressure from a rolled towel. You should be able to place your open hand on the bed under the patient's heel without touching any skin. The knee should be slightly bent to avoid hyperextension, and the lower legs should not be so high that the hips are forced to flex a lot.

Gail don't you have a wheelchair bound client?

GAIL

You mean Bernice?

SARAH

Yes. Tell Lorraine and Michael what to do to help prevent pressure ulcers in chair-bound clients?

GAIL (V.O.)

Sure.

Clients, like Bernice, who spend most of their waking hours in wheelchairs need appropriate chair cushions that will reduce pressure while providing good stability and support. Things like special, inflated, gel, or pulsating cushions can reduce pressure dramatically.

For clients who are chair bound temporarily, provide them with cushions that provide maximum pressure reduction over the tailbone and lower back--even a head pillow will work.

Clients who can move on their own should reposition themselves at 15- to 20-minute intervals--we often tell patients who are watching tv to change position with each commercial break.

Wheelchair push-ups are great for clients who have the upper-body strength to perform them. Show 'em how it's done, Bernice.

Now there are a number of things you can do to reduce or relieve pressure and friction, and a number of devices to assist you. It's worth noting that only things that lift the body from a surface actually relieve pressure.

(pointing out the padding on Bernice's elbows, **put title on screen for each**)

Pressure reducing devices, for example, soft padding and special surfaces in wheelchairs, beds, and on the client's elbows and heels can distribute the client's weight so that a very small area of skin isn't being pressured excessively.

(pointing out pillows under Debbie and the cushion on Bernice's chair)

Pressure relieving devices include pillows to raise the client's arms, legs, buttocks and hips, or any other cushion or device that elevates part of the body to relieve pressure. Special beds and chairs also relieve pressure.

ANOTHER ANGLE ON GAIL

She opens a drawer beside Debbie's bed.

GAIL

Friction reducing devices include the use of socks, blanket lifts, and heel or elbow protectors.

(taking a FILM DRESSING from the drawer)

Friction may also be reduced through skin protective dressings such as hydrocolloid or film dressings, and moisturizers. You may see that the nurse has put on a clear sticky dressing or a waxy one. These are to protect the skin and should stay on. If they come off or are rolled up, they can be peeled off completely: be sure to tell the nurse.

DIFFERENT ANGLE ON GAIL & DEBBIE

Gail points out the CUSHIONING DEVICES between Debbie's knees and ankles.

GAIL

To maintain alignment and, importantly, to prevent body parts, like the ankles and knees, from rubbing together, cushioning devices should be placed between the legs and ankles.

(pause)

But never forget: With all pressure-relieving devices, you must use them properly and use enough of them to do the job right. They can and do fail under ordinary use. And when undetected equipment failures occur, life-threatening pressure ulcers can develop very quickly. Don't rely on a machine to do your job!

SARAH

That's true, I've heard of many clients suffering needlessly because one of our well-meaning colleagues or a caregiver has used a device that's worn out, or

used a device in a situation that it wasn't designed for, or simply not used enough pressure-relieving devices to address the problem properly.

End of lesson. You're a good guinea-pig, Bernice.

BERNICE

I try.

DEBBIE

What about me?

SARAH

You're awesome!

(to students)

Thank you Debbie and you too Bernice for teaching us. Let's hear it for two of the world's greatest guinea-pigs!

And as the students applaud, we:

CUT TO:

INT. HOSPITAL CORRIDOR - TRACKING SHOT - DAY

Sarah, Michael, Gail and Lorraine walk along the corridor as Lorraine reads from her notes. HOSPITAL EMPLOYEES, PATIENTS AND OTHERS are in evidence.

LORRAINE

OK, so we relieve localized pressure and shear by carefully turning, repositioning, and transferring the client on a regular and documented schedule.

Always use the "Rule of 30" when repositioning a client. The head of the bed should never be up more than 30 degrees and the client should be placed in a 30-degree position when repositioned to either side.

(to Sarah)

Did I get that right?

SARAH

You did. When you place a client on her side, you tilt her shoulder and hips 30 degrees from flat on the back and use pillows or foam wedges to keep her that

way, without pressure over her lower hip or sacrum.

LORRAINE

Now, if we raise the head of the client's bed higher than 30 degrees for some reason, we have to limit the duration of that position to minimize both pressure and shearing forces. Is that right?

SARAH

Absolutely. No more than 30 minutes at a time.

LORRAINE

Now, about the legs of a completely immobile client: Floating the heels from the bed is the best way to minimize pressure on the heels and knees.

SARAH

Right. And how do you do that?

The group stops at a water fountain and one or two of them take a drink.

LORRAINE

You elevate the patient's calf on a pillow, towel, or folded bath blanket to suspend the heel above the surface of the bed. And you make sure to place it under the muscle area of the calf and not under the Achilles tendon.

SARAH

Because?

LORRAINE

Because – the Achilles tendon can be damaged by pressure from a rolled towel?

SARAH

Exactly, and that can cause 'foot drop.' And how should you determine that you've elevated the client's leg properly?

LORRAINE

Uh – by placing your open hand on the bed under the patient's heel. You shouldn't be able to touch any skin—its

"floating." And the knee should be slightly bent to avoid hyperextension.

SARAH

You got it.

GAIL

What about chair-bound clients?

MICHAEL

You make sure they're sitting on a surface that reduces pressure and gives them good support and stability. Things like air-filled cushions work really well.

GAIL

What are the pressure areas of primary concern?

LORRAINE

The tail bone, sitting bones, and backs of the legs, right?

GAIL

Right. Then what about clients who can move on their own?

MICHAEL

Uh - they should reposition themselves every 15 to 20 minutes and do some push-ups, if they can.

GAIL

How do you reduce pressure and friction?

LORRAINE

Padding at various pressure points reduces pressure; pillows to raise arms, legs, buttocks and hips relieve pressure, and...moisturizers, film dressings, heel protectors reduce friction.

MICHAEL

And you keep knees and ankles from rubbing together with those squishy thingies.

GAIL

"Squishy thingies?" You mean pillows?

MICHAEL

Yeah.

(disbelievingly)
What?!

And as his colleagues begin to laugh, we:

CUT TO:

INT. HOSPITAL CORRIDOR - LATER

As the quartet, AD-LIBBING CONVERSATION, reaches an intersection, Dorothy, briefcase in hand, meets up with them.

DOROTHY
Hi, troops.

SARAH
Hey, Dorothy.

LORRAINE
How was your meeting?

DOROTHY
Too long and too boring. What are you guys up to?

LORRAINE
Still trying to get up to speed on the Big 10 of pressure ulcer prevention.

DOROTHY
Are you there yet?

LORRAINE
I'm not sure.

DOROTHY
What are you lacking?

SARAH
We're just getting started. We haven't covered device and skin inspection yet or monitoring...

GAIL
Yeah, we really need to go over those.

DOROTHY
(glancing at her watch)
Well, I've got some time now. Do you want to grab some coffee and chat about it?

SARAH

That would be great.

LORRAINE

Yeah, I'd really appreciate that.

DOROTHY

Then let's go to the break room.

MICHAEL

Amen. Been tryin' to get there all day.

And as the group starts away, we:

CUT TO:

INT. BREAK ROOM - DAY

Dorothy, Sarah, Gail, Lorraine, and Michael sit around a table, drinking coffee and snacking.

#4: Inspect Pressure Relieving Devices

DOROTHY

Safe and proper use of padding and pressure relieving surfaces is critical to prevention and healing of pressure ulcers. However, these devices do wear out eventually, and can fail during use. When this occurs, it can put an at-risk client in serious danger of developing a pressure ulcer.

It is extremely important that all pressure relieving devices be inspected for wear and proper functioning on a daily basis. That means every day, okay?

I wish I could tell you exactly what to look for, but there are literally thousands of these devices available nowadays. Make sure you know how your client's devices are supposed to work, so you can recognize wear or problems **before** your client is put at risk.

Some general things, though, that you can look for include breaks in the cover of the device, leaks of any kind, lack of air in cells of a RoHo, or permanent impressions in foam.

SARAH

Now, I know we're talking about what we should do about pressure relieving devices to prevent pressure ulcers, but there are some really important don'ts as well. Don't use doughnut-shaped cushions, water-filled gloves and pool toys. And don't use synthetic sheepskins.

Doughnut cushions actually increase pressure in the areas they contact. Synthetic sheepskins don't "breathe." They trap moisture and bacteria, and they can "pill", or mat, which causes hard bumps that can actually increase the risk of pressure damage. Natural sheepskins, on the other hand, can be helpful for reducing friction. Pool toys simply have no place in health care, except for swimming.

LORRAINE

Got it.

#5: Monitor for Skin Changes and Inspect Pressure Points

GREG THIS FEELS LIKE IT NEEDS SOME CONITUITY/TRANSITION?!

DOROTHY

One of the most important ways you can prevent pressure ulcers is to thoroughly inspect your client's skin, including all pressure points, every time you visit him or her. Ideally, you should do so at least twice a day.

Any bony areas that have been under pressure should be checked every single time an immobile client is repositioned, even if this is several times a visit. We won't know if we don't look, will we? A good time to perform a general skin inspection is during the client's bath, or when providing personal care.

For incontinent clients, a quick inspection every time personal care is provided can greatly reduce risk.

SARAH INTERJECTS

The patient should also be instructed to inspect skin, if they are able, and can

be provided a long handled mirror to make it easier to check the sacrum and sitting bone.

DOROTHY (V.O.)

Exactly. Now, here are the steps to a good, quick and easy skin inspection:

INT. BEDROOM OF AN UPSCALE HOME - DAY

Sarah bathes CHARLIE, A BLACK MAN IN HIS 40S.

DOROTHY (V.O.)

Remove the client's clothing in the area you're inspecting and position him so that the areas to be checked are easily seen. Cover the areas that you're not washing or inspecting: doing so is sensitive to the patient's modesty and helps keep him warm.

CLOSER ON CLIENT

DOROTHY (V.O.)

Examine the skin for any signs of pressure, which include redness or darkened areas, bruised areas, changes in temperature or texture, any signs of excess moisture or dryness, flaky skin, the presence of rashes, especially between folds of skin, and blisters or open sores.

MORE CLOSE SHOTS OF CHARLIE'S BACK

DOROTHY (V.O.)

One of the best ways to notice pressure damage early is to check for temperature changes at pressure-prone areas. Compare the temperature of pressure points to the temperature of surrounding body areas by gently placing the back of your hand against the skin surface. This can detect less than a five-degree difference in temperature and give you important information about how well blood is circulating in these areas.

Be very gentle when you do this and don't press down on or rub these areas under any circumstances. Doing so can actually increase the risk for pressure-ulcer formation by increasing friction and shear.

If you notice a suspicious area, avoid putting any pressure on it. Wait 15 minutes, then check it again. If it's still showing symptoms, check it again in another 15 minutes. If no improvement is seen, contact your supervisor immediately.

WIDER SHOT TO INCLUDE SARAH AND CHARLIE

Sarah makes notes on a CLIP BOARD.

DOROTHY (V.O.)

Make sure that you document the size and location of the suspicious area, its temperature compared to the surrounding tissue, whether it's firm or boggy, its color, and the length of time it takes to return to normal. If it doesn't improve significantly within 30 minutes, it may be a pressure ulcer. So, you should immediately notify your supervising nurse, or the attending physician.

INT. BREAK ROOM - DAY

#6: Practice Good Skin Care

DOROTHY

And while we're talking about the skin, good skin care and proper bathing are also essential.

SARAH

I think it's important to add that skin only needs to be cleansed when it's soiled. This is especially important for people who are at risk for pressure ulcers because bathing temporarily removes the natural oils that prevent moisture loss and infection.

DOROTHY

That's true. Most of the time, people at risk for pressure ulcers will only need face, hands and private-area care on a daily basis to keep the skin clean. Full-body baths are rarely needed, particularly in elderly patients with very dry skin. Let's talk some more about bathing your clients.

INT. BEDROOM OF A HUMBLE RESIDENCE - DAY

Multiple shots of Gail bathing EDWARD. Edward is a white or Hispanic man in his 40s.

DOROTHY (V.O.)

Your clients rely on you for a lot of things, which may make them feel helpless. So, you can combat this by allowing them some input about the type and frequency of bathing they want, keeping in mind that their private parts, face and hands should be cleaned daily, more often for incontinent clients.

GAIL (V.O.)

Bathing is always more difficult with a client of the opposite sex, or a client who feels that their privacy is being invaded. But if you maintain a professional attitude and continually assure them that it's just business as usual, they'll relax and some will even become very accepting. Once you develop comfort with the steps of bathing, you will be able to talk to the client about their lives.

DOROTHY (V.O.)

Good point, Gail. As for the nuts and bolts of bathing, use plain water, or a mild cleanser that won't strip the skin of moisture. Plain water's the best and safest choice for clients with extremely dry skin.

Bath water should be just barely warm, not hot. Hot water can easily burn delicate tissues and will dry out the skin. Think about the temperature you'd use to bathe a baby. Be very gentle when washing any area.

You've probably heard that vigorous scrubbing or massage will increase circulation. But that's not the case. It's been documented that such practice actually increases tissue damage.

Hard or vigorous rubbing will strip the skin and may cause bruising and friction damage. It can also increase the risk of pressure damage in pressure-prone areas.

Use only a soft, smooth cloth with minimal nap to bathe the client. Rough washcloths should be avoided because they can cause friction damage to fragile skin.

To dry skin after bathing, pat gently with a soft towel. As we've discussed, any rubbing may cause friction and shearing damage, which increases the risk of pressure ulcers.

Apply moisturizing lotions, creams or ointments to pressure-prone areas only as directed in the patient care plan. But avoid massaging these areas. Gently smooth on topical remedies and be brief about it. Handle these areas only for as long as you need to to get the job done.

When you've finished, document exactly what you did during bathing and note any concerns you may have.

If any rashes are noticed, gently cleanse the area with plain water. Don't use soap, detergent, antiseptic, lotions or creams. When you're finished, pat the area dry, don't rub it. Then report the rash to your supervisor. And do not apply topical lotions, powders or ointments unless your supervisor tells you to do so.

Make sure that your client and his bedding are dry and clean at all times. If his skin is excessively moist or dry, make note of this and discuss it with your supervisor.

The client's care plan may need to include instructions for moisture management, or moisturizers to help with dryness.

If any blistering, loss of skin, or open wound is noticed, position the client so that this area doesn't come under any further pressure and contact the supervising nurse or physician immediately.

CUT TO:

INT. BREAK ROOM - DAY

DOROTHY

This is a good time to remind you about macerated skin, which is skin that becomes waterlogged from constant exposure to moisture and is, therefore, very fragile. It's easily damaged by friction, is more likely to become infected with germs, and it's more easily irritated by cleansers, lotions, and the like.

In immobile clients, maceration is usually caused by incontinence and is particularly dangerous when both urinary and fecal incontinence occur together. Obviously, it's extremely important to take care of a client's private parts as often as the situation demands. So, let's talk about incontinence management.

Contrary to what many people believe, incontinence is not a normal part of aging. It's important to understand that clients may be incontinent for a number of valid reasons. And advanced age by itself is generally not one of them.

Clients may have diarrhea due to medications, tube feedings, or fecal impactions. They may need to void frequently and not be able to move well enough to reach the toilet or commode in time. Sometimes, they're too embarrassed to ask for assistance or a bedpan.

If the cause of the incontinence is avoidable, you should give the client many opportunities for toileting assistance and provide lots of positive reinforcement.

Clients should never be made to feel ashamed for accidents or incontinence. If you client can walk or use the bathroom unassisted, begin by helping him or her do so. Regular scheduling of toileting needs can dramatically decrease episodes of incontinence, particularly in elderly clients.

So, in addition to inspecting the skin frequently, we practice good skin care, which involves proper bathing, preventing maceration, and managing incontinence. Understood?

The group nods and utters assents.

DOROTHY

Good. What's next on our list?

LORRAINE

(referring to her notes)

Well, we've covered relieving local pressure, reducing friction, checking devices, skin inspection, proper skin care, so -- what?

#7: ENCOURAGE ADEQUATE NUTRITION AND EXERCISE

GAIL

How about nutrition and exercise?

DOROTHY

Very important.

INT. KITCHEN - MIDDLE-CLASS RESIDENCE - DAY

Gail finishes mixing a PROTEIN DRINK and hands it to wheelchair-bound Bernice, along with several VITAMIN PILLS. As she does so, MAX enters. He is Bernice's husband.

DOROTHY (V.O.)

An inadequate daily intake of protein, vitamin C, vitamin E, calcium, or zinc makes clients much more likely to get pressure ulcers. Dehydration decreases blood volume and causes skin changes that also increase risk. If your client can't consume enough food or drink to maintain adequate nutrition, alert the supervising nurse ASAP.

Gail hands Max a NOTE PAD and tells him how to keep a diary of everything that Bernice eats and drinks on a daily basis.

DOROTHY (V.O.)

The quantity and quality of food and liquid consumed by the client must be monitored, of course. Make certain that correct dietary restrictions are followed, particularly for people with

diseases such as diabetes or depression. Ask the client about her appetite and what types of food she eats—we had one homebound woman eating nothing but popcorn!

Make sure that your client takes all vitamins, or other nutritional supplements, that have been prescribed. And be sure to have the client, or in-home caregiver, keep an accurate diary of all food, liquid and supplements consumed each day, because even mild nutritional problems can greatly increase the risk of pressure ulcers.

INT. BEDROOM - BERNICE'S RESIDENCE - DAY

SEVERAL ANGLES on Gail, Max and Bernice as they discuss Bernice's recent weight loss, referring to a CHART. Bernice, again, is a stroke patient.

DOROTHY (V.O.)

If the client has lost weight unintentionally in recent times, discuss it with your supervisor. Unintentional changes in weight can be a sign of a more serious problem--and a weight loss of 10 percent in a three-month period will significantly increase risk of pressure-ulcer development in an immobile person.

Someone who is only recently immobile may gain weight at the onset of his or her immobility. This requires attention to prevent other health problems, including pressure ulcers, and makes it more difficult for the patient to reposition.

To encourage proper nutrition, try to cater to food likes and dislikes as much as possible, and assist clients with eating and drinking whenever necessary. It's helpful to give the client a drink from liquid supplements while providing care; just a sip here and there adds up to a lot.

INT. LIVING ROOM - BERNICE'S RESIDENCE - DAY

Gail shows Bernice some new techniques for shifting positions and some new exercises.

DOROTHY (V.O.)

If you get your clients to move a little, everybody will feel better. Exercise increases blood flow and speeds healing. Movement can relieve pressure and reduce the risk of pressure-ulcer development.

DOROTHY (V.O.)

In many cases, even bedridden people can do stretches and isometric exercises. Encourage clients who have some mobility, particularly those in wheel chairs, to shift positions every 15 minutes.

Clients who are completely unable to move without assistance may have special requirements for physical therapy. So, discuss these needs with your supervisor, or the family caregivers.

CUT TO:

INT. BREAK ROOM - DAY

DOROTHY

And that's it for nutrition and exercise. Try to get your clients to eat properly, drink water with them, and get them moving. And be sure to explain the importance of diet and exercise to family caregivers, and have them establish a schedule for such things.

Now, let's talk about the last of the Big 10 things we need to do to prevent pressure ulcers: following the care plan, monitoring risk, and documenting everything. These are extremely important activities for our clients, our employer, and us.

#8: FOLLOW THE PATIENT CARE PLAN

DOROTHY (CONT'D)

A care plan identifies the individual client's needs and provides the nursing staff and home health aides with a protocol or guide. Following a plan keeps everybody organized and on-task, and ensures that clients get the care they need.

It's important to let the nurse know if you see changes in your clients' conditions, such as several days of poor eating, that could require changes to the care plan. And this brings me to our next topic.

#9: MONITOR AND MITIGATE RISK FACTORS

DOROTHY

(to Lorraine)

Do you recall the risk factors, Lorraine? We need to continually monitor those and seek ways to reduce them.

An example of risk monitoring is keeping an eye on your client's skin, hair, and nails. Any changes can mean nutritional deficiencies or underlying illness.

So, when performing a skin assessment, bathing, or just interacting with your clients, be sure to pay attention to details that can provide important clues to overall health. Is your client's hair shiny and soft, or dull and brittle? Is the skin a healthy color, or gray? How about the fingernails? And how about your client's level of alertness and mood?

INT. DEBBIE'S HOSPITAL ROOM - DAY

Debbie, the 20-ish, bed-bound woman with the spinal cord injury, talks with Sarah about her depression.

DOROTHY (V.O.)

Negative changes in mental status can increase risk of pressure ulcers. Clients who are sleepy or sedated will not move as much as alert clients. So, if you notice any change in how alert or mentally capable your client is, be sure to make a note of it.

Sarah takes from a TOTE BAG a NEEDLE POINT PROJECT that Debbie set aside a month ago and encourages her to resume working on it.

DOROTHY (V.O.)

Depression is another risk factor for pressure ulcers. People who are chronically or terminally ill can,

justifiably, feel frustrated, angry, or depressed about their situation.

If you notice a change in your client's mood, or your client does not want to do the things he needs to, or used to do, alert your supervisor.

SARAH (V.O.)

If possible, it's also a good idea to encourage your clients to engage in hobbies or other activities. That keeps them occupied and feeling productive. But sometimes their depression is such that antidepressants become necessary.

DOROTHY (V.O.)

Also, if you notice any increase in your client's level of pain, be sure to alert your supervisor. It could be a symptom of a worsening of their condition, or another problem that needs to be addressed. Pain can make a client unwilling, or unable, to move, which can greatly increase the risk for pressure ulcer.

INT. BREAK ROOM -- DAY

DOROTHY

You also need to monitor the bladder and bowel habits of your clients. Any significant changes can signal changes in a client's condition that may increase his or her risk for pressure ulcers. Stool incontinence is especially likely to contribute to pressure ulcer formation.

DOROTHY (CONT'D)

And be alert to a large increase or decrease in urine or stool output, especially if you don't see a related increase or decrease in food and liquid intake.

INT. BEDROOM - BERNICE'S RESIDENCE - DAY

Gail talks with Max, Bernice's distraught husband. Bernice watches from her wheelchair, which is nearby. Max feels that he is reaching the point of burnout in caring for his wife, because he is ailing.

DOROTHY (V.O.)

If the ability of in-home caregivers to provide adequate care declines, your client will be at increased risk for pressure-ulcer development, among many other problems.

Gail escorts Max out of the room and away from Bernice's hearing.

INT. KITCHEN - BERNICE'S RESIDENCE - DAY

Gail and Max enter, and she tries to console him.

DOROTHY (V.O.)

If you notice problems in this area, alert your supervisor. Sometimes, caregivers get burned out and need a break. Sometimes, they're not in good health themselves and become unable to provide the level of care that the client needs.

INT. BREAK ROOM - DAY

DOROTHY

The bottom line is this: If you notice changes in the condition of your clients with respect to any of these factors, you must document your observations and discuss them with your supervisor a.s.a.p.:

SUPERIMPOSE each item as it is spoken IN A SCREEN SPACE BESIDE HER HEAD.

DOROTHY

Mobility. Alertness and mental state. Food and/or liquid intake. Body weight. Pain. Medications. Incontinence, either fecal or urinary. Urine and/or bowel output. Depression, anger, mood swings. The ability of in-home caregivers to provide care. Compliance with the care program. And worsening, or improvement, of existing medical conditions or diseases.

ANOTHER ANGLE

#10: DOCUMENT, DOCUMENT, DOCUMENT

DOROTHY

And speaking of documenting - writing it down is a vital part of the care we provide. It helps the patient, the doctors, and us. We document everything we do throughout the other 9 steps, including all aspects of observations, client care, and our interactions.

Documenting is important for making sure care is the same from all care providers, for communicating changes in health status and, as much as it pains me to say it, for protecting us from liability. The importance of good, accurate, documentation cannot be overstated. This is one of the most important parts of your job as a home health aide.

(to Lorraine and Michael)

Now, can you two summarize the Big 10 things to do to prevent pressure ulcers without looking at your notes?

Lorraine and Michael exchange anxious looks, then, as bullets reappear with their numbers from earlier:

LORRAINE

Well, clear out the space where you'll be working with your client--and keep it clear. Oh and establish a routine.

DOROTHY

Good.

MICHAEL

How about relieving localized pressure and shear, like when we turn and reposition the client so certain body parts aren't always in contact with beds and such?

DOROTHY

Good.

LORRAINE

And we should reduce pressure and friction, and inspect pressure-relieving & reducing devices.

DOROTHY

You go, girl.

MICHAEL

Watch for skin changes, like a hawk, and keep your eyes on pressure points.

DOROTHY

You got it.

MICHAEL

And we're supposed to practice good skin care, including bathing them gently and only when necessary.

DOROTHY

Yes!

LORRAINE

Uh-huh, and I got this: We're supposed to make sure our clients eat right and exercise as much as they can.

DOROTHY

Right again.

LORRAINE

And follow the client's care plan to the letter.

DOROTHY

You are correct.

MICHAEL

And monitor risk factors, right?

DOROTHY

Right.

LORRAINE

And document everything.

MICHAEL

Document, document, document!

DOROTHY

Amen! And that's 10!

And as Dorothy, Gail and Sarah applaud the students, we:

FADE OUT:

FADE IN:

BLACK SCREEN

Superimpose:

SEGMENT 3: SUMMARY & CONCLUSION

EXT. ST. JOSEPH HOSPITAL - DAY

LORRAINE (V.O.)

The first thing I learned was how bad pressure ulcers are.

INT. HOSPITAL CLASSROOM - DAY

Lorraine stands facing the whiteboard, on which Dorothy headlines the things she says. Michael, Sarah and Gail watch from their seats.

LORRAINE

I had no idea how painful they can be, and certainly didn't know they can be fatal. Uh, I learned that pressure ulcers can form almost anywhere on the body - They're caused by pressure, friction, or shear - but they usually develop at points of highest pressure, the sitting bone, heels, elbows, and the back.

MICHAEL

(unable to keep his mouth shut any longer)

Don't forget about the tail bone! A lot of pressure ulcers develop on the tail bone, man, and on the sides of hips, and ankles, and shoulder blades.

Exasperated, Dorothy says:

DOROTHY

Michael, we know that you know your stuff. We know it. So, please, try to contain yourself. OK?

Michael raises his hands defensively and nods with embarrassment, and Sarah and Gail titter.

DOROTHY (CONT'D)

Thank you.
(to Lorraine)
Please, continue.

LORRAINE

Uh, well, I learned that any of our clients can develop a pressure ulcer, but some people are at greater risk than others, because of risk factors – some we have control over and some we don't.

DOROTHY

And what's the difference between them?

LORRAINE

Well, many risk factors are things that we have some control over; things like unrelieved pressure, friction and shear, macerated skin from exposure to moisture, poor nutrition, and dehydration.

MICHAEL

. . . But other risk factors are things that we don't have any control over. And those are things like advanced age, obesity or being underweight, medicines that limit mobility, chronic diseases and conditions, including mental disorders like depression.

LORRAINE

Right, and the more of any of these factors an immobile client has - And immobile is the important word - the greater the risk of developing pressure ulcers.

DOROTHY

And so?

LORRAINE

So, we have to watch very carefully for signs of pressure ulcer development and take steps to prevent them.

DOROTHY

And those steps are what?

LORRAINE

Well, first, we need to clear out the space where we'll be working with our clients and make sure we have everything we need to do the job properly.

DOROTHY

And then?

LORRAINE

We relieve localized pressure by turning and repositioning the client, and carefully inspect the skin, especially on pressure points. We should inspect all pressure-relieving surfaces at least once a day.

DOROTHY

Anything else?

LORRAINE

(after a pause)

Yes, we need to make sure that our clients eat and drink properly, and exercise as much as they can; that we practice good skin care; follow the client's care plan; continually monitor risk factors; and document every single thing we do.

DOROTHY

You've learned your lessons well, Lorraine.

LORRAINE

Thank you. I really want to be a good aide.

DOROTHY

And you will be. You have a caring spirit, and you have the knowledge and skills necessary to be a terrific caregiver. Just keep learning, ask questions of your supervisor and others. And when it comes to your bed- or chair-ridden clients - continually examine every square inch of their skin for signs of pressure ulcers.

LORRAINE

(nodding and smiling)

Every square inch.

Michael picks up the phrase and begins chanting rhythmically while drumming on his desk; this to the mock exasperation of Dorothy and amusement of Gail and Sarah.

MICHAEL

Every square inch. Every square inch.
Every square inch.

FADE OUT:

FADE IN:

BLACK SCREEN

Superimpose:

SEGMENT 4: SUMMARY

EXT. ST. JOSEPH HOSPITAL - DAY

The following will be illustrated with images from the associated learning modules and will have appropriate bullets.

NARRATOR

Lorraine has certainly come a long way since the start of the day. She knows what a pressure ulcer is, how it forms, where it forms, what puts her clients at risk, and very importantly what she can do to reduce that risk.

She's learned the Big Ten Steps to Pressure Ulcer Prevention:

(READ and LIST)

(1) Clear out the work space and keep it clear; (2) Relieve localized pressure and shear through turning and repositioning; (3) Reduce pressure and friction; (4) Inspect pressure-relieving surfaces; (5) Monitor for skin changes and inspect pressure points; (6) Practice good skin care; (7) encourage adequate nutrition and exercise; (8) Follow patient care plan; (9) Monitor risk factors; and (10) Document, document, document.

So, what are the next steps for you? Will you make it a point to work through the Big Ten checklist with your next client? Just to give it a try? Checklists are available with the Every Square Inch module. And more information is available on our Web site.

Will you check every square inch? It's easy to do. Your clients will appreciate it, your employer will appreciate it, and I'll bet that you'll feel good about yourself, knowing that you're doing an even better job with each and every one of your clients.

Thank you for your time.

FADE OUT.

THE END

APPENDIX B

Materials

The video program used in this study is entitled Every Square Inch: Preventing Pressure Ulcers. This appendix contains the scripts for all aspects of the video as well as screen shots of the interface.

- (1) Every Square Inch: Main Module Video Script
- (2) Every Square Inch: Animation Scripts
- (3) Every Square Inch: Belief Statements Script
- (4) Every Square Inch: DVD screen shots

EVERY SQUARE INCH: GUIDE TO PRESSURE ULCER PREVENTION
ANIMATION NARRATIVE AND DESCRIPTIONS
OCTOBER 26, 2005

ESI ANIMATED ILLUSTRATION #1

“HEALTHY SKIN”

Covering all of our exterior surfaces, the skin is the largest organ of the body. Its primary function is to protect the body from stress or damage from the environment and to regulate body temperature. It senses the environment, including heat, cold, pressure, and pain.

The skin is made up of two layers. The outer layer, the one we see, is called the epidermis. Below the epidermis is the inner layer, known as the dermis. The dermis has specialized structures like blood vessels, sweat glands, nerves, and hair follicles.

Beneath the two layers of the skin lies another important layer of body tissue called the hypodermis or subcutaneous layer because it is located under the skin, or cutaneous layers. The subcutaneous layer is not technically part of the skin, but it is crucial to skin structure and function.

Subcutaneous tissue is made up of fatty and connective tissues that house larger blood vessels and nerves, all of which are important to the regulation of body temperature and the functions of healthy skin.

Below the subcutaneous tissue, lies the connective tissue of the body. Connective tissue provides structural support and holds all of the body's structures together, including the skin and all internal organs. Connective tissue is very strong and fibrous. It is like a web inside the body that wraps the body's systems—circulatory, digestive, nervous, musculo-skeletal. This tough webbing is responsible for the shapes of our bodies.

Connective tissue includes bones, muscles, tendons, ligaments, cartilage, and blood vessels. Bone is a hard, extremely dense connective tissue that forms the skeleton. It is composed of fibers of a material called collagen, filled in with minerals - mainly calcium salts - much like reinforced concrete. Muscles are specialized elastic connective tissues that support the joints of the skeleton and allow the body to move.

ESI ANIMATED ILLUSTRATION #2

“CAUSES OF PRESSURE ULCERS: PRESSURE, FRICTION, & SHEAR”

Unrelieved pressure on any area of skin is the main cause of pressure ulcers. When skin is squeezed between the underlying bones of the body and any surface (like a bed or other furniture), this constant pressure in one spot cuts off the blood supply to the skin and underlying tissues. Unless the pressure is relieved so that blood can flow to the area again, the affected skin and tissue will die. This can happen within a very short time. Areas where the skin or underlying tissue has died become pressure ulcers.

A second cause of pressure ulcers is friction. Friction damage occurs from the body rubbing against bed linens, clothing or furniture. Friction damage is similar to the damage that healthy people get when they scrape their knees across a rough carpet, a “rug burn.”

Pressure ulcers can also be caused by shear. Shear is a force that occurs when deep tissues connected to bones are pulled in one direction while the outer skin sticks to bed linens, or other furniture, and remains in place.

When shear occurs, the skeleton actually slides inside the skin, stretching the blood vessels and connective tissue, and making damage possible in practically no time at all.

To understand shear, hold your hand, palm down. Take the other hand and, with your fingers, push the skin of your outstretched hand toward your elbow. This stretching of your skin, relative to the connecting tissue below, is shear.

People with loose skin from advanced age or weight loss, those who sit up in bed all the time, and people who rely on others to move them from a bed to a chair are all particularly prone to damage from shear.

So, unrelieved pressure, friction, and shear are the primary causes of pressure ulcers. Avoiding them goes a long way toward avoiding pressure ulcer formation.

ESI ANIMATED ILLUSTRATION #3

“WHERE DO PRESSURE ULCERS FORM?”

Pressure ulcers form at points of highest pressure, usually where the weight of the body squeezes the skin against a firm surface. Bony areas, like the tailbone, hips and heels, are very susceptible to pressure damage. Skin and the tissues underneath it, including ligaments and tendons, are compressed between the hard bone and the relatively hard surface of a bed or chair.

Pressure ulcers can occur anywhere, but the most common locations are around the tailbone also called the sacrum, the sitting bones, called the ischia, and the sides of the hips, called the trochanters. Pressure ulcers also commonly form near the lower buttocks, heels, ankles, and knees, particularly the sides of the knees.

Less common, but still important, locations include the elbows, hands, back of the head, face, shoulder blades, vertebra and upper arms.

Medical tubing, casts, artificial limbs or other hard objects that press against the body also increase risk for pressure-ulcer development as do foreign objects in the bed or chair. Television remote controls are a good example of this.

Although certain pressure points are at greater risk, and objects can increase risks to those and other areas, in the end, a pressure ulcer can form anywhere on the body where there is unrelieved pressure, friction or shear.

ESI ANIMATED ILLUSTRATION #4

“FORMATION: OUTSIDE-IN and INSIDE-OUT”

STATE 1

Like any wound, pressure ulcers can be mild to severe, or even life threatening.

STATE 2

Many pressure ulcers begin as an area of reddened skin. If left untreated, they become progressively worse, forming a blister, then an open sore, and finally a crater. Open sores can quickly become life-threatening, and require careful treatment by wound care specialists.

STATE 3

Sometimes pressure ulcers form from the inside out, meaning that the deep tissue under the surface of the skin dies before the skin is actually broken open. Often by the time these inside-out wounds are discovered, they are very serious, and life-threatening, and require hospitalization, surgery, and the expertise of a wound care specialist immediately.

ESI ANIMATED ILLUSTRATION #5

“PRESSURE ULCER STAGES”

Pressure ulcers described in four stages by the Agency for Healthcare Research and Quality, and the National Pressure Ulcer Advisory Panel.

Pressure ulcers are often classified, or described, by four stages, with stage one being the least severe, and stage four being the most severe. These stages help medical staff and insurers communicate effectively about the wounds. These stages are not necessarily progressive, and a pressure ulcer can emerge as any of these four stages.

STATE 1

Stage I: A reddened or darkened area of skin appears and does not go away within 30 minutes after you change your client's position to relieve pressure on the area. There is no open sore in the skin. However, skin texture and temperature often are not normal: the skin can be warm and hard, or cool and boggy.

STATE 2

Because discoloration can be hard to notice in clients with very dark skin, relying on skin texture and temperature are more effective than just visual inspection for color changes.

STATE 3

Stage II: The skin, including the epidermis and dermis, cracks, blisters, peels, or breaks. The skin is now open. Danger of infection is high. Open wounds require aggressive care by wound care specialists

STATE 4

Stage III: The pressure, friction, or shear has damaged all of the skin layers and now the wound extends to the tissues under the skin. Some yellow fatty tissue may be visible. Danger of infection and surrounding tissue death is very high.

STATE 5

Stage IV: A deep and life-threatening ulcer that requires hospitalization and expert treatment. Muscle is visible. Bone may also become visible. And in extreme cases, nerves, tendons, and internal organs may be exposed and involved.

STATE 6

Pressure ulcers that are covered with scabs, also called eschar, or that form from the inside out, cannot be assigned a stage until a wound-care specialist removes the dead and dying tissue to see the extent of the damage. It might look like a stage one ulcer from the outside, but actually be a stage four ulcer on the inside.

APPENDIX B

Materials

The video program used in this study is entitled Every Square Inch: Preventing Pressure Ulcers. This appendix contains the scripts for all aspects of the video as well as screen shots of the interface.

- (1) Every Square Inch: Main Module Video Script
- (2) Every Square Inch: Animation Scripts
- (3) Every Square Inch: Belief Statements Script**
- (4) Every Square Inch: DVD screen shots

PSYCHOSOCIAL TESTIMONIALS

These are to be recorded in character, direct to camera, as a testimonial or a simple statement. They will be used in various places in the overall project, e.g. Introductions, transitions, conclusions, and they hit major beliefs that we want to address or reinforce.

TESTIMONIAL#1

MICHAEL

I was really embarrassed the first time I had to check a female client's um private parts, but when I explained what I was doing and how important it was that we catch ulcers before they get going, my client understood. Today I am much more comfortable working with clients on the opposite sex, it just took some getting used to.

TESTIMONIAL#2

DOROTHY

I received a compliment today--a client expressed how glad they were that our aid was taking steps to prevent pressure ulcers.

TESTIMONIAL#3

DEBBIE

I didn't think I was at risk and thought that having do all those things to reduce my risk was a waste of time--but a friend of mine got one really bad, right out of the blue--and I've really come to appreciate the steps my care giver takes.

TESTIMONIAL#4

GAIL

I see it as an opportunity to educate the client, maybe even change her behavior. They really stressed them in my training.

TESTIMONIAL#5

GAIL

The patients, and their families really appreciate the effort--once they understand what I am doing.

TESTIMONIAL#6

SARAH

Fewer pressure ulcers keep me and my employer out of trouble with the state, and, well, probably keeps us from being sued.

TESTIMONIAL#7

MAX

If Bernice ever got an ulcer she'd probably end up in a home or something. I don't think I could handle it...

TESTIMONIAL#8

MICHAEL

Having an uncooperative patient, or family for that matter, ah, that makes it really hard--or so I thought. Turns out that in most cases I just need to explain why its so important. Sometimes it takes a little extra effort but I'm pretty good at helping them understand.

TESTIMONIAL#9

BERNICE

My last aide--she was new--and she was all nervous, you could tell. She didn't want to check things out, I think she thought she might be "invading my privacy"--hah, no way, I just wanted to stay healthy! I helped her out <smile>.

TESTIMONIAL#10

SARAH

I bring supplies with me, then clear out the space when I get there--it really makes doing my job easier.

TESTIMONIAL#11

GAIL

When I establish a routine with the client, and the client's family, things usually go a lot more smoothly.

TESTIMONIAL#12

DEBBIE

I knew my caregiver *cared* when he took the time to watch out for those ulcers.

TESTIMONIAL#13

DOROTHY

Its absolutely an essential part of the quality care we should provide our clients.

TESTIMONIAL#14

SARAH

I tell all my aides that preventing pressure ulcers is a standard practice, a part of our comprehensive care.

TESTIMONIAL#15

LORRAINE

I wasn't sure I could do it--it all sounded so complicated, but it turned out to be pretty easy, with a little practice and support.

TESTIMONIAL#16

GAIL

All this pressure ulcer stuff seemed like a waste of time to me--none of my patients were at risk, I didn't think, and I'd never known anyone with one. Then one of my friend's client's got one, it really woke me up. I couldn't believe how fast it happened.

TESTIMONIAL#17

SARAH

A client of one of my new aides developed a pressure ulcer under our care. The family filed complaints and a lawsuit against our agency, the hospital, and personally named me, my aide, and my boss, it was a mess.

TESTIMONIAL#18

LORRAINE

I thought it'd take a lot of time, maybe even increase paperwork, which we already have plenty of, but it really didn't.

TESTIMONIAL#19

DEBBIE

One aide thought I wouldn't want to discuss them, I can't imagine why! Maybe she thought I'd shy away from it, who knows, but I told her straight up: an ulcer could kill me!

TESTIMONIAL#20

GAIL

It just makes me feel good.

TESTIMONIAL#21

MICHAEL

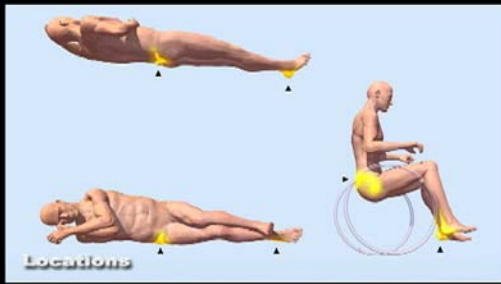
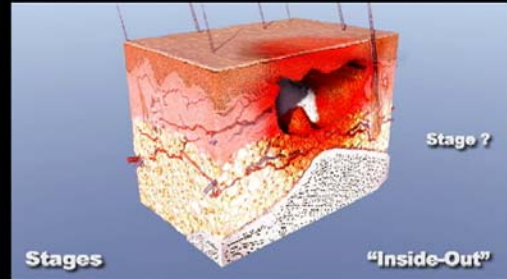
And, of course, my agency wants me to do it.

APPENDIX B

Materials

The video program used in this study is entitled Every Square Inch: Preventing Pressure Ulcers. This appendix contains the scripts for all aspects of the video as well as screen shots of the interface.

- (1) Every Square Inch: Main Module Video Script
- (2) Every Square Inch: Animation Scripts
- (3) Every Square Inch: Belief Statements Script
- (4) Every Square Inch: DVD screen shots



Monitor Risk Factors

- mobility
- alertness & mental state
- food & liquid intake
- body weight
- pain
- medications
- incontinence
- depression, anger, mood swings
- ability of in-home caregivers
- compliance

Risk Factors you cannot control:

- advanced age
- obesity or underweight
- certain prescription medications
- depression
- cognitive problems
- spinal cord injuries
- chronic medical conditions
- chronic or acute pain
- incontinence
- loose skin
- terminal illness



CURRICULUM VITAE

Richard Goldsworthy
PO Box 5307
Bloomington, IN 47407
812.333.9543/info@academicedge.com

Education

- Ph.D. Instructional Systems Technology/Educ. Psychology, Indiana University, Bloomington, Indiana, 2007.
- M.S.Ed. Instructional Systems Design, University of Kentucky Lexington, Kentucky, 1996
- B.A. Philosophy, University of Kentucky, Lexington, Kentucky, 1995

Research Focus

Health behavior and health behavior change
Mediated learning environments
Constructivism and purpose-driven learning
Reasoned action theories
The relationship of information, knowledge, and performance

Professional Experience

- 1996-Present CEO/Director of Research and Development,
Academic Edge, Inc. ,
Bloomington, IN/Lexington, KY
Manages the conceptualization, development, and evaluation of multimedia products and web sites, with particular emphasis on learning environments and instructional tools.
- 1997-1999 Technical Support Provider
Indiana University, Educational Technology Services,
Bloomington, IN
Provided consulting and technical support for all aspects of instructional technology throughout the school of education. Specific responsibilities included development and provision of technology training; management of network, server, and desktop computing; and coordination of distance learning activities.
- 1990-1996 Technology Coordinator/Instructor,
Woodbridge Academy,
Lexington, KY
Developed technology rich curricula, taught a wide range of technology related courses including advanced multimedia design and development, and managed the development and implementation of the technology plan.

Publications

Refereed Journal Articles

- Goldsworthy, R., & Schwartz, N. (in press). Preliminary development and evaluation of a multimedia enhanced HIVSTD curriculum for middle schools. *Journal of School Health*.
- Goldsworthy, R., Schwartz, N., Barab, S., & Landa, A. (in press). Evaluation of a collaborative multimedia conflict resolution curriculum. *Educational Technology Research and Development*.
- Mayhorn, C. & Goldsworthy, R. (in press). Refining Teratogen Symbols for Diverse Audiences. *Birth Defects Research Part A: Clinical And Molecular Teratology*.
- Goldsworthy, R., & Kaplan, B. (2006). Exploratory evaluation of several teratogen warning symbols. *Birth Defects Research Part A: Clinical And Molecular Teratology*, 76(6), 453-460.
- Sayegh M.A., Fortenberry J.D., & Goldsworthy, R. (2006). Teratogen symbol interpretation and preference of adolescent consumers. *Journal of Adolescent Health*, 38(2), 129-130.
- Goldsworthy, R. (2002). Supporting the development of emotional intelligence through technology. *Computers in the Schools*, 19(1/2), 119-148.
- Goldsworthy, R., Barab, S. A., & Goldsworthy, E. L. (2000). The STAR Project: Enhancing adolescents' social understanding through video-based, multimedia scenarios. *Journal of Special Education Technology*, 15(2), 13-26.
- Goldsworthy, R. (2000). Instructional design for emotional intelligence. *Educational Technology*, Nov/Dec.
- Goldsworthy, R. (2000). Bridging the gap: Implications of conversation for multimedia development. *Journal of Educational Multimedia and Hypermedia*, 9(2), 99-114.
- Goldsworthy, R. (1999). Collaborative Classrooms. *Learning & Leading with Technology* 27(4), 7-17.
- Goldsworthy, R. (1999). Lenses on Learning and Technology. *Educational Technology* 39(4), 59-62.
- Goldsworthy, R. (1997). The Not-so-virtual Field Trip. *Learning and Leading with Technology* 24(7), 26-29.

Conference Presentations

- Goldsworthy, R. (2006, November 4-8). *Adolescent warning interpretation and preferences: Who looks makes a difference*. Paper presented at the APHA 134th Annual Meeting and Exposition: Public Health and Human Rights.
- Goldsworthy, R. (2006, November 4-8). *Using media to support FASD awareness and treatment*. Paper presented at the APHA 134th Annual Meeting and Exposition: Public Health and Human Rights.
- Goldsworthy, R. (2006, November 4-8). *WSTDtv: Award-winning multimedia HIV/STD curriculum for middle schools*. Paper presented at the APHA 134th Annual Meeting and Exposition: Public Health and Human Rights.
- Goldsworthy, R., Fortenberry, J. D., & Sayegh, M. A. (2006, May). *Attitudes and*

- beliefs of pharmacists-in-training regarding HIV/STD counseling*. Paper presented at the National STD Prevention Conference: Beyond *The Hidden Epidemic: Evolution or Revolution?*, Jacksonville, FL.
- Goldsworthy, R. (2006, May). *Development and Evaluation of an Interactive Multimedia HIV/STD Curriculum*. CDC HIV/STD Conference, Jacksonville, FL.
- Goldsworthy, R. (2005, Oct). Using Sociocognitive Theory to Drive Design of Multimedia Behavioral Change Interventions. E-Learning, Vancouver, CAN.
- Goldsworthy, R., (1999, Apr). The Development of Adolescent Social Problem Solving Skills through Scenario-based Multimedia Instruction, Annual Conference of the Amer. Ed. Research Assoc., Montreal, Quebec, CAN.
- Goldsworthy, R., (1999, Feb). A Framework for Considering Collaborative Tools, Annual Meeting of the Association for Educational Communications and Technology, Houston, TX
- Appelman, R. and Goldsworthy, R., (1999, Feb). The Juncture of Game and Instructional Design: Can Fun be Learning? Annual Meeting of the Association for Educational Communications and Technology, Houston, TX.
- Goldsworthy, R. (1998, Apr). Interactive Multimedia and Social Problem Solving Skills in ADHD Adolescents, Annual Conference of the American Educational Research Association, San Diego, CA.
- Goldsworthy, R. (1998, Feb). Integrating Technology Through Real-World Activities, Annual Meeting for the Association for Educational Communications and Technology, St. Louis, MO.
- Goldsworthy, R., (1997, Feb). Anchored Instruction and Technology Integration, Association for Educational Communications and Technology, Albuquerque.

Invited Papers and Book Chapters

- Goldsworthy, R., & Kaplan, B. (2006). Warning symbol development: A case study on teratogen symbol design and evaluation. In M. S. Wogalter (Ed.), *Handbook of Warnings* (pp. 739-754). Mahwah, NJ: Lawrence Erlbaum.

Dissertation

- Goldsworthy, R. (2007). From start to finish: integrating reasoned action theory and constructivism to inform development of instructional interventions. Committee members: Thomas Duffy, Indiana University; Martin Fishbein, Pennsylvania State University; Ken Kelley, Indiana University; David Marrero, Indiana University School of Medicine.

Honors and Awards

2006 CODiE Award Finalist for design of WSTDtv instructional program
2005 Gold Parents' Choice Award 2005 for WSTDtv product
2005 BESSIE Awards 2005 (Best in Educational Software) for WSTDtv
2005 BESSIE Awards 2005 for Harmony Island
2004 All-Star Award from Children's Software Revue for WSTDtv product.
1998 Strohbeim Award for Instructional Design and Development from
Association for Educational Comm. and Tech.
1996 Fellow, National Endowment for the Humanities' Summer Institute
1995 Governor's Fellow, AT&T Teacher's and Technology Institute

Research Grants and Contracts

2007-2009 Principal Investigator
WSTD: Adolescent Multimedia STD Prevention Curriculum,
Phase 2 SBIR Grant
National Center for Research Resources
(1R44RR15322-01; 9/1/2007-8/31/2009)

2007-2009 Principal Investigator
Pressure ulcer prevention and treatment media
Phase 2 SBIR project
National Institute of Arthritis and Musculoskeletal and Skin Diseases
(1R44AR50314-02; 4/1/2007-3/31/2009)

2007 Principal Investigator
Development of Packaging and Educational Materials for HIV/STD
related Expedited Partner Services
21st Century Fund Phase 1 Match Award from state of Indiana
(9/1/06-9/1/07).

2006-2007 Principal Investigator
Development of Packaging and Educational Materials for HIV/STD
related Expedited Partner Services
Phase 1 SBIR Contract
Centers for Disease Control and Prevention (9/1/06-9/1/07)

2005-2007 Principal Investigator
FASD Diagnostic and Intervention Support for Care Providers
Phase 2 SBIR project
National Institute of Alcohol Abuse and Alcoholism
(R44AA12377; 3/15/2005-3/15/2007)

2005-2007 Principal Investigator
Teratogen Warning Symbols, Labels, and Educational Media
Phase 2 SBIR Grant Project
National Center on Birth Defects and Developmental Disabilities
(NCBDDD), a part of the Centers for Disease Control and Prevention
(2R44DD00001-03; 5/1/2005-9/1/2007; Phase 2)

2004-2006 Principal Investigator
HIV-STD Risk Assessment Training Materials for Health Care Providers

Phase 2 SBIR Contract
Centers for Disease Control
(9/1/04-9/1/06)

2004 Principal Investigator
Pressure Ulcer Training Media for Home Health Care
21st Century Fund Phase 1 Match Award from state of Indiana
(4/1/04-12/2006).

2004 Principal Investigator
Teratogen Warning Symbols and Media
21st Century Fund Phase 1 Match Award from state of Indiana
(4/1/04-12/2006).

2004 Principal Investigator
HIV-STD Counseling Media for Pharmacists
21st Century Fund Phase 1 Match Award from state of Indiana
(4/1/04-12/2006).

2004 Principal Investigator
Pressure Ulcer Prevention and Treatment Media
Phase 1 SBIR Project
National Institute of Arthritis and Musculoskeletal and Skin Diseases
(1R43AR050314-01A1; 04/19/2004-11/30/2004).

2003-2004 Principal Investigator
Teratogen Warning Symbols, Labels, and Educational Media
Phase 1 SBIR Project
NCBDDD/CDC
(1R43DD000001-01; 09/01/2003-03/01/2004).

2003 Principal Investigator
HIV-STD Counseling Media for Pharmacists
Phase 1 Contract
Centers for Disease Control and Prevention
(awarded 9/1/03, work completed).

2002-2005 Principal Investigator
STARstreams: Multimedia, the Web, and Conflict Resolution
Phase 2 SBIR Project
National Institute of Child Health and Human Development
(R44HD39032-01; 9/1/2002-9/1/2005).

2002-2003 Co-Director
Anytime, Anyplace Learning for Critical Care
Phase 1 STTR Project
National Institute of Nursing Research
(1R41NR007951-01; 04/01/2002-03/31/2003)

2002 Principal Investigator
ECG Education Software for Health Professionals
National Heart, Lung, and Blood Institute
Phase 1 SBIR Project
(1R43HL070577-01; 02/01/2002-10/30/2002)

2001-2002 Principal Investigator
 Pediatrician ADHD Training Media for Parents
 Phase 1 SBIR project
 National Institute of Mental Health
 (1R43MH62845-01A1; 9/13/2001-6/12/2002)

2001-2002 Principal Investigator
 Classroom Support of ADHD Social Skills Development, Phase 1 SBIR
 project funded by National Institute of Child Health and Human
 Development
 (1R43HD38598-01A1; 6/15/2001-3/31/2002)

2001 Principal Investigator
 ePrevent: Suicide
 Phase 1 SBIR contract
 National Institute of Mental Health
 (10/15/2001-2/15/2001).

2000-2001 Principal Investigator
 Multimedia and Children's Conflict Resolution
 Phase 1 SBIR Project
 (1R43HD039032-01; 08/01/2000-03/31/2001)

2000-2001 Principal Investigator
 Multimedia HIVSTD Prevention Curriculum for Middle Schools
 Phase 1 SBIR Project
 (1R43RR015322-01; 09/15/2000-09/14/2001)

2000-2001 Principal Investigator
 FAS/FAE MULTIMEDIA TOOLS FOR CARE PROVIDERS
 Phase 1 SBIR Project
 (1R43AA012377-01A1, 9/28/2000-3/31/2001)

1999-2001 Product Development Director
 Multimedia for Enhancing Social Problem Solving in ADHD Adolescents
 Phase 2 SBIR project
 National Institute of Mental Health
 (1R44MH54903-01, 9/1997-present)

1997-1998 Product Development Director
 Multimedia for Enhancing Social Problem Solving in ADHD Adolescents
 Phase 1 SBIR project
 National Institute of Mental Health
 (1R43MH54903-01, 9/1997-7/1998)

1992-1994 Project Director, Apple Computer Crossroads 3 Grant

1993 Recipient, Apple Computer Education Leadership Award Grant

Professional Societies

American Public Health Association
American Educational Research Association
Association for Education Communications and Technology
International Society of the Learning Sciences
Society for Adolescent Medicine
Society for Public Health Education

References (additional available upon request)

Professor Thomas M. Duffy
Learning Sciences
Indiana University
duffy@indiana.edu

Janet St. Lawrence
Branch Chief, NCHSTP
Centers for Disease Control and Prevention
jlawrence@meridian.msstate.edu

Professor Sasha Barab
Learning Sciences
Indiana University
sbarab@indiana.edu

Martin Fishbein
Annenberg Center for Communication
Pennsylvania State
mfishbein@asc.upenn.edu