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A Meta-Analysis of Surveys Examining the Relationship between AIDS-Related Knowledge and Attitudes

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A META-ANALYSIS OF SURVEYS EXAMINING THE RELATIONSHIP BETWEEN AIDS-RELATED KNOWLEDGE AND ATTITUDES

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ABSTRACT

A meta-analysis was conducted of surveys examining the relationship between AIDS knowledge and attitudes. The final sample consisted of 42 non-duplicated studies, which yielded 73 separate estimates of effect size across 9 attitudinal domains. Overall average effect sizes (r) are reported for the relationship between AIDS-knowledge and each of the following attitudinal domains: (1) attitudes toward people with AIDS, (2) attitudes toward homosexuals, (3) self-reported risky behaviors, (4) behavioral changes due to AIDS, (5) intentions to change behavior, (6) fear, worry, or concern of AIDS, (7) perceived personal risk of AIDS, (8) perceived severity of AIDS, and (9) attitudes about AIDS in general. These averages, however, should be interpreted with caution because moderator analyses conducted within each domain showed that *none* of the coded variables served as adequate moderators. Suggestions are made concerning future research.

CHAPTER 1

INTRODUCTION

Since 1981, when AIDS was first identified as a distinct disease, at least half of the AIDS patients in the United States have died, and the rate of infection has now increased dramatically. AIDS, while originally confined to high risk groups such as homosexual/bisexual men and intravenous drug users, has found its way into other segments of the population. Although treatments have been developed, they appear to be effective only in delaying the inevitable final stages of the disease and do not offer any hope of a cure. In recent years, AIDS has become more than a medical issue, it has become a social issue involving attitudes towards people who are afflicted with the disease and other high risk groups, the various social policies regarding AIDS, and personal risk factors.

Social psychologists, for their part, have responded to the AIDS epidemic with a series of surveys designed to tap the cognitive, affective and behavioral responses of the public to this fatal disease. More than 200 articles, book chapters, dissertations and selected conference presentations were retrieved through December 1993 that examined respondents' levels of AIDS-related knowledge and their

attitudinal dispositions and behavioral change in the face of the AIDS epidemic. The purpose of this report is to provide an integrative summary of findings of the aforementioned studies on the relationship between knowledge and attitudes.

Knowledge was operationally defined as the amount of correct information a person has, and attitude as an evaluative disposition having three components: (a) cognitive, (b) affective, and (c) behavioral. Before going into the related literature, it is necessary to define what is meant by the term attitude. In the present context, "attitude" is defined in terms of the traditional tri-componential view-point which holds that an attitude is a single entity that has three major components: (a) cognitive -- consisting of the ideas and beliefs an attitude holder has about an object; (b) affective -- the feelings and emotions one has toward an attitude object; and (c) behavioral -- consisting of one's action tendencies toward the object. The thought-emotion-behavior distinction is essentially identical to the one made by Plato, who used the terminology cognition, affection, and conation. Empirical evidence has shown that generally these components are moderately to highly intercorrelated (Breckler, 1984; McGuire, 1969). Adopting a tri-componential view of attitudes justifies the wide range of attitudinal variables used in the present meta-analysis such as beliefs about the

characteristics of people who have contracted the HIV virus, fear of getting AIDS, and self-reported action tendencies and future intentions.

Most of the studies that were retrieved for the purposes of this meta-analysis seem to have been developed around an assumption of human rationality, whereby opinions on AIDS issues would be based on the level of correct knowledge that a person has, and that these attitudes would, in turn, have a directive influence on their personal risk reduction and other behaviors (e.g., Atchison, Beard, & Lester, 1990; Baldwin & Baldwin, 1988; Barr, Waring, & Warshaw, 1992; Henry, Campbell, & Willenbring, 1990). In other words, it seems to be commonly assumed that the more accurate people are in their knowledge about the ways in which AIDS is transmitted and other facts, the more likely it is that they will exhibit certain attitudes, which will, in turn, guide their actions. One need not look far for examples of this thinking, especially when considering the various AIDS education strategies employed by health officials over the past 13 years. The vast majority of these efforts have focused on disseminating the medical facts pertaining to how HIV is contracted and how it can be prevented. These educational messages have increasingly flooded the media throughout the better part of the 1980s and early 1990s. Such assumptions, though, are controversial when considering the alternatives that knowledge and atti-

tudes about AIDS may be unrelated to each other, or that the relationship may vary from one domain to another.

Theoretical Foundation

A review of relevant social psychological theories of attitude change and persuasion suggests that researchers should not expect a clear and direct relationship to exist between the amount of correct AIDS knowledge people have and their AIDS-related attitudes. There is also reason to believe that the magnitude of this relationship may vary depending on the attitudinal domain studied.

Message learning theory. During the 1950s, Carl Hovland and his associates published a number of volumes of research findings in the area of attitudinal change and persuasion. The most important of these volumes was *Communication and Persuasion* (Hovland, Janis, & Kelley, 1953). In this book, Hovland et al. laid out an initial framework of working assumptions about the factors thought to affect attitude change. This general framework would later be called "Message Learning Theory."

Hovland et al. likened the process of attitude change to the learning of a habit or skill. They believed attitude change would occur only if there is (a) practice ("mental rehearsal" or thinking about the new attitude), and (b) an incentive (a reward or reinforcement) for accepting it. They

also stressed that attention to the persuasive stimulus is necessary before there can be acceptance of a new attitude.

Much of Hovland et al.'s (1953) research concentrated heavily on variables in the stimulus situation which might help to determine the amount of attitude change. They focused on aspects of the source of the message, many elements of the content of the message, some characteristics of the audience, and a few target behavior variables.

From this standpoint, if we consider a measure of the amount of correct AIDS knowledge people have as a starting point from which to predict their attitudes in a given domain, we can see that the level of knowledge and attitude may have been moderated by any number of variables that were influential in the way the person was first exposed to AIDS information, as well as by other values and knowledge he or she may hold.

Variables of interest might include credibility of the communicator, level of fear-inducement used in the message, as well as any number of audience characteristics such as intelligence level or self-esteem. The learning theory approach postulates that attitude change should be based on new information learned and the rewards or incentives presented to the audience member. Thus it implies that there should normally be a positive relationship between the amount of message content remembered (AIDS knowledge) and the amount of attitude change that persists over time.

Research conducted in this topic area, however, has produced mixed results. McGuire (1957) reported a substantial positive relationship between retention and attitude change, while Miller and Campbell (1959) found a non-significant negative correlation. And, despite the fact that Watts and McGuire (1964) obtained some evidence for a positive relationship between memory for persuasive arguments and attitude change, their time-of-assessment factor exerted non-parallel effects on the two variables. McGuire (1985) would later conclude that the time-course and the shape of decay curves for the content memory and attitude change are often so different that there is no simple relationship between message learning and amount of attitude change.

Despite some admitted difficulties, it seems unfortunate that the overwhelming majority of AIDS survey researchers who have examined the relationship between AIDS-knowledge and attitudinal variables did not consider systematically examining the influence of such important message learning theory variables as source credibility, message content, and/or audience characteristics. Without an understanding of the influence of these variables or decay curves for memory and attitudes, reliably estimating the degree of relationship between AIDS knowledge and an attitudinal domain would be exceedingly improbable.

Cognitive response theory. In the 1980s, we witnessed

an emergence of a new major theoretical viewpoint in the literature on attitude change and persuasion. Cognitive Response Theory (Petty & Cacioppo, 1981; Petty, Ostrom & Brock, 1981) emphasized the individual's cognitive responses when exposed to new information or persuasive messages. These cognitive responses are thoughts which the individuals themselves generate, and which can be supportive, oppositional or irrelevant to the message. Usually there will be a mix of these different types of thoughts, and the relative balance of favorable and unfavorable thoughts is the key variable in determining the impact of a message on attitudes.

The cognitive response viewpoint assumes that when people receive (or anticipate receiving) a persuasive message, they are likely to relate its arguments to knowledge, beliefs, and attitudes they already hold on the topic and/or similar topics, and in doing so they generate a number of thoughts that are not part of the message itself. The theory states that the balance of favorable or unfavorable self-generated thoughts will determine the extent to which the message is accepted. That is, the cognitive responses mediate between characteristics of the message and the effect of the message, and they are considered to be crucial in determining what effect the message will have. These cognitive responses represent a step between the comprehension of the message and yielding to or acceptance of it, as described in

McGuire's (1985) fine-grained analysis of the communication process.

Here, once again, the relationship between the information a person receives on a given topic and the effect it has on attitudinal change or formation is moderated by other variables. In this instance, the moderating variables are the cognitive responses that the individual has towards the new information. Greenwald (1968) argued that measures of the favorability of cognitive responses are more related to attitudes than is recall of actual message content. According to this hypothesis, it is the rehearsal and learning of cognitive responses to persuasion that provides a basis for explaining the persisting effects of communications in terms of cognitive learning. The learning of cognitive response content may indeed be more fundamental to persuasion than is the learning of communication content. Although there has been a great deal of basic experimentation conducted on the role of cognitive responses in persuasion, none of this research has been applied to the practical issue of knowledge-attitude consistency in general or to AIDS in particular. Since an AIDS knowledge test is a measure of recall of past messages, cognitive response theory and research would predict a very small relationship (if any) between knowledge and attitudes.

The first ideas that contributed to the cognitive response viewpoint developed from early research on active

participation in persuasion. In these studies, it was found that people who improvised their own persuasive talk based on a written counter-attitudinal communication displayed more attitude change than ones who read the written message silently or read it aloud into a tape recorder (King & Janis, 1956). The difference appeared not to be due to satisfaction with their own performance, but rather to the element of improvising their own statement of the arguments. Later studies showed that there were two factors contributing to this improvisation effect. First, when people know what position they are going to have to defend, they engage in a biased information search which tends to concentrate on arguments that favor their position, thus encouraging more attitude change in that direction (O'Neill & Levings, 1979). Second, people value arguments that they generate themselves more than other people value them and more than they value other people's arguments (Greenwald & Albert, 1968).

Despite acknowledging the scientific ideal of conducting tightly controlled and theory-driven research, it is rare to find a researcher who has tried to tap subjects' cognitive responses (e.g., using thought-listing procedures) to AIDS-relevant information and how it, in turn, is related to their attitudes about AIDS.

Elaboration likelihood model. Following the cognitive response theory in the evolution of ideas about the relationship between messages and attitudes is the Elaboration

Likelihood Model (Petty & Cacioppo, 1986). This model states that the degree to which an individual is likely to be persuaded is a function of two different routes to attitudinal change. The central route is based on the information that a person has about an attitude topic or issue. This route stresses the individual's prior knowledge and interest in a topic, the degree of comprehension and learning of the arguments in the message, and the self-generated thoughts of the individual in reaction to the message. This central route involves a relatively rational process of considering facts, arguments, and thoughts. Its hallmark is the thoughtful consideration of information, but the central route also allows for some degree of irrationality that is often observed during the attitude change process. Irrationality creeps into the equation when the individual considers a biased group of thoughts or arguments and combines them in psychological rather than logical ways.

The peripheral route to persuasion is far less thoughtful, and it is used when a person's motivation and/or ability to process message content or other information are low. It relies on cues peripheral to the content of the message instead of the arguments in the message and the thoughts which it arouses. The peripheral cues provide a short-cut process by which a person can decide how to react to a message without taking the trouble to think about all the pros and cons. For instance, one peripheral cue is the

source's credibility, likability, or power. A recipient may rely on any one of these to determine his or her response without thinking about the message in detail. Still another cue could be message characteristics that have been associated with rewarding or punishing experiences in the past, as in AIDS public service announcements that are designed to induce fear in the audience. Recipient characteristics, such as low issue involvement (i.e., the message has a low level of personal relevance or interest to the recipient), often lead to attitude change by a peripheral route. Though the peripheral route is cognitively "lazy," it is not necessarily illogical. It is not likely that a person would be able to consider every detail about each of the persuasive messages he or she is exposed to, and it may often make sense to rely on recommendations of an expert or on the feelings of pleasure or threat which a message arouses, particularly if the topic is not important to the person.

Petty and Cacioppo (1986) emphasized that persuasion via the peripheral route should be weak, temporary, and susceptible to counter pressure, whereas persuasion via the central route should produce attitudes that are stronger, relatively persistent, and resistant to counterattack. They call their theory of attitude change the elaboration likelihood model because it stresses that an individual's cognitive elaboration of issue-relevant arguments plays a crucial role in attitude change and persistence.

Similar concepts have been proposed by other theorists working in the field of attitude change and social cognition, e.g., Chaiken's distinctions between systematic versus heuristic processing (Chaiken, 1980), thoughtful versus "scripted" or "mindless" processing (Abelson, 1976; Langer, Blank, & Chanowitz, 1978) and cognitive versus affective evaluation of information (Zajonc, 1980). The use of simple heuristic decision cues (e.g., "more is better," or "experts can be trusted") and an unthoughtful mindless reaction are special cases of the peripheral route, which is typified by the energy-saving "cognitive miser" approach (Fiske & Taylor, 1984). The cognitive miser, when faced with an overwhelming demand on his or her attention and other cognitive resources, seeks to alleviate the load by relying on these simple heuristics instead of thoroughly processing each and every piece of information. Cognitive misers rarely use more than the minimum level of mental energy required to deal with the situation.

These information processing theories suggest two reasons why knowledge may not be strongly related to attitudes. First, a person may have arrived at an attitude through a central route, but it is possible that he or she has processed more than just "correct" knowledge. Second, a person may have embraced an attitude through a peripheral route or a heuristic cue without processing (or retaining) any substantive information. In either case, the problem

with using this framework to organize the findings of the literature on the relationship between AIDS knowledge and attitudes lies in the total disregard for such theories on the part of AIDS survey researchers.

Congeniality hypothesis. Message learning theory, cognitive response theory, and the elaboration likelihood model all deal with the effects of learning and information processing on attitudes. A complementary body of social psychology theory and research deals with the opposite direction of causality. The congeniality hypothesis states that attitude affects learning and memory of information. It may be that the more favorable people are in their attitude toward AIDS issues, the more information they tend to selectively seek out pertaining to AIDS. This body of work also calls into question the existence of a simple and consistent correlation between knowledge and attitudes. Roberts (1985) conducted a meta-analysis of the attitude-memory relationship and concluded that there was a modest correlation between attitude and recall. Delayed memory tests were more likely than immediate memory tests to result in a positive result. Similar results were obtained by Chaiken (1984), however both of these reviews have been criticized. Johnson (1991) criticized Robert's review on several bases: (a) It tested meta-analytic hypotheses using primary rather than meta-analytic statistical tests. (b) It failed to indicate,

using homogeneity statistics, how variable the congeniality effects in the literature are. The absence of such statistics from a meta-analysis renders the meta-analytic results ambiguous because it is not known how closely the effects fit the model tested. It may even be that all effect sizes can be adequately described by one overall mean value. (c) Chaiken's review made it clear that Robert's sample of studies was not all-inclusive. Although Chaiken's review seemed to be more representative of the relevant studies, it was criticized because it tested hypotheses using "box-score-tallies," failing to test models for study effect sizes; thus the review turned out to be nothing more than a systematic narrative review, instead of a formal meta-analysis. Because it is unknown whether correction of these flaws would alter the conclusions reached about this literature, Johnson suggested that further meta-analytic work should be conducted in this area.

The available evidence suggests that it is possible that the direction of the relationship between AIDS knowledge and attitudes may be called into question. Perhaps it is not the case, as has been commonly assumed, that the amount of knowledge people have directly affects their level of positive or negative attitudes. Instead, it is plausible that the person's original attitude leads them to seek out information, thus directly affecting their level of AIDS-relevant knowledge. It is arguably most plausible that

knowledge is both an antecedent and a consequence of attitude, but that any number of other factors affect the strength of this bi-directional relationship. Furthermore, in the realm of survey research conducted to examine the relationship between AIDS knowledge and attitudes it is rare to find a researcher who has even remotely considered examining the possibility that attitudes may influence the level of knowledge a person has, or what factors may affect the impact of attitudes on knowledge.

The Problem: A Lack of Theory-Driven Research

The unfortunate lack of theory-driven primary research in this area has made the integrative review of this body of research a difficult process. Many of these early studies were conducted while medical science was still trying to identify the various modes through which the HIV virus could be transmitted, and social scientists were still too naive to have fully predicted all the psychological and social ramifications of the AIDS epidemic as it spread from the socially stigmatized high-risk populations of gay/bisexual males and intravenous drug users and into the mainstream of societies across the world. As a result, there were very few studies that actually measured AIDS knowledge and attitudes within the context of a larger theoretical framework and even fewer that provided clear definitions (not too mention empirical support) of the constructs tapped by their mea-

sures. This unfortunately prohibited the selection and coding of very many obvious and/or theoretically-relevant study characteristics from the research reviewed here that might be seen as possibly moderating the relationship between AIDS knowledge and attitudes and/or behaviors. Some potentially theoretically relevant variables, based on the foregoing review, may have included ratings of the reliability of information sources (instead of just naming the primary source of information), and indicators of cognitive responses to messages and whether or not these responses appeared on knowledge tests, regardless of whether those beliefs were right or wrong.

Purpose

This meta-analysis covered the research conducted within this topic area from January 1981 through December 1993. This review is the first of its kind, attempting to qualitatively and quantitatively integrate research findings from research in this topic area.

One purpose of this meta-analysis is to identify what types of respondents, instruments for measuring knowledge and attitudes, and the data collection modes that have been employed in this body of research. To do this, a comprehensive qualitative and quantitative review was conducted on the studies reporting measures of knowledge and other attitudinal and/or behavioral variables.

Another purpose of this meta-analysis is to review the general trends of findings concerning the observed relationship between AIDS-related knowledge and attitudes with a special emphasis on possible variations in this relationship among the different content domains of knowledge and attitudes. These content domains can be thought of as the more specific aspects of a broad issue, whose components are tapped by the items used in either the knowledge or attitude scales.

A final objective of this research is to suggest some general conclusions and implications for the future of both primary and meta-analytic research in this area. This will be done by highlighting the methodological shortcomings found throughout the literature. Suggestions will also be made concerning the manner in which the various study characteristics or results in research papers are reported. It is hoped that these suggestions might aid in the integration of our knowledge of this topic area.

Finally, and perhaps most importantly, it is hoped this research will help to highlight the need for more theory-driven survey research on how knowledge might combine with attitudes and other variables into a network of mutual influence. It is hoped that the present study may serve as a model for reviews of the research on knowledge and attitudes about AIDS and in other domains as well.

CHAPTER 2

METHOD

Selection of Studies

Several methods were used in an attempt to recover as many relevant research reports as possible. Published articles were searched for through the use of the PsychLit, LUIS (Loyola University Information System), and ERIC computer databases using various subject keywords (e.g., AIDS, AIDS knowledge, Attitudes, homosexuals, drug use) to define the search fields. Other methods -- such as looking up primary studies that were listed in the bibliographies of articles that had already been retrieved, talking to other researchers who have studied this topic area, and browsing the table of contents of current periodicals -- were also used as a means of identifying potentially useful articles, dissertations, and/or conference presentations.

This search yielded 242 potentially relevant research reports (a copy of this bibliography can be obtained from the author). Studies included in this meta-analysis had been presented and/or published prior to December 31, 1993. The study also had to contain both a measure of AIDS-related knowledge and a measure of the degree of association (i.e., Pearson's *r*, *F*-ratio, x^2, *t* tests, proportions, or regres-

sion weights) between AIDS knowledge and some attitudinal variable prior to (or in the absence of) any specific educational intervention. Retrieved studies that failed to meet all three of these basic eligibility criteria were dropped from the analysis. Prior to any attempts to calculate effect sizes for these studies the data set consisted of 59 non-duplicated research reports. The vast majority of the studies that were deleted during this phase of the research project were dropped because either they did not contain a measure of knowledge or they simply measured the individuals' levels of actual knowledge and attitudes without reporting a correlation (or some other test of the relationship) between the two scales. The decision to use (r) as an index of effect size was made based on the almost standard usage of Pearson's r as a measure of association between two variables throughout the social psychological literature. The use of the Pearson's r also provides the reader with a ready estimate of the proportion of variance in attitude that is accounted for by AIDS-relevant knowledge. Thus, an effect size estimate of r=.50 indicates that approximately 25% of the variance in scores on the dependent variable is a function of the independent variable.

Of the 59 studies that remained, many contained more than one indicator of effect size because knowledge was tested along with its relationship to several other variables. Still, a number of these studies (n=17) were excluded

from the final data set because they failed to report the information needed to properly calculate the effect size (r) according to the methods described in Wolf (1986). Of these, a number of studies (n=11) were excluded from the meta-analysis if the only measure of association between the variables was reported in the form of standardized or unstandardized beta regression weights. Regression weights do not, by definition, provide a pure measure of the relationship between the two variables. Also excluded were studies that reported path coefficients as a part of a path analysis used to test a theoretical model (n=1) because each weight in an equation depends on the amount of variance accounted for by the other variables in the equation. The only exceptions to this rule would be cases in which knowledge was used as the first variable entered into the equation of either a hierarchical or step-wise regression analysis. No such cases were found in the final data set.

Still other studies (n=2) were excluded because the results that were reported only listed an odds ratio and/or a rate ratio with a 95% confidence interval, but failed to provide the frequencies and/or percentages of subjects who were in each cell of the design. Without this information it was impossible to perform the probit transformations necessary to transform these scores into a measure of effect size (r) using the methods described in Smith and Glass (1981). Attempting to calculate an effect size without this informa-

tion would require extrapolating far beyond the published data.

Three other studies were subsequently excluded from the final analysis. One study was dropped because the relationship between the two variables was presented in the form of a rank sum score and could not be transformed. A second study was dropped due to the nature of the original analysis. In this study, the authors reported a correlation between each of two separate knowledge questions and a cluster of variables which were found, through discriminant function analysis, to discriminate between respondents who intended to wear condoms and those who did not. Finally, a third study was dropped because it reported an F-test comparing three levels knowledge (without reporting group means or standard deviations). As with the other cases described above, this statistic could not be transformed into an estimate of effect size for the present meta-analysis.

On a number of occasions throughout the course of this research effort, authors of the original studies were contacted if it was suspected that they may have conducted further analyses (i.e., correlation matrices) that were not included in the published version of the report. Unfortunately, these attempts to retrieve unpublished data yielded no responses from the original authors. The final data set consisted of ($\underline{N}$=75) separate estimates of effect size culled from 42 research reports.

Variables Coded From Each Study

As mentioned earlier, due primarily to the relative absence of theoretically driven research in this area, many of the variables coded for the purposes of this exploratory meta-analysis were methodological and procedural in nature. After a thorough preliminary examination of each of the collected studies, a sense was gained as to which types of potentially relevant variables were shared by the majority of the studies in the data set. The only theoretically substantive information I could cull from the research reports included in the sample were those regarding the content domains of the knowledge and attitudinal and/or behavioral scales used by the primary researchers. The other study characteristics which were extracted from the primary reports for the purposes of this review were primarily of a methodological or procedural nature. Also coded was information regarding the subjects who had participated in the original studies.

A code book was developed and tested using two independent graduate student coders. To train the coders (as well as to identify problems with the code book) each coder independently coded a set of five studies. After a trial run, problems in coding were discussed between the author and the coders and subsequent revisions were made to the code book. Then each coder tried coding another five studies using the revised book. As before, problems with the code

book were discussed as the coders became more familiar with using it. Finally, in an attempt to establish the reliability of the coding scheme across coders, a set of ten studies were randomly chosen from the data set and each coder's data entry sheets were compared for inter-coder agreement rate. Inter-coder agreement, defined as the number of agreements between coders divided by the total number of chances for agreement, was found to be .86.

The next step was an attempt to establish an estimate of inter-coder accuracy by comparing each graduate coder's agreement rate to that of the author's own coding of the study. In other words, separate agreement rates were calculated between each of the coders and the author. This simple analysis showed that coder 1 had an accuracy rate of .87 and coder 2 had an accuracy rate of .92. Discrepancies between the three coders were discussed and resolved.

Having established relatively high levels of inter-coder agreement and accuracy, I was convinced that the code book provided a clear enough explanation of the coding procedures that its use could be replicated by other coders. The rest of the studies were then coded, and the effect sizes calculated by the author using a fourth and final version of the code book.

Each study was coded for the following descriptive variables: year of publication, type of sampling strategy employed, total sample size, number of subjects included in

the statistical analysis, type of respondents, whether or not the study included a separate analysis of members from high risk populations (e.g., gays/bisexuals, I.V. drug users, or runaways), response rate, mode of data collection, type and value of the original analysis statistic, procedure used to transform the original study statistic into the effect size (r), and the estimate of the effect size.

Each study was separately coded for each and every attitudinal variable for which a relationship was reported with the amount of correct AIDS-related knowledge. Each of the studies was coded for measures of association between AIDS knowledge and attitudinal variables which fell into one of the following coding categories: (a) People with AIDS (P.W.A.): Mixed attitudes scales covering a variety of cognitive, affective and behavior components, (b) P.W.A.: Fear, concern, or worry of people with AIDS -- typically, these measures consist of items which describe characteristics of people with AIDS (e.g., People with AIDS have gotten what they deserve.), (c) P.W.A. Policy: Mandatory testing and/or restrictive policies, (d) P.W.A. Policy: Other general policy issues (e.g., funding) -- typically these measures consisted of items that contain statements pertaining to how P.W.A.'s "should" or "ought" to be dealt with (e.g., People with AIDS should be quarantined.), (e) Homosexuals: Anti-gay attitudes (homophobia, homosexual bias), (f) Risky Behaviors: Self-reported past behaviors related to risk of con-

tracting AIDS, (g) Risk Reduction: Behavioral changes due to AIDS (already made), (h) Risk Reduction: Intentions to change behavior (not yet made), (i) Health Beliefs: Fear, worry, and concern about AIDS, (j) Health Beliefs: Perceived personal risk of contracting AIDS, (k) Health Beliefs: Perceived severity of AIDS (e.g., hope for cure or severity of further spread of disease) (l) Health Beliefs: Self-efficacy in protecting oneself against AIDS, (m) Health Beliefs: Efficacy of preventive practices (e.g., condoms help prevent the spread of AIDS), and (n) Attitudes About AIDS in General: If a scale seemed to tap two or more domains, but only provided a single overall score.

Classification of the studies into each of these categories was based on an examination of the evidence available in the original report concerning the contents of the scales. In general, the language of the original investigators was useful in coding the attitudinal domains of interest (especially in cases where no sample scale items were presented in the text of the original study). Usually, the investigator's label for the scale was able to fit nicely into one of the previously defined categories. At times, however, the investigators may have used a very general label or non-descriptive label (e.g., AIDS attitudes), or they may have based their variable name on some previously established measure (e.g., SERBAS, a self report scale of risky behavior). In these situations the coder examined the

constructs that were said to be measured by the scale or the preponderance of items within the scale (if a list of items was given in the original report) in an attempt to determine which domains were being measured.

Each study was also coded for information pertaining to the measures of knowledge and the other attitudinal or behavioral variables of interest including: the number of items for each scale, number of response categories, type of response alternatives (i.e., true/false or agree/disagree), estimated reliability of the scale, type of reliability index used to assess the scale (i.e., Cronbach's alpha or test-retest), and whether or not the reported test of reliability was conducted as a part of the primary study or cited from previous research using the scale.

Some studies may have analyzed only one relationship (e.g., the relationship between AIDS knowledge and attitudes towards people with AIDS). Other studies reported relationships between knowledge and more than one attitudinal domain (i.e., a correlation between knowledge and attitudes towards homosexuals and a correlation between knowledge and intentions to change behavior). If a study reported relationships between knowledge and more than one of these attitudinal domains, then the study was coded on two or more separate coding sheets. The division of articles was based on the type of relationship tested for in each article. This strategy provided the conceptual organization of this meta-analy-

sis.

If, however, a study reported multiple indicators of the relationship between knowledge and the same attitudinal domain (e.g., separate correlations for males and females of the relationship between AIDS knowledge and attitudes towards homosexuals) then these results were averaged (weighing each score by sample size of each group) so as to provide a single estimate of effect size for each study under each domain.

If a scale seemed to tap several domains, but the authors only reported a single overall score on the scale and correlated it with knowledge (as opposed to correlating knowledge with scores on each of several sub-scales), then these studies were coded under the category "Attitudes about AIDS in general" or "P.W.A.: Mixed attitudes" (the latter category used only if the preponderance of scale items seemed to deal with attitudes and issues involving victims of AIDS).

If a study presented imprecise results (i.e., "no rs higher than .10" or "no relationship was found") a conservative solution was adopted and zero was entered as the estimate of effect size for that particular study. This is the course of action recommended by Cooper (1989).

It should be noted that some authors have examined the relationship between AIDS knowledge and other miscellaneous variables such as personality traits (e.g., authoritarian-

ism) or psychiatric diagnoses. These variables, while interesting in their own right, were not representative of the variables studied by the vast majority of researchers in this field and, as such, are not the focus of this meta-analysis. These variables were not coded, except to note that they were looked at by the original investigators in the comment section of the coding sheet.

Computation and Analysis of Effect Sizes

In all, a total of 42 non-duplicated research reports comprised the sample of studies from which the effect sizes were calculated. Many of these studies reported relationships between knowledge and more than one attitudinal domain. These studies were coded for 75 separate effect size estimates that they contained. Each of the coding sheets was categorized according to their attitudinal dependent variable. The estimated effect sizes (r) were calculated by hand from the original analysis statistics using the transformation equations outlined by Wolf (1986).

In effect, a separate meta-analysis was conducted of all the effect sizes coded under each separate domain. The decision to conduct separate analyses under each domain instead of combining all 75 effect sizes together was made primarily to avoid combining studies that tapped very different areas (i.e., personal intentions to change behavior due to AIDS versus anti-gay attitudes). By keeping the

studies separated into different domains I also prevented the respondents in a single study from contributing more than one estimate of the effect size to each quantitative analysis. Failure to separate effect sizes according to domains would have resulted in a distortion of the representativeness of the original samples used in these studies because respondents from these studies would be counted two or more times. The goal of each of these analyses was to find out if, across studies, a relationship existed between the amount of correct AIDS knowledge a person has and his or her attitudinal and/or behavioral dispositions (e.g., attitudes toward homosexuals or past risky behaviors). If such a relationship does exist, what is the direction and magnitude of the relationship?

Once all the data had been coded and separated into different attitudinal domains, the data were entered into computerized data sets to be analyzed using a software package known as DSTAT 1.10 (Johnson, 1993). DSTAT is a software package that is specifically designed for the meta-analytic review of research literatures. Separate data sets were created, edited, and analyzed within separate sub-directories that were set up within the main DSTAT directory.

The meta-analytic strategies featured in DSTAT can be found in Hedges and Olkin (1985). This program allows for the convenient calculation of effect sizes and also the

speedy performance of several different tests which estimate the between group variance in effect sizes as well as the within group variance (i.e., tests of the homogeneity of study results).

After entering all cases into each data set, the effect sizes were corrected for sample size bias before being combined. Summary statistics which were produced by the DSTAT program included: (a) $\underline{d}$, which is the mean weighted effect size; (b) 95% confidence intervals for $\underline{d}$; (c) $\underline{r}$ corresponding to $\underline{d}$; (d) $\underline{p}_{\text{two-tailed}}$ corresponding to $\underline{r}$ (this $\underline{p}$ value is based on the total sample sizes for all studies; (e) the absolute deviation from $\underline{d}$; and (f) the amount by which homogeneity statistic $\underline{Q}$ would be reduced by removing the average $\underline{d}$ (Johnson, 1993).

Simple homogeneity tests were run on all of the separate data sets. Outlier analyses were conducted for all data sets for which the homogeneity statistic ($\underline{Q}$) proved to be significant. The DSTAT program removed the largest outlier from each data set in a step-wise fashion, until the homogeneity statistic ($\underline{Q}$) was no longer significant. These cases were then examined for ways in which they appeared to differ from the rest of the studies.

If the results showed that the effect sizes coded under a particular domain were significantly heterogeneous then it would not be meaningful to combine the effect sizes into a single average effect size because the variability within a

particular grouping of effect sizes proved to be greater than would be expected by chance. It would then become a matter of trying to separate the "apples" from "oranges." The DSTAT program was used to conduct a moderator analysis of each relationship in an attempt identify those study characteristics which may account for the observed variance among the effect size estimates in each attitudinal domain.

CHAPTER 3

RESULTS

In light of the research objectives reported in the Introduction chapter of the present thesis, data concerning the general descriptive characteristics of the studies will be provided, followed by a section describing the knowledge measures used in each of the 42 non-duplicated reports that were included in the meta-analysis. Data will also be provided concerning the descriptive characteristics of the 75 different attitudinal measures, as they were tallied within each of the nine attitudinal domains. Finally, the results of each of the domain specific meta-analyses are reported, including the overall average effect size (r) (both prior to and after conducting a simple step-wise homogeneity analysis). The corresponding value for the effect size estimate (d) and its 95% confidence interval are reported, along with the results of the domain specific moderator analyses.

Characteristics of Studies

The descriptive characteristics of the 42 non-duplicated research reports that were coded for use in the meta-analyses are summarized in Table 1. The years of

publication or presentation for this set of 42 studies ranged from 1986 to 1992, with the plurality (31%) of the studies being conducted in 1990.

These studies involved collecting data from a total of 22,568 individuals. The mean sample size was found to be 537.33 individuals with samples ranging in size from 42 respondents to 3460 respondents.

Effect sizes, however, were calculated and then corrected for sample-size bias, by weighting each effect size by the number of subjects included in the analysis. The number of subjects included in the analysis was often smaller than the number in the original sample (e.g., due to low response rates or unusable data). For this reason, the present meta-analysis was based only on the number of subjects reported in the analyses, 20,488. The average number of respondents included in an analysis was found to be 487.81 individuals (ranging from 4 respondents to 3460 respondents).

Almost 43% (n=18) of the studies used college undergraduate or graduate students (excluding medical and nursing students) as their sample. Other studies looked at adolescents and pre-college students (n=8), members of the general public (n=8), health care graduate students and employees (n=5), and service employees (n=2).

Only five of the 42 (12%) studies employed some method of probability sampling (e.g., random digit dialing). The

vast majority (88%) of studies were conducted using some method of non-probability sampling (e.g., purposive or accidental).

The studies included in the meta-analyses also varied by the mode of data collection employed by the researchers. The majority (64%) of these studies used a form of self-administered questionnaire which the respondents filled out and/or returned in the presence of the investigator. The second most popular mode of data collection was a mail survey (19%). Telephone surveys and personal interviews were used less frequently.

A summary of the response rates obtained by the researchers throughout this body of literature indicated that for 22 of the 42 (52%) studies this information was either not reported or was deemed not relevant (i.e., in-class survey). When the authors did report response rates they ranged from .29 to 1.0. The mean of response rate of these 20 studies was found to be .70.

Characteristics of AIDS Knowledge Measures

For the purposes of this meta-analysis, AIDS-knowledge was operationalized as the amount of correct information a person had about AIDS. The AIDS knowledge measures employed by the vast majority of research reports sampled for this meta-analysis were diverse both in the range and the depth of the content domains they covered. Despite the diversity

of the topics covered by a given AIDS knowledge measure, it was customary for the original authors to calculate and report only a single overall knowledge score for each respondent. This prohibited the stratification of scores on the basis of the various sub-scales of AIDS-relevant knowledge which were tapped by the measure. As a result, only one score for AIDS knowledge was coded from each of the 42 studies. The characteristics of the AIDS knowledge measures are summarized in Table 2.

The number of items used on the knowledge measures included in the meta-analyses ranged from 3 to 90 items. The mean number of items was 23.92. The number of items of the knowledge measure was not reported in eight of the 42 studies (19.5%).

Dichotomous response scales (e.g., true/false or agree/disagree) were used in 15 (36%) of the studies. Three-point scales (e.g., true/false/don't know) were used in nine of the 42 (21%) studies. This type of information was not reported in nearly 17% of these studies.

The most frequently used response content format was a true/false or true/false/don't know scale which was used in approximately 56% of the studies (n=24). In two studies AIDS knowledge was measured using an open-ended or essay format. Information pertaining to the response content of the knowledge measure was missing from 19% of the original research reports.

The majority of the studies (52%) did not report which type of reliability estimate was used to assess the AIDS knowledge measure. When this information was reported, as in 17 of the 42 (40.5%) studies, it tended to be an estimate of internal consistency. Reliability estimates were calculated by the primary researcher for the explicit use in their original study for only 38% of the studies. Reliability estimates were also cited from previous research in approximately 10% of the studies. When reliability estimates were reported they ranged from .39 to .91, with a mean estimate of .74.

Characteristics of the Attitudinal Measures

There were 75 separate attitudinal variables measured in this meta-analysis. Descriptive statistics were tallied for the attitudinal measures falling into each domain. These characteristics will be summarized, along with the results of the other analyses which were conducted for the purposes of this quantitative review. It should be noted, however, that of all the research reports that were included in the sample, none of them contributed data points to the domain of self-efficacy and only one study contributed a data point to the domain of efficacy of AIDS-preventive practices (r=+.14). It was impossible to conduct the necessary meta-analytic procedures without adequate data. These attitudinal domains were not examined in the sections that follow.

Means and Variances of Effect Sizes Across Domains

A number of different analyses were conducted on the effect sizes from each domain. For each domain an overall average effect size (r) was calculated using effect size estimates that had been corrected for sample size bias. Also presented are the corresponding d values and 95% confidence intervals, along with both the highest and lowest observed effect sizes.

A simple homogeneity analysis was then conducted by dropping outliers from the analysis until a homogeneous set of effect sizes remained that could be combined into an average effect size (r) for the domain. Here again, the corresponding d value and 95% confidence interval are presented, along with the percentage of studies that were deleted from the analysis.

As a means of trying to explain the variance among effect size differences, models of both categorical and continuous variables were tested under each domain. In these models the potential moderator variable was used to divide the studies under a particular domain into two or more classes defined by different subcategories or levels of the moderator variable. The homogeneity of effect sizes across and within classes was then tested by solving for the homogeneity equations of Q_B and Q_W used by Hedges and Olkin (1985).

A significant Q_B suggested that the effect size

estimates (r) differed across classes and that the study characteristic identified might be an important moderator of effect size estimates, but only if, in subsequent tests of within-class effect size variability, the effect size estimates within classes were found to be homogeneous (e.g., Q_W was not statistically significant within each class).

A failure to reject the null hypothesis of no within-class effect size variability on the basis of Q_W, coupled with a significant Q_B, would suggest that the identified study characteristic provided an adequate model of effect size variability because the effect sizes differed across classes but were also homogeneous within classes. A significant Q_W, on the other hand, would suggest that the study characteristic was not a completely adequate moderator because effect sizes remained heterogeneous within classes.

A number of categorical and continuous models were tested in hopes of explaining the variance among the estimates of effect size that fell into each domain. Many of these models showed significant Q_Bs. However, *none* of these variables were found to be completely adequate moderators of effect size variance because effect sizes were also found to be heterogeneous within most classes (i.e., significant Q_Ws). Rather than report the Q_Bs and Q_Ws for each model that was tested in the meta-analyses, the reader is provided with a description of the model that proved to be the most effective in modelling the observed variance among effect

sizes in a given domain. For the purposes of this analysis, a relatively effective model will be defined as the model with the largest significant Q_B and greatest percentage of non-significant Q_Ws). Relevant information is also presented regarding the variables under each domain which could not account for the observed variance adequately, either because Q_B was not significant or the model could not be tested due to lack of variation in that particular variable.

A number of models of possible moderators of effect size were tested for all the domains, using the various methodological variables coded from each of the studies: Type of respondent, year of publication (tested as both a categorical and continuous variable), mode of data collection, response rate, number of response categories for both knowledge and attitudes scales, type of response format used for both knowledge and response scales, reliability estimates of both the knowledge and attitude measures. *None of these variables (as coded) were found to serve as adequate moderators of the relationship between knowledge and attitudes in any of the content domains*. In other words, they were not helpful in explaining the variance in effect size estimates.

Knowledge and attitudes towards people with AIDS. For the purposes of statistical analysis, data points that fell into the first four content domains concerning People with

AIDS (PWA): Mixed Attitudes; Fear, concern, or worry; Policy: Testing and other restrictions; and Policy: Funding/general social policies were combined under the more general category of P.W.A. Attitudes because of the relatively small number of cases falling into each cell. Two data points which were originally coded from the same study but under different domains were averaged together so that each study would only contribute one effect size to the analysis. Combining these two data points within this domain resulted in a final data set that consisted of 73 separate estimates of effect size culled from 42 non-duplicated studies. There were a total of 14 cases included in the analysis of this domain (see Table 7). Each effect size had been corrected for bias by the DSTAT program.

The attitudinal scales used to tap this particular domain consisted of a mean of 9.31 items (which ranged from 1 to 37 items). The most frequently used type of scale was a 4-point scale (n=5) as it was used in approximately 36% of the original research reports. A majority (57%) of the original reports used some form of a Likert-type scale to measure respondent's attitudes toward people with AIDS. In 64% of the studies coded under this domain, the authors failed to report or provide any evidence of the reliability of their measure. The mean estimate of internal consistency was found to be .75 for the five attitude scales tapping attitudes towards AIDS patients.

Overall, the meta-analysis showed the average correlation between knowledge and attitudes towards people with AIDS to be $\underline{r}$=+.19 ($\underline{d}$=+.3824, 95% CI=+.36/+.41). In other words, the more correct knowledge an individual had about AIDS the more favorable their attitudes were toward people who have AIDS. The effect sizes within this domain, however, showed a great deal of variability ranging from $\underline{r}$=-.26 to $\underline{r}$=.+44. A simple homogeneity analysis was conducted, by which the largest outlier was removed from the analysis in a step-wise fashion until homogeneity among the effect sizes had been achieved. This resulted in dropping nine of the 14 studies (64%). The overall average correlation between knowledge and attitudes toward people with AIDS following the homogeneity analysis was $\underline{r}$=+.31 ($\underline{d}$=+.6548, 95% CI=+.61/+.70). Thus, the average of the five most homogeneous effect sizes was somewhat more positive than the average of all 14 effect sizes in this domain.

The moderator analysis of effect sizes revealed that the most promising model was that which used the number of response categories used in the people with AIDS attitude scales: Q_B=960.25, $\underline{p}$<.00001; Q_W non-significant in 1 of 7 (14%) levels of the variable, Q_W (5-point scale)=4.48, $\underline{p}$=.214). Contrary to what would be expected from scaling theory, the magnitude of the relationship between knowledge and attitudes was not found to systematically increase as the number of response categories increased up to a 7-point

scale (thus increasing the potential variability of responses and the likelihood of finding a significant effect). Instead, the average effect sizes for the classes of response categories fluctuated drastically in both magnitude and direction from class to class.

Conversely, the model for whether or not an analysis contained members of a high-risk population could not be tested because there was no variability among studies on this variable. In fact, none of the 14 studies that examined the relationship between AIDS-knowledge and attitudes towards people with AIDS included, in their sample, members of groups who are traditionally considered to be at high-risk of contracting AIDS.

Knowledge and attitudes towards homosexuals. There were seven cases included in this meta-analysis (see Table 8). The scales used to measure anti-gay attitudes were on average 13.14 items in length, ranging from 2 to 43 items. Eighty-six percent of these measures used 5-point scales. In three of the studies included under this domain, the authors neglected to include any information regarding the reliability of the measures. When reliability was reported (n=4), it ranged from .67 to .89 with a mean reliability estimate of .81.

The overall average correlation between AIDS-related knowledge and homophobia was found to be r=-.25 (d=-.5265,

95% CI=-.57/-.48). The effect sizes ranged from r=-.31 to r=+.20. Apparently, the more correct knowledge people had, the more tolerant were their attitudes toward homosexuality. The step-wise simple homogeneity analysis resulted in dropping three of the seven (43%) studies. The resulting average correlation from the homogenous group of studies was r=-.29 (d=-.6094, 95% CI=-.65/-.57). Thus, the average effect size of the four most homogeneous studies was nearly the same as for all seven effect sizes in this domain.

None of the variables that were suspected to moderate the relationship between knowledge and attitudes in this domain were helpful in accounting for the observed variance among effect sizes. The closest fitting model was for mode of data collection (Q_B=61.64, p<.00001) with Q_W non-significant for 1 of 2 (50%) of the groups. The effect sizes of studies whose data had been collected through the use of mail surveys (n=2) were found to have a non-significant Q_W and had an overall average correlation of r=-.29. There was significant within-group heterogeneity (Q_W=97.79, p<.00001) among effect sizes that were coded as being collected through self-administered questionnaires to captive audiences (n=5). The average correlation of this group was found to be approximately r=-.10.

Knowledge and self-reported risky behaviors. There were 10 cases in this meta-analysis (see Table 9). The measures

of self-reported risky behaviors ranged in length from 1 to 12 items, with an average measure consisting of 6.63 items. Researchers in this area employed a broad variety of scales in an attempt to capture the variability of responses among their original samples. A dichotomous scale (i.e., yes/no) was used in 20% of the studies. The most frequently used response formats included verbal frequency scales (30%) and yes/no scales (20%). Reliability information was not included as a part of the report in 70% of the original studies. In the studies that did report a reliability estimate for a measure of past risky behavior the mean estimate of internal consistency was .69.

The overall average correlation between the amount of AIDS-related knowledge that a person had and their self-reported past AIDS risk behaviors was $\underline{r}$=+.08 ($\underline{d}$=+.1585, 95% CI=+.11/+.20). Effect sizes ranged from $\underline{r}$=-.26 to $\underline{r}$=+.23. Apparently, there was very little relationship between knowledge and past risky behaviors. A total of 3 of the 10 cases (30%) were deleted in the homogeneity analysis resulting in an overall average correlation of $\underline{r}$=+.03 ($\underline{d}$=+.1585, 95% CI=+.00/+.11) for the homogenous studies, which is virtually the same as the average for all 10 studies in this domain.

None of the variables that were suspected to moderate the relationship between knowledge and attitudes in this domain satisfactorily account for the observed variance

among effect sizes. The best fitting was the model for type of respondent (Q_B=18.58, p<.0001); and 2 of 3 (66%) non-significant Q_Ws. For studies using adolescents and pre-college students as respondents (n=2) the average correlation between knowledge and self-reported past risky behaviors was found to be r=-.01 (Q_W=1.38, p=.5008). For studies in which the general population was surveyed (n=3) the average correlation was found to be r=+.05 (Q_W=2.73, p=.4350).

Interestingly, neither the model for high-risk respondents or the model for mode of data collection showed significant between group variance. These variables were not at all helpful in explaining variance.

Knowledge and behavioral changes due to AIDS. There were 12 cases included in this meta-analysis (see Table 10). Behavioral changes due to AIDS were measured by scales that were on average 4.73 items long (range from 1 to 14 items). Again, a wide variety of scales were used to tap the relevant information. Reliability information was unavailable for 75% of the studies. When the reliability of the scale could be coded it was found that it ranged from .71 to .94 with a mean internal consistency rating or .79.

The overall average correlation between AIDS knowledge and behavioral changes made specifically due to the AIDS epidemic was r=+.14 (d=+.2802, 95% CI=+.25/+.31) with effect

sizes ranging from r=-.09 to r=+.44. Thus, there is a slight positive relationship between AIDS knowledge and behavioral change, with more knowledge being associated with more behavioral change. A step-wise homogeneity analysis resulted in 4 of the 12 studies (33%) being dropped. The overall average correlation among the remaining homogeneous studies was r=-.03 (d=-.0562, 95% CI=-.10/-.01). Thus, while the average of all 12 effect sizes in this domain was slightly positive, the average of the eight most homogeneous studies was essentially zero.

None of the variables that were suspected to moderate the relationship between knowledge and attitudes in this domain satisfactorily accounted for the observed variance among effect sizes. The best fitting of these models, however, was the categorical model for year of publication/presentation (Q_B=373.19, p<.00001) where 2 of the 6 (33%) Q_Ws were non-significant. The average correlation between AIDS knowledge and behavioral changes due to AIDS for the studies conducted in 1989 (n=2) was found to be r=-.01 (Q_W=1.48, p=.4779), while the average correlation of studies conducted in 1992 (n=2) was found to be r=-.05 (Q_W=1.91, p=.3841).

Knowledge and intentions to change behavior. There were only three cases included in this meta-analysis (see Table 11). The number of items on the scales designed to tap

intentions to change behavior ranged from 1 to 7 items. The mean number of items was found to be 4 items. One study failed to report information related to the number of response categories used and the response content of those particular categories. Of the two remaining studies, one employed a three point scale yes/no/don't know scale and the other used a seven point comparative scale. None of the studies included under this domain reported an estimate of reliability for their measure of behavioral intention.

The average correlation between AIDS knowledge and intentions to change behavior was found to be $\underline{r}$=+.14 ($\underline{d}$=+.2756, 95% CI=+.14/+.42). The effect sizes in this meta-analysis ranged from $\underline{r}$=+.01 to $\underline{r}$=+.22, indicating that the more AIDS knowledge people have the greater their intentions to change their behavior. The homogeneity analysis resulted in dropping one of the three studies (33%). The resulting average correlation between the two remaining homogeneous studies was $\underline{r}$=+.21 ($\underline{d}$=+.4308, 95% CI=+.25/+.61) which is slightly more positive than the average of all the effect sizes in this domain.

Due largely to the fact that there were only three cases in this particular meta-analysis, none of the coded variables proved to be adequate moderators of the relationship between knowledge and intentions to change behavior. In fact, for the following models: type of respondent, mode of data collection, and respondents from

high risk groups, Q_B was not found to be significant. The models for type of response format used on the knowledge scale, and the reliability estimates of both the knowledge and attitude scales could not be tested because there was no variability on these variables across the three studies included in this domain.

Knowledge and fear, worry, and concern of AIDS. There were 11 cases included in this meta-analysis (see Table 12). Attitude scales which were designed to tap respondents' level of fear of AIDS ranged in length from 1 to 14 items in length with a mean length of 5.44 items. A wide variety of response categories were used ranging from 3-point scales to 8-point scales. The most frequently employed response formats were a Likert-type scale, which was used in 4 of the 11 (36%) of the studies, and the comparative rating scale which was used in 27% of the studies in this domain. Reliability estimates were not available in 73% of the studies. The mean of those that did report an estimate of reliability was found to be .75.

The overall average correlation between knowledge and fear of AIDS was found to be $\underline{r}$=-.13 ($\underline{d}$=-.2599, 95% CI=-.29/-.23). The effect sizes under this domain ranged from $\underline{r}$=-.37 to $\underline{r}$=+.22. In other words, the more AIDS knowledge people have the less concerned or worried they are about AIDS. During the step-wise homogeneity analysis, 6 of

the 11 studies (55%) were dropped. The overall average correlation between knowledge and fear of AIDS for the five remaining homogeneous studies was found to be $\underline{r}$=-.02 ($\underline{d}$=-.0493, 95% CI=-.12/+.03). Thus, while the average effect size for all the studies was slightly negative, it was essentially zero for the homogeneous set of effect sizes.

None of the variables that were suspected to moderate the relationship between knowledge and attitudes in this domain could satisfactorily account for the observed variance among effect sizes. The best fitting of these models was the model for the number of response categories used in the knowledge scale (Q_B=172.01, p<.000001) with 3 of 7 (43%) non-significant Q_Ws. The studies which used a dichotomous knowledge scale ($\underline{n}$=3) had a mean correlation between knowledge and fear of AIDS of $\underline{r}$=-.27 (Q_W=2.52, $\underline{p}$=.4716). The studies which used a 3-point knowledge scale ($\underline{k}$=2) showed a mean correlation of $\underline{r}$-.13 (Q_W=5.40, $\underline{p}$=.0673) between AIDS-knowledge and fear of AIDS. Finally, for studies which used a 5-point knowledge scale ($\underline{n}$=2) the mean correlation was $\underline{r}$=-.01 (Q_W=.99, p=.6099). Thus, a tendency was observed for the knowledge-attitude relationship to be smaller when the knowledge measure allowed for multiple, including "don't know," rather than dichotomous responses.

Knowledge and perceived personal risk of AIDS. There were six cases included in this meta-analysis (see Table

13). The attitudinal measures within this domain ranged from 1 to 11 items in length. The mean length was 3.80 items. Information concerning number of response categories and response content was missing from 33% of the studies under this domain. Of the four studies that reported such information the type of response categories used in this domain included dichotomous scale (n=1), 3-point scale (n=1), 6-point scale (n=1), and a 7-point scale (n=1). Information regarding the estimates of reliability was unavailable from all of the studies. Response contents varied also with researchers using true/false (n=1), Likert type scale (n=1), comparative scales (n=1), and one study was coded as "other." Apparently, the original researchers did not attempt to estimate the reliability of their measures or they did compute it but were later forced to delete this information from the final published report due to lack of journal space.

The overall average correlation between AIDS knowledge and perceived personal risk of AIDS was found to be r=+.18 (d=+.3610, 95% CI=+.30/+.42). The effect sizes in this domain ranged from r=-.38 to r=+.36. It seems that, in general, the more AIDS knowledge an individual had, the more they perceived themselves to be at risk. The simple step-wise homogeneity analysis resulted in dropping 3 of the 6 studies (50%) from the analysis. Of the remaining homogeneous studies the average correlation was found to be

$\underline{r}$=+.29 ($\underline{d}$=+.5123, 95% CI=+.45/+.58). Thus, dropping the outlier effect size resulted in a somewhat more positive correlation than for all the effect sizes combined.

None of the coded variables were found to be adequate moderators of the relationship between AIDS knowledge and an individual's feelings of personal susceptibility. The strongest model was for type of respondent (Q_B=82.49, p<.00001) with 1 of 2 (50%) non-significant Q_Ws. The average correlation between knowledge and personal susceptibility in studies that tested adolescents and pre-college students ($\underline{n}$=2) was found to be $\underline{r}$=+.26 (Q_W=.00, $\underline{p}$=.9999). Again, it is interesting to note that under this domain, none of the studies included members of traditionally high AIDS-risk groups (e.g., gay men) as part of the sample.

Knowledge and perceived severity of AIDS. There were only three cases that were included in this meta-analysis (see Table 14). One study failed to report the number of items in the scale. Of the studies that did report this information, the measures of perceived severity of AIDS ranged from 1 to 2 items in length with an average of 1.5 items. The response formats used in the two studies that reported such information were true/false and a Likert-type scale. The small number of items included in the analysis to measure perceived severity of AIDS made it impossible to assess the internal consistency of the measure. As a result,

none of the studies provided any evidence of the reliability of the measure they used to tap perceived severity.

The overall average correlation between AIDS knowledge and an individual's perception of the severity of AIDS was $\underline{r}$=+.19 ($\underline{d}$=+.3796, 95% CI=+.30/+.46). The effect sizes ranged from $\underline{r}$=-.09 to $\underline{r}$=+.25. In other words, the more people know about AIDS, the more likely it is that they will perceive the AIDS epidemic to be a serious health crisis. The stepwise homogeneity analysis resulted in dropping 1 of the 3 studies (33%) from the analysis. The study that was dropped had a relatively large effect size of r=+.25. The resulting overall average correlation between AIDS knowledge and perceived severity for the two remaining homogenous studies was found to be $\underline{r}$=-.01 ($\underline{d}$=-.0161, 95% CI=-.18/+.15).

None of the variables, however, were found to serve as adequate moderators of the relationship between knowledge and perceived severity of AIDS. Although most of the models showed a significant $\underline{Q}_B$, there were no models that included a single non-significant $\underline{Q}_W$. The models for the variables of mode of data collection and high risk respondents could not be tested due to lack of variability in these variables across the studies. None of the studies included in this domain contained samples that included members of high risk populations.

Knowledge and attitudes about AIDS in general. There

were seven cases included in this meta-analysis (see Table 15). This particular grouping of studies was made up of all data points which could not be neatly categorized into any of the other domains because the attitudinal measure seemed to tap two or more different content domains. The number of items on these scales ranged from 5 to 53 items. The mean number of items was found to be 25. Interestingly, nearly 86% of the studies included in this meta-analysis used a true/false response content format. Estimates of internal consistency were provided in the original study for 71% of the attitudinal measures. The mean reliability was found to be .83 (range: .68 to .93). In four of the five cases where an estimate of reliability was reported, this estimate was calculated by the original authors specifically for use on their particular sample.

The overall average correlation between AIDS knowledge and an individual's attitudes about AIDS in general was found to be $\underline{r}$=+.01 ($\underline{d}$=+.0128, 95% CI=-.06/+.09). The effect sizes in this domain ranged from $\underline{r}$=-.28 to $\underline{r}$=+.45. There appears to be little or no relationship between AIDS knowledge and the mixture of attitudes included in this domain. During the step-wise homogeneity analysis three of the seven studies (43%) were dropped from the analysis, resulting in an overall average correlation of $\underline{r}$=-.00 ($\underline{d}$=-.0026, 95% CI=-.09/+.08) among the remaining set of homogeneous studies.

None of the models were successful in adequately explaining the variance in effect sizes. The best fitting model was for type of respondents (Q_B=88.06, p=<.00001) which had one of four (25%) non-significant Q_Ws. For the two studies that used undergraduate or graduate students the average correlation between knowledge and general attitudes toward AIDS was found to be r=+.04 (Q_W=.00, p=.9999).

CHAPTER 4

DISCUSSION

This meta-analyses has fulfilled its two main objectives by describing the "state of the art" of the methodology in this particular topic area (forming the basis for the suggested improvements to be discussed) and summarizing the general trends of findings about the relationship (both the direction and degree of correlation) between AIDS knowledge and attitudes. The most notable result was that the knowledge and attitude correlation was generally small but highly varied both across and within the nine attitudinal domains.

To be more specific (while keeping in mind that the assignment of effect sizes to these domains was sometimes arbitrary and that the number of cases per domain was sometimes small), when looking at the average $\underline{r}$'s and the most homogeneous subsets of $\underline{r}$'s, the general trends appear to be that greater amounts of correct AIDS knowledge is only modestly related ($\underline{r}$'s about .30 or less) to more favorable attitudes toward people with AIDS and policies that are favorable to PWAs, less prejudice toward homosexuals and greater perception of personal risk. Knowledge is even less related to self-reported behavior change, intentions to

change behavior, fear of AIDS or perceived severity of AIDS; and AIDS knowledge is completely unrelated to self-reported risk behaviors. Compared to all the effect sizes, the homogeneous sets of effect sizes were slightly more positive in three domains (attitudes toward PWA, intentions to change behavior, and personal risk/susceptibility), essentially the same in other domains (attitudes toward homosexuals, self-reported risky behaviors, attitudes towards AIDS in general), and closer to zero in the remaining three domains (behavioral changes due to AIDS, fear, worry, or concern of AIDS, and perceived severity of AIDS). None of these changes, though, were dramatic in terms of percent of variance accounted for. A summary of these findings is presented in Table 16.

Correlations in all but one of the nine domains ranged from positive to negative. The variety of relationships is further illustrated by the zero correlation between AIDS-knowledge and attitudes in the last domain which consisted of a mixture of other domains or AIDS "in general."

As mentioned in the introductory chapter, a lack of theory-driven research in this research area resulted in less than ideal conditions under which to conduct a quantitative review of the literature. The vast majority (over 70%) of the 242 retrieved studies had to be excluded from the meta-analyses either because they did not contain a measure of AIDS-knowledge and/or attitudes or they failed to

report a measure of the relationship between the two variables (instead, reporting only levels of the respondents' knowledge and attitudes). Other studies were excluded because the original statistic could not be transformed into an estimate of effect size (*r*). Therefore, it is important to note that this particular meta-analysis was based upon a very limited number of studies which were purposively sampled from the target population of studies on the basis of the type of information that was presented in the original research report. In the future, it would be helpful if primary authors would report an estimate of effect size within their original report, or at the very least give a description of the different types of analyses conducted on the data so that future meta-analysts could decide whether or not the original author needed to be contacted in an attempt to retrieve the unpublished data. The problem is that these attempts can only be successful with the full cooperation of the original authors, who must then find the time to respond to requests for such information. Sharing unpublished data will not only help us avoid a publication bias while integrating research findings, but it will also facilitate our understanding of a particular topic area by increasing the dialogue between researchers with similar interests.

Most of the study characteristics that were coded to serve as potential moderator variables were of a strictly

methodological and procedural nature. The results of this meta-analysis showed that *none* of the categorical or continuous variable models which were used to explain variance among effect size estimates (r) were completely successful in providing an adequate model of effect size variance. The heterogeneity of the results falling under each domain was found to be too great to be adequately accounted for. Therefore, summary statistics (e.g., the overall average correlations between knowledge and attitudes which were computed prior to simple homogeneity analysis) reflect an average score of a combination of studies which differ from each other on a number of methodological variables. These averages do not reflect a statistically sound estimate of the true effect size (r) which was observed between knowledge and each of the attitudinal domains. Instead, these scores reflect an average based on a methodologically diverse sample of studies (e.g., "apples" and "oranges").

The overall average correlations which were calculated following from the simple homogeneity analysis in each domain are more meaningful because they, at least, estimate the average of a relatively homogeneous group of studies. Unfortunately, these results lose most of their meaning when, in order to achieve homogeneity, a large percentage (usually between 30% and 60%) of the studies that contributed effect sizes to the domain specific meta-

analysis had to be excluded from the analysis in order to achieve homogeneity. The exclusion of outliers generally resulted in a change in the direction and/or magnitude of the observed relationship between AIDS knowledge and attitudes.

In the seven of nine domains where a "relatively" strong fitting model could be specified (remember, for the domains of intentions to change behavior and perceived severity of AIDS not a single model was found to have both a significant Q_B, as well as at least one non-significant Q_W) the most "promising" moderator generally varied across the domains and included the number of response categories in the attitude measure, mode of data collection, etc., with no discernable consistency. The model for type of respondent proved to be the best available model to explain the variance of effect sizes in three of the seven domains.

This finding suggests that of all the variables that were tested in this meta-analysis to explain the variance among effect sizes, the one that most consistently accounted for differences between studies and across domains was the type of respondent who filled out the knowledge and attitude measures. Even so, there was not an observable pattern among these three domains in which any particular type of respondent consistently showed a stronger or weaker correlation. Unfortunately, the small number of cases which were included in each of the cells of the analysis did not

allow for a more powerful fine grained statistical analysis of the type of respondent as a moderator of between AIDS-knowledge and various attitudinal dispositions.

A number of reasons can be postulated for the general failure to account for variance between AIDS-knowledge and the various attitudinal dispositions. The most important of these may involve the fact that in this particular meta-analysis, studies were separated on the basis of their attitudinal domains and not the knowledge measure. This was primarily because the authors of these studies, despite asking questions from several different knowledge domains (i.e., modes of transmission, prevalence, definition of AIDS) tended only to report an overall AIDS-knowledge score instead breaking it down and providing separate correlations between each knowledge sub-scale and each attitudinal sub-scale.

It would be expected that the more that the items on the knowledge sub-scale were similar in content domain to the items of the attitudinal sub-scale then the greater the magnitude of the observed relationship between the two variables should be. For example, we would expect to observe a relatively larger magnitude relationship between a knowledge sub-scale of modes of transmission and reports of self-protective behavior than between a single overall test of knowledge (actually tapping into several distinct domains) and the same measure of self-protective behavior,

if for no other reason than we have narrowed the focus of our analysis and removed unrelated constructs that may have contributed error variance to the observed scores. Research conducted by Prislin (1995), while not directly concerned with AIDS knowledge, serves as an example of AIDS-attitude research that further contributes to our understanding of the individual's reactions to the AIDS epidemic by breaking attitudes down into different domains and then finding the best set of predictor variables within each of the attitudinal domains.

Still another problem arises when one considers that the knowledge and attitudinal measures that have been used within and across the different domains were often not tested to assess their reliability. This undoubtedly affected the quality of the original research by lowering the sensitivity of the research design (and, as a result the probability of finding an effect that is really there). Decreasing sensitivity lowers the statistical power of the original study. This problem seems to stem primarily from a lack of already standardized measures that are specially designed to tap each of the domains. Too frequently, researchers create their own instruments for use in research instead of consulting the vast literature to find a similar measure that has already been shown empirically to be a reliable and valid measurement.

On these grounds, I recommend that in the future social

psychologists and other AIDS researchers spend time developing measures of both AIDS knowledge and attitudes, using factor analytic and other techniques to establish the validity and reliability of their measures. These measures should include more items per scale, to insure that a broad variety of aspects can be tapped by the measure, thus canceling out the bias inherent in any single item. Once these measures have been empirically developed and accepted throughout the research community, then it is hoped that we will see a rapid increase in our understanding to the public's reaction to the AIDS epidemic. Correlational analyses should be conducted between sub-scales of AIDS knowledge and attitudes in an attempt to gain a clearer understanding of the relationship between the two variables. Here, again, the importance of theory in the planning and development of such measures is highlighted. Adopting any one of the previously mentioned theories would provide the researcher with important insights into which variables, and more specifically, which content domains would be relevant to answering the proposed research questions.

Similarly, theory should play an important role in both the development and evaluation of AIDS education programs. Measuring and tracking theoretically relevant variables throughout the course of the intervention, would allow us to more closely examine the *process* of attitude change and persuasion, instead of only the *outcome*. A better

understanding of the process will help us understand which elements of the intervention need to be worked on and improved, while also providing us with an impression of the variables that seem to be most effective.

Across the studies a broad variety of respondents were examined, but a plurality of studies (43%) looked at college students' reactions to the AIDS epidemic. A surprising result of the meta-analysis revealed that only a few studies sought out members of high AIDS-risk populations to serve as respondents to the survey. Future research should also focus on these subjects as they are at the most direct risk of contracting AIDS. Other respondent populations should also be sampled so as to gain more diversity within and between samples thus increasing the generalizability of the results.

Another methodological point worth discussing is the tendency for researchers to fail to report a response rate. Providing the reader with this information will help in assessing the overall quality of the data. A response rate of .29 suggests that there may be a very serious threat of selection which could influence both the internal and external validity of the survey. This is because the respondents who choose to participate may differ from those who choose not to participate. In the future, reporting such information will help the reader gain a sense of how much confidence he or she should put into the reported results.

Each of these suggestions, if taken, should help make

the meta-analyst's job easier. Primary authors should be careful when reporting results to include reliability estimates of each of the scales used in the analysis. These statistics would not only be interesting from a psychometric standpoint, but they would provide the researcher with a variable which could then be used to rate the quality of research (often an important moderator variable in meta-analyses). In recent years, meta-analysts have also suggested that primary researchers report effect size estimates, along with the results of the various hypothesis tests in the results sections of the original research report.

Following these guidelines should lead to higher quality research and make the subsequent integration of research findings in this area more straightforward. As medical scientists race against time to find a cure for AIDS, thousands of people die each year from this dreaded disease. Until a medical cure for AIDS can be found, the only way to prevent AIDS from spreading further is through strict adherence to the behavioral regimen outlined by health educators in their educational campaigns. It is up to social scientists to focus on translating the knowledge conveyed in educational messages into attitudes and behaviors conducive to halting the spread of AIDS.

APPENDIX A

CODING SHEET

Meta-analysis of Surveys on AIDS-related Knowledge and Attitudes

Coding Sheet

Version 4

Authors_____

Title_____

Value	Variable	Comments
_____	ID	
_____	YEAR	
_____	SAMPLING	
_____	TOTAL_N	
_____	POP_RES	
_____	HIGHRISK	
_____	RESPONSE	
_____	MODE	
_____	OTHER_D (attitude/behavior)	
_____	OTHER_NI (number of items)	
_____	OTHER_NC (number of response categories)	
_____	OTHER_RC (response content)	
_____	OTHER_TR (type of reliability)	
_____	OTHER_HR (how reliability was reported)	
_____	OTHER_RE (reliability estimate)	
_____	KNOW_NI (number of items)	
_____	KNOW_NC (number of response categories)	
_____	KNOW_RC (response content)	

_____ KNOW_TR (type of reliability)

_____ KNOW_HR (how reliability was reported)

_____ KNOW_RE (reliability estimate)

_____ ANALYS_N (number of subjects in analysis)

_____ TIME (time of analysis: pretest vs. posttest)

_____ STAT (original analysis statistic)

_____ STAT_VAL (original analysis statistic value)

_____ DF (degrees of freedom)

_____ PROC (procedure used to calculate ES)

_____ ES (estimate of effect size)

Other Comments:

APPENDIX B

CODING VARIABLES

Meta-analysis of Surveys on AIDS-related Knowledge and Attitudes

Coding Variables

Version 4

Variable	Variable Label
Study I.D.	ID
Year of Publication	YEAR
Sampling Design 1. Probability Sample (e.g., random sample) 2. Non-probability Sample (e.g., volunteers)	SAMPLING
Total Number of Subjects	TOTAL_N
Population of Respondents 1. Pre-college Students/Adolescents 2. Undergraduate/Graduate Students (medical/nursing students excluded) 3. General Population (i.e. census or news paper polls) 4. Service Employees 5. Health Care Providers (medical/nursing students included) 6. Mixed (2 or more above)	POP_RES
High Risk Respondents 1. Not Relevant 2. Gay/Bisexuals 3. Runaways 4. Prostitutes 5. I.V. Drug Users 6. Mixed (2 or more above)	HIGHRISK
Response Rate	RESPONSE
Mode of Data Collection 1. Self-administered questionnaire 2. Telephone Interview 3. Mail Survey 4. Personal Interview 5. Mixed Mode (2 or more of above)	MODE

Other Variable (Attitudinal or Behavioral Domain) **OTHER_D**

01. P.W.A.: Mixed Attitudes (cognitive/affective/behavior)
02. P.W.A.: Fear/Comfort/Concern/Empathy
03. P.W.A. Policy: Testing and/or Other Restrictions
04. P.W.A. Policy: Funding/General Social Policies
05. Homosexuals: Anti-Gay Attitudes (homophobia)
06. Risky Behaviors: Self-Reported Past Risky Behaviors
07. Risk Reduction: Behavioral Changes Due to AIDS (already made)
08. Risk Reduction: Intentions to Change Behavior (not yet made)
09. Health Beliefs: Fear, Worry, & Concern of AIDS
10. Health Beliefs: Personal Risk/Susceptibility
11. Health Beliefs: Perceived Severity of AIDS
12. Health Beliefs: Self-efficacy
13. Health Beliefs: Efficacy of Preventive Practices
14. Attitudes About AIDS in General (2 or more mixed domains)

Other Variable (Number of Items) **OTHER_NI**

Other Variable (Number of Response Categories) **OTHER_NC**

1. Dichotomous Scale
2. 3-Point Scale
3. 4-point Scale
4. 5-point Scale
5. 6-point Scale
6. 7-point Scale
7. 8-point or more Scale
8. Mixed Format (2 or more of the above)
9. Other

Other Variable (Response Content) **OTHER_RC**

01. True/False
02. Likert Type Scale (Agree/Disagree)
03. Multiple Choice
04. Semantic Differential
05. Essay or Open Ended Response
06. Mixed Format (2 or more)
07. Other
08. Yes/No
09. Numeric Frequency Scale (0-20, 21-30, 31-40)
10. Verbal Frequency Scale (Always/Sometimes/Never)
11. Fixed Sum Scale
12. Comparative Scale (relatiive comparisons, no absolute standard)
13. Forced Ranking or Paired Comparison Scales

Other Variable (Type of Reliability) **OTHER_TR**

1. Internal Consistency (e.g., Cronbach Alpha or Kuder-Richardson)
2. Test-Retest
3. Parallel Forms
4. Split Half
5. Other (e.g., Kappa)

Other Variable (How Reliability Was Reported) **OTHER_HR**
1. As Part of Study
2. Cite Previous Research

Other Variable (Reliability Estimate) **OTHER_RE**

Knowledge Variable (Number of Items) **KNOW_NI**

Knowledge Variable (Number of Response Categories) **KNOW_NC**
1. Dichotomous Scale
2. 3-Point Scale
3. 4-point Scale
4. 5-point Scale
5. 6-point Scale
6. 7-point Scale
7. 8-point or more Scale
8. Mixed Format (2 or more of the above)
9. Other

Knowledge Variable (Response Content) **KNOW_RC**
01. True/False
02. Likert Type Scale (Agree/Disagree)
03. Multiple Choice
04. Semantic Differential
05. Essay or Open Ended Response
06. Mixed Format (2 or more)
07. Other
08. Yes/No
09. Numeric Frequency Scale (0-20, 21-30, 31-40)
10. Verbal Frequency Scale (Always/Sometimes/Never)
11. Fixed Sum Scale
12. Comparative Scale (relatiive comparisons, no absolute standard)
13. Forced Ranking or Paired Comparison Scales

Knowledge Variable (Type of Reliability) **KNOW_TR**
1. Internal Consistency (e.g., Cronbach Alpha or Kuder-Richardson)
2. Test-Retest
3. Parallel Forms
4. Split Half
5. Other (e.g., Kappa)

Knowledge Variable (How Reliability Was Reported) **KNOW_HR**
1. As Part of Study
2. Cite Previous Research

Knowledge Variable (Reliability Estimate) **KNOW_RE**

Total Number of Subjects Used in the Analysis **ANALYS_N**

- If number is different from Total N then specify the correct number in the .
- If it is the same then re-enter the number of subjects from Total N.

Time of Measurement of Relationship **TIME**

1. Pre-test Only
2. Post-test Only or Pre and Post (use post tests)

Original Analysis Statistic **STAT**

01. Pearson's r
02. Chi-Square
03. t-test
04. Multiple Regression Beta Weight
05. Multiple Regression R
06. Multiple Regression change in R^2
07. ANOVA F-test
08. Logit Analysis Odds Ratio
09. ANCOVA
10. Structural Equation Model Phi
11. Discriminative Function Analysis
12. Mann Whitney U Test Rank Sum
13. Other

Original Analysis Statistic Value **STAT_VAL**

Degrees of Freedom **DF**

Procedure Used to Calculate Effect Size **PROC**

1. r
2. F to r
3. t to r
4. chi-square to r
5. d to r
6. g to r
7. Other

Estimate of Effect Size **ES**

APPENDIX C

CODING RULES

Meta-analysis of Surveys on AIDS-related Knowledge and Attitudes
Detailed Coding Rules

Version 4

NOTES:

If any of the information needed to code the study is unavailable in the original research report (e.g., reliability estimate or number of items on attitude scale), please indicate that the information is missing in the comment section of the coding sheet. These variables will be entered into the data set with a value of (-9) indicating that the data was missing or unavailable in the original study.

If you encounter any difficulties (a.k.a. "judgement calls") in using the code book and/or extracting the relevant information from one of the studies, please indicate your difficulty in coding a particular piece of information in the comment section of the coding sheet. Also, provide a detailed explanation of the reasoning you used in making your final decision to assign a particular value to the variable in question. Your comments will prove to be helpful in the creation of any additional documentation of the coding procedure.

Be sure to include the page number of the original article from which each separate piece of information was extracted. This information will prove to be helpful in clarifying any discrepancies between coders. Finally, feel free to suggest any additional coding categories that may help facilitate the coding of relevant information.

Thank You for Your Cooperation,

Patrick Smillie, Meta-analyst

Variable	Description
ID	Use three digits 001. When an research report contains two or more attitude domains in the same report, with appropriate data for the meta-analysis, the first study is coded "001A." The second is coded "001B" on a separate coding sheet.
YEAR	Only the last two digits, e.g., 1987 equals 87.
SAMPLING	Code as 1 for probability samples (e.g.' random samples, random digit dialing). Code as 2 for non-probability samples (e.g., volunteers, convenience samples, purposive samples, and intact groups).
TOTAL_N	Recorded as the actual number of subjects, who were actually included in the study, not the total number of subjects who were invited to participate.
POP_RES	Recorded as the type of respondents which made up the population from which the sample was selected for the study. Code as 1 if respondents were high school students, adolescents (12-16 years old), or children (under 12 years of age). Code as 2 if the respondents were undergraduate or graduate students in colleges or universities (exclude medical or nursing majors). Code as 3 if respondents were sampled from the general population (e.g., census) or were recruited due to their status as patients at clinics, or were approached on the street or in parks to answer questions. Code as 4 if the respondents were employees sampled from non-medical professions as a part of survey conducted at various worksites. Code as 5 if respondents worked in the health care profession in which their jobs could put them in direct contact with HIV-infected people (include both medical and/or nursing students as well). Code as 6 if the population was mixed.
HIGHRISK	Code as 1 if population did not consist of high risk group. Code as 2 if respondents were described as being of a predominantly homosexual or bisexual orientation (exclude male prostitutes). Code as 3 if respondents were teens or adolescents sampled from runaway shelters. Code as 4 if respondents were identified as prostitutes. Code as 5 if respondents were identified as former or practicing I.V drug users. (A good clue is whether or not these groups are mentioned in the title of the article, although a more thorough reading of the article could reveal that the target population, to which the researcher hopes to generalize their results is one of the high risk groups mentioned.) Code as 6 if population was mixed.

RESPONSE Code the response rate as given by the authors in the study. If not directly reported by the authors try to calculate the response rate from the total number of respondents who agreed to participate (see **TOTAL_N**) divided by the total number of respondents who were invited to participate in the study. Many times the response rate (or information needed to calculate it) is not reported in studies that use non-probability samples (e.g., volunteers - the authors don't mention how many people were approached and asked to participate), in these situations it would be misleading to report the response rate as 100% so it would be best (more conservative) to code it as (-9) as missing data.

MODE Code as 1 if the survey data was collected through the use of a self-administered questionnaire (e.g., respondents sat and filled out their questionnaire in the presence of the investigator, or questionnaire was mailed to site investigator who distributed surveys to respondents who filled out the questionnaire and was mailed back to principal investigator at a later date). Code as 2 if the data was collected through a telephone interview. Code as 3 if data was collected through a mail survey which the respondent had to complete the questionnaire (while not in the presence of investigator) and then either mail it back to the investigator or drop it off at a later date. Code as 4 if the data was collected through a formal or informal personal interview (e.g., face-to-face interaction between interviewer and respondent). Code as 5 if a mixed mode of data collection (e.g., two or more of the above methods) was used to collect data for an individual study.

OTHER_D Code the Other Variable (Attitudinal or Behavioral Domain) as the variable for which a relationship is reported with the amount of correct AIDS-related knowledge a person has. **It is best when coding this variable to turn to the results section of the original study and to see which variables the authors has decided to examine for its relationship with AIDS-knowledge.** The first step should be to determine which one of the following six general domain categories the finding falls into: 1) Attitudes Toward People with AIDS (P.W.A.); 2) Policies Issues Directed Towards People with AIDS; 3) Homosexuals; 4) Risky Behaviors that the Individual has Engaged in; 5) Risk Reduction Behaviors that the Individual has Engaged in or Intends to Engage In; and 6) Health Beliefs.

Some studies may have analyzed only one relationship (e.g., the relationship between knowledge and attitudes towards people with AIDS (P.W.A.)). Still, other authors may have reported measures of the relationships between knowledge and more than one other attitudinal and/or behavioral domain

(e.g., a correlation between knowledge and attitudes towards homosexuals and a correlation between knowledge and intentions to change behavior). **If a study reports relationships between knowledge and more than one of these attitudinal and/or behavioral domains then the study should be coded on two or more separate coding sheets. This is the basis for the conceptual organization of this meta-analysis. *You cannot enter more than one value per coding sheet for the OTHER_D variable.***

If however, a study reports multiple indicators of the relationship between knowledge and the same attitudinal or behavioral domain (e.g., separate correlations for males and females of the relationship between knowledge and attitudes toward homosexuals) then these results should be coded on the same coding sheet (see **ANALYS_N** for details of handling multiple indicators of the same relationship).

In general, use the language that the original investigators used in coding the attitudinal or behavioral domain of interest, if possible. **Usually, the investigator's label will be able to fit into one of the categories below. At times, however, the investigators will have used a very general or non-descriptive label (e.g., AIDS attitudes), or they may have based the label of their variable based on name of some previously established measure (e.g., SERBAS, a self-report scale of risky behaviors), in these situations it is up to the coder to examine the constructs that are said to be measured by the scale or to exam the preponderance of items within the scale (if a list of items is given in the original report) in an attempt to determine which domains are being measured.**

If a scale or sub-scale taps a single measure, and the investigators have analyzed the relationship between knowledge and that particular measure then code it appropriately.

If a scale seems to tap several domains, but the authors only reported a single overall score on the scale and correlated it with knowledge (as opposed to correlating knowledge with each of the separate sub-scales) then these studies should be coded as "Mixed".

Special care should be taken when coding behavioral domains, be sure to figure out whether the behavioral measure asked respondents questions concerning their past or present risky activities (e.g., "What percentage of the time do you use condoms while having sex?"), changes in their behavior since the discovery of AIDS (e.g., "Have you modified your sexual behavior in any way as a result of AIDS?"), or their future intentions to change their behavior (e.g., "I will use a

condom the next time I have sex" or "I intend to ask my partner about their sexual history"). The major difference between these categories is that the first asks respondents to list all risky behaviors they have in the past or presently been engaged in, the second asks respondents about changes in their behavior that they have already made, and the final category concerns changes in behavior the respondents say they will make (but as yet have not made).

OTHER_D CATEGORIES

01. **P.W.A.**: Mixed Attitudes Scales (cognitive/affective/behavior)
02. **P.W.A.**: Fear/Comfort/Concern/Empathy/Worry of People w/ AIDS

--Typically these measures consist of items which describe characteristics of people with AIDS (e.g., People with AIDS have gotten what they deserve.)

03. **P.W.A. Policy**: Mandatory Testing and/or Restrictive Policies
04. **P.W.A. Policy**: Other General Policies Issues (e.g., funding)

--Typically these measures consist of items that contain statements pertaining to how P.W.A.'s "should" or "ought" to be dealt with.(e.g., People with AIDS should be quarantined.)

05. **Homosexuals**: Anti-Gay Attitudes (homophobia, homosexual bias)

06. **Risky Behaviors**: Self-Reported Past Risky Behaviors

07. **Risk Reduction**: Behavioral Changes Due to AIDS (already made)
08. **Risk Reduction**: Intentions to Change Behavior (not yet made)

09. **Health Beliefs**: Fear, Worry, & Concern about AIDS
10. **Health Beliefs**: Personal Risk of Getting AIDS/Susceptibility
11. **Health Beliefs**: Perceived Severity of AIDS (e.g., hope for cure)
12. **Health Beliefs**: Self-efficacy in Protecting One's self
13. **Health Beliefs**: Efficacy of Preventive Practices (e.g., condoms help prevent the spread of AIDS).

14. **Attitudes About AIDS in General**: 2 or More Mixed Domains

It should be noted that some authors have examined the relationship between AIDS-knowledge and other miscellaneous variables such as personality traits (e.g., authoritarianism) or psychiatric diagnoses. These variables, while interesting in their own right, are not the focus of this meta-analysis and should not be coded, except to note that they were looked at by the original investigators in the comment section of the coding sheet.

OTHER_NI Code the number of items on the scale used as the measure of the attitudinal or behavioral domain of interest (see **OTHER_D**). If only a portion or sub-scale of the original scale was used in the analysis of the relationship between Knowledge and **OTHER_D** and a specific number is reported for the number of items in the sub-scale then use this number. Otherwise, use the total number of items listed for the attitudinal or behavioral measure of interest.

OTHER_NC Code as 1 if the response format used was dichotomous scale Code as 2 if the response format was a three point scale. Code as 3 if a 4-point scale was used. Code as 4 if a 5-point scale was used. Code as 5 if a 6-point scale was used. Code as 6 if a 7-point scale was used. Code as 7 if a 8 or more point scale was used. Code as 8 if a mixed format (2 or more of the above) was used. Code as 9 if other format (e.g., essay or open ended).

OTHER_RC Code as 01 if true/false. Code as 02 if Likert type (agree/disagree). Code as 03 if multiple choice. Code as 04 if semantic differential (e.g., scale is anchored by polar opposite adjectives -- good/bad). Code as 05 if essay or open ended. Code as 06 if a mixed format (2 or more) was used. Code as 07 if other format was used. Code as 08 if yes/no format was used. Code as 09 if respondents were asked to chose from a numeric frequency (e.g., 0-20 times, 21-50 times). Code as 10 if respondents were asked to choose from verbal frequency categories (e.g., always/sometimes/never). Code as 11 if respondents were asked to respond on a fixed sum scale (e.g., What percentage of the time do you use condoms?). Code as 12 if a comparative scale was used in which there was no absolute or specific standard of comparison (e.g., Compared to the years prior to the AIDS epidemic, how has AIDS influenced your behavior...Very little change/very much change). Code as 13 if a forced ranking or paired comparison scale was used (e.g., For each pair of behaviors listed below, please put a check mark next to the one you feel is most risky in terms of contracting AIDS).

OTHER_TR Code as 1 if an estimate of internal consistency was used (e.g., Cronbach's alpha). Code as 2 if test-retest reliability was measured. Code as 3 if parallel forms method was used. Code as 4 if split-half reliability was measured. Code as 5 if other method was used to assess reliability (e.g., Spearman coefficient). Code as 6 if two or more different types of reliability were reported and be sure to note which ones were used in the comment section of the coding sheet.

OTHER_HR Code as 1 if the reliability estimate was assessed as part

of the original study. Code as 2 if the reliability estimate was cited from previous research.

OTHER_RE Code the overall reliability coefficient for the measure of the attitudinal or behavioral domain of interest. If a reliability coefficient is reported for a particular sub-scale of the attitudinal or behavioral domain that was used to assess the relationship between Knowledge and **OTHER_D** then report the reliability of the sub-scale, instead of the overall reliability of the measure. If the authors report reliability estimates of the same scale or sub-scale from one or more previous studies report the average of these reliability coefficients. If the authors report a range of reliability coefficients pick the mid-point to report. **NOTE: In other words, if the authors have conducted reliability estimates of their own for use of a particular scale or sub-scale in their original study then report this number (regardless of whether or not the authors also mention previous estimates of reliability on the same scale). If the authors report only reliability estimates based on previous research and have made no attempts to conduct their own reliability analysis then follow the suggestions mentioned above when coding this information. Be sure to include all estimates of reliability mentioned ny the authors in the comments section of the coding sheet.**

If a range of reliability estimates are offered for a single scale, or over a number of scales used in the study, then subtract the lowest from the highest, split the difference, and add that number to the lowest reported estimate of validity. Code this number as the reliability estimate.

If several estimates (from previous research) are reported then take the average and code it appropriately.

KNOW_NI see above for **OTHER_NI**

KNOW_NC see above for **OTHER_NC**

KNOW_RC see above for **OTHER_RC**

KNOW_TR see above for **OTHER_TR**

KNOW_HR see above for **OTHER_HR**

KNOW_RE see above for **OTHER_RE**

ANALYS_N Code the number of subjects included in the analysis of the relationship between Knowledge and **OTHER_D**. In some cases, this number will be different than the **TOTAL_N** because the original research report only reported an indicator of relationship for knowledge and

attitudes/behaviors for a subset of the original sample (e.g., females only). The number of subjects in the analysis may also differ from **TOTAL_N** because a some subjects had to be excluded from the analysis because they provided insufficient data. If a study reported more than one data point for the relationship between Knowledge and **OTHER_D** (e.g., reported separate analyses for males and females) be sure to note this information and number of subjects included in each of the separate analyses in the comments section of the coding sheet. These data points will later be averaged (using weights derived from the proportion of members in each group who make up the **ANALYS_N**) so that a single effect size will be computed for the relationship between Knowledge and **OTHER_D** for each study, so that each study contributes only one effect size to the meta-analysis.

TIME Code as 1 if the relationship between Knowledge and **OTHER_D** was assessed as it naturally occurs within the individual (e.g., prior to or in the absence of an educational intervention). Code as 2 if the relationship was between knowledge and **OTHER_D** was assessed following an educational intervention. For example, in some of the intervention studies included in the sample, separate measures of the relationship between Knowledge and **OTHER_D** was taken before and after the intervention. In these cases, report only the relationship between post-knowledge and post-attitude. A number of cross-lag (pre-knowledge and post-attitude) relationships may also be reported, in these cases, make sure a relationship is reported between post-knowledge and post-attitudes and report only this relationship.

STAT Code the indicator of the relationship between Knowledge and **OTHER_D** from the original analysis as presented in the results section of the research report. If coded as "Other" please indicate the statistic used in the original analysis in the comment section of the coding sheet.

STAT_VAL Code the value of the original analysis statistic. Allow seven spaces for this variable. The first column will denote the sign (or direction) of the value using + or -. The next three columns will denote a whole number ranging from 000 to 999. The next column will be used for a decimal point. The last two columns will be used to report values to the second decimal place. (e.g., if the original study reported a correlation between Knowledge and **OTHER_D** of r=-.46, then it would be entered into the data set as follows (-000.46)).

DF Code the degrees of freedom used in the original analysis. If this data is not directly reported by the authors it can

be calculated from **ANALYS_M** using Table 8 "Guidelines for Converting Various Test Statistics to r" (Wolf, 1986).

PROC Code procedure based on the statistic used to calculate the effect size. If "Other" is coded, note which procedure was used in the comment section of the coding sheet.

ES Report the estimate of the effect size (r) of the relationship between Knowledge and **OTHER_D** as calculated using procedures defined in Hedges & Olkin text.

APPENDIX D

TABLES

Table 1

Characteristics of the Studies (N=42)

Characteristic	n	%
Year of Presentation/Publication		
1986	1	02
1987	2	05
1988	3	07
1989	8	19
1990	13	31
1991	8	19
1992	7	17
Sampling Design		
Probability	5	12
Non-probability	37	88
Mode of Data Collection		
Self administered questionnaire	27	64
Telephone survey	3	07
Mail survey	8	19
Personal interview	3	07
Mixed	1	02
Type of Respondent		
Pre-college/adolescent	8	19
Undergraduate/graduate student	18	43
General population	8	19
Service employee	2	05
Health care providers	5	12
Mixed	1	02

Table 1 (cont.)

Note. All percentages have been rounded to the nearest full percentage point and may not equal exactly 100% when summed.

Table 2

Characteristics of AIDS Knowledge Measures (N=42)

Characteristic	n	%
Number of Response Categories		
Dichotomous scale	15	36
3-point scale	9	21
4-point scale	1	02
5-point scale	3	07
6-point scale	2	05
7-point scale	1	02
Mixed Format	3	07
Other	1	07
Missing	7	17
Response Content		
True/false	25	60
Likert type scale	1	02
Multiple choice	1	02
Essay/open ended	2	05
Mixed format	4	10
Other	1	02
Missing	8	19
Type of Reliability		
Internal consistency	17	41
Test/retest	1	02
Split-half	2	05
Missing	22	52

Table 2 (cont.)

Characteristics of AIDS Knowledge Measures (N=42)

Characteristic	n	%
How Reliability was Reported		
As part of study	16	38
Previous research	4	10
Missing	22	52

Note. All percentages have been rounded to the nearest full percentage point and may not equal exactly 100% when summed.

Table 3

Percentages of No. Response Categories Across Domains (N=73)

No. of Response Categories	Attitudinal Domain (Percent per Domain)								
	A	B	C	D	E	F	G	H	I
Dichotomous scale	14	00	20	08	00	00	17	33	14
3-point scale	07	00	10	17	33	09	17	00	29
4-point scale	36	14	10	17	00	18	00	00	14
5-point scale	21	86	10	17	00	18	00	33	14
6-point scale	00	00	10	00	00	09	17	00	00
7-point scale	07	00	00	00	33	09	17	00	00
8-point or more	00	00	00	00	00	09	00	00	00
Mixed Format	07	00	10	08	00	09	00	00	00
Other	00	00	00	08	00	00	00	00	00
Missing	07	00	30	25	33	18	33	33	29

Note. Domain A: Attitudes towards people with AIDS (n=14); Domain B: Attitudes towards homosexuals (n=7); Domain C: Self-reported risk behaviors (n=10); Domain D: Behavioral changes due to AIDS (n=12); Domain E: Intentions to change behavior (n=3); Domain F: Fear, worry or concern of AIDS (n=11); Domain G: Perceived personal risk of AIDS (n=6); Domain H: Perceived severity of AIDS (n=3); Domain I: Attitudes about AIDS in general (n=7). All percentages within a particular domain have been rounded to the nearest full percentage point and may not equal exactly 100% when summed.

Table 4

Percentages of Response Content Across Domains (N=73)

Response Content	Attitudinal Domain (Percent per Domain)								
	A	B	C	D	E	F	G	H	I
True/false	07	00	00	08	00	00	17	33	86
Likert type scale	57	14	00	17	00	36	17	33	00
Multiple choice	00	00	00	00	00	00	00	00	00
Essay/open ended	00	00	10	08	00	00	00	00	00
Mixed format	07	00	00	08	00	09	00	00	00
Other	07	00	00	00	00	18	17	00	00
Yes/no	14	00	20	25	33	00	00	00	00
Numeric frequency	00	00	10	00	00	00	00	00	00
Verbal frequency	00	00	30	08	00	00	00	00	00
Comparative scale	00	00	10	00	33	27	17	00	00
Missing	07	86	20	25	33	09	33	33	14

Note. Domain A: Attitudes towards people with AIDS (n=14); Domain B: Attitudes towards homosexuals (n=7); Domain C: Self-reported risk behaviors (n=10); Domain D: Behavioral changes due to AIDS (n=12); Domain E: Intentions to change behavior (n=3); Domain F: Fear, worry or concern of AIDS (n=11); Domain G: Perceived personal risk of AIDS (n=6); Domain H: Perceived severity of AIDS (n=3); Domain I: Attitudes about AIDS in general (n=7). All percentages within a particular domain have been rounded to the nearest full percentage point and may not equal exactly 100% when summed.

Table 5

Percentages of Type of Reliability Across Domains (N=73)

Type of Reliability	Attitudinal Domain (Percent per Domain)								
	A	B	C	D	E	F	G	H	I
Internal consistency	36	43	30	25	00	27	00	00	71
Test/retest	00	00	00	00	00	00	00	00	00
Split-half	00	14	00	00	00	00	00	00	00
Missing	64	43	70	75	100	73	100	100	29

Note. Domain A: Attitudes towards people with AIDS (n=14); Domain B: Attitudes towards homosexuals (n=7); Domain C: Self-reported risk behaviors (n=10); Domain D: Behavioral changes due to AIDS (n=12); Domain E: Intentions to change behavior (n=3); Domain F: Fear, worry or concern of AIDS (n=11); Domain G: Perceived personal risk of AIDS (n=6); Domain H: Perceived severity of AIDS (n=3); Domain I: Attitudes about AIDS in general (n=7). All percentages within a particular domain have been rounded to the nearest full percentage point and may not equal exactly 100% when summed.

Table 6

Percentages of How Reliability was Reported Across Domains (N=73)

How Reliability Was Reported	Attitudinal Domain (Percent per Domain)								
	A	B	C	D	E	F	G	H	I
As part of study	36	43	70	25	00	27	00	00	57
Previous research	00	14	00	00	00	00	00	00	14
Missing	64	43	30	75	100	73	100	100	29

Note. Domain A: Attitudes towards people with AIDS (n=14); Domain B: Attitudes towards homosexuals (n=7); Domain C: Self-reported risk behaviors (n=10); Domain D: Behavioral changes due to AIDS (n=12); Domain E: Intentions to change behavior (n=3); Domain F: Fear, worry or concern of AIDS (n=11); Domain G: Perceived personal risk of AIDS (n=6); Domain H: Perceived severity of AIDS (n=3); Domain I: Attitudes about AIDS in general (n=7). All percentages within a particular domain have been rounded to the nearest full percentage point and may not equal exactly 100% when summed.

Table 7

Raw Data Domain A: Attitudes Toward People with AIDS (N=14)

Study	d	95% CI	r	p
1. Ajdukovic & Ajdukovic (1991)	-0.4722	-0.57 / -0.37	-.2300	.0000
2. Allard (1989)	-0.3447	-0.45 / -0.24	-.1700	.0000
3. Archambault & Edwards (1989)	+0.1794	-0.10 / +0.46	+.0900	.2016
4. Atchison, Beard & Lester (1990)	+0.0000	-0.25 / +0.25	+.0000	1.0000
5. Barr, Waring & Warshaw (1992)	+0.9797	+0.93 / +1.03	+.4400	.0000
6. Brown et al. (1991)	+0.0000	-0.12 / +0.12	+.0000	1.0000
7. DuRant et al. (1992)	+0.6738	+0.51 / +0.84	+.3200	.0000
8. Gallop et al. (1991)	-0.5382	-0.61 / -0.46	-.2600	.0000
9. Henry et al. (1990)	+0.6519	+0.59 / +0.71	+.3100	.0000
10. McElreath & Roberts (1992)	+0.5356	+0.30 / +0.78	+.2600	.0000
11. Morton & McManus (1986)	-0.0996	-0.33 / +0.13	-.0500	.3987
12. Ornstein (1992)	+0.6751	+0.59 / +0.76	+.3200	.0000
13. Range & Starling (1991)	+0.6272	+0.46 / +0.80	+.3000	.0000
14. Witt (1989)	-0.2823	-0.42 / -0.15	-.1400	.0001

Table 8

Raw Data Domain B: Attitudes Toward Homosexuals (N=7)

Study	d	95% CI	r	p
1. Bouton et al. (1989)	+0.4068	+0.22 / +0.60	+.2000	.0000
2. Conner et al. (1990)	+0.0000	-0.41 / +0.41	+.0000	1.0000
3. Gallop et al. (1991)	-0.5382	-0.61 / -0.46	-.2600	.0000
4. Henry et al. (1990)	-0.6519	-0.71 / -0.59	-.3100	.0000
5. Morton & McManus (1986)	+0.2813	+0.05 / +0.51	+.1400	.0176
6. Temoshok et al. (1987)	-0.6508	-0.80 / -0.50	-.3100	.0000
7. Verdaguer (1989)	-0.4917	-0.73 / -0.25	-.2400	.0001

Table 9

Raw Data Domain C: Self-Reported Risky Behaviors (N=10)

Study	d	95% CI	r	p
1. Bassman (1991)	+0.3237	+0.20 / +0.45	+.1600	.0000
2. Gray & Saracino (1986)	+0.0200	-0.11 / +0.15	+.0100	.7621
3. Hanson et al. (1992)	+0.1183	-0.28 / +0.52	+.0600	.5594
4. Jemmott & Jemmott (1991)	+0.0397	-0.23 / +0.31	+.0200	.7749
5. Ornstein (1992)	+0.1201	+0.04 / +0.20	+.0600	.0032
6. Pleak & Meyer-Bahlburg (1990)	-0.2179	-0.61 / +0.18	-.1100	.2735
7. Slonim-Nevo et al. (1991)	-0.2383	-0.62 / +0.14	-.1200	.2139
8. Thomas et al. (1989)	+0.4722	+0.38 / +0.57	+.2300	.0000
9. Verdaguer (1989)	-0.5355	-0.78 / -0.29	-.2600	.0000
10. Walter et al. (1992)	+0.0000	-0.12 / +0.12	+.0000	1.0000

Table 10

Raw Data Domain D: Behavioral Changes Due to AIDS (N=12)

Study	d	95% CI	r	p
1. Ajdukovic & Ajdukovic (1991)	+0.1604	+0.06 / +0.26	+.0800	.0019
2. Allard (1989)	+0.0000	-0.09 / +0.09	+.0000	1.0000
3. Archambault & Edwards (1989)	-0.1794	-0.46 / +0.10	-.0900	.2016
4. Baldwin & Baldwin (1988)	-0.0200	-0.13 / +0.09	-.0100	.7234
5. Bassman (1991)	-0.2007	-0.32 / -0.08	-.1000	.0014
6. DiClemente et al. (1990)	-0.0400	-0.13 / +0.05	-.0200	.3908
7. DuRant et al. (1992)	-0.1803	-0.34 / -0.02	-.0900	.0290
8. Henry et al. (1990)	+0.9796	+0.92 / +1.04	+.4400	.0000
9. Kleinman et al. (1990)	+0.3847	+0.13 / +0.64	+.1900	.0027
10. Temoshok et al. (1987)	-0.0200	-0.16 / +0.12	-.0100	.7847
11. Thurman & Franklin (1990)	+0.2005	+0.04 / +0.36	+.1000	.0152
12. Zimet et al. (1992)	+0.0000	-0.20 / +0.20	+.0000	1.0000

Table 11

Raw Data Domain E: Intentions to Change Behavior (N=3)

Study	d	95% CI	r	p
1. Jemmott & Jemmott (1991)	+0.4052	+0.13 / +0.68	+.2000	.0039
2. Manning et al. (1989)	+0.0199	-0.21 / +0.25	+.0100	.8633
3. Miller et al. (1990)	+0.4487	+0.22 / +0.68	+.2200	.0001

Table 12

Raw Data Domain F: Fear, Worry, & Concern of AIDS (N=11)

Study	d	95% CI	r	p
1. Ajdukovic & Ajdukovic (1991)	+0.0200	-0.08 / +0.12	+.0100	.6989
2. Bouton et al. (1989)	-0.0599	-0.18 / +0.06	-.0300	.3299
3. Crawford (1990)	+0.0000	-0.24 / +0.24	+.0000	1.0000
4. DuRant et al. (1992)	-0.0999	-0.26 / +0.06	-.0500	.2256
5. Gallop et al. (1991)	-0.5382	-0.61 / -0.46	-.2600	.0000
6. Henry et al. (1990)	-0.3033	-0.36 / -0.25	-.1500	.0000
7. Peterson & Murphy (1990)	+0.4489	+0.23 / +0.67	+.2200	.0001
8. Sunenblick (1988)	-0.7898	-1.09 / -0.49	-.3700	.0000
9. Temoshok et al. (1987)	-0.5374	-0.68 / -0.39	-.2600	.0000
10. Thurman & Franklin (1990)	+0.0399	-0.12 / +0.20	+.0200	.6281
11. Verdaguer (1989)	-0.1396	-0.38 / +0.10	-.0700	.2490

Table 13

Raw Data Domain G: Perceived Personal Risk of AIDS (N=6)

Study	d	95% CI	r	p
1. DiClemente et al. (1987)	+0.5382	+0.46 / +0.62	+.2600	.0000
2. DuRant et al. (1992)	+0.5371	+0.37 / +0.70	+.2600	.0000
3. Manning et al. (1989)	+0.2405	+0.01 / +0.47	+.1200	.0381
4. Sunenblick (1988)	-0.8147	-1.12 / -0.51	-.3800	.0000
5. Thurman & Franklin (1990)	+0.0799	-0.08 / +0.24	+.0400	.3325
6. Verdaguer (1989)	-0.2201	-0.46 / +0.02	-.1100	.0696

Table 14

Raw Data Domain H: Perceived Severity of AIDS (N=3)

Study	d	95% CI	r	p
1. DiClemente et al. (1987)	+0.5160	+0.42 / +0.61	+.2500	.0000
2. Manning et al. (1989)	+0.1396	-0.09 / +0.37	+.0700	.2275
3. Morton & McManus (1986)	-0.1798	-0.41 / +0.05	-.0900	.1296

Table 15

Raw Data Domain I: Attitudes About AIDS in General (N=7)

Study	d	95% CI	r	p
1. Archambault & Edwards (1989)	+0.0795	-0.20 / +0.36	+.0400	.5710
2. Brown & Fritz (1988)	+0.0000	-0.10 / +0.10	+.0000	1.0000
3. Crawford et al. (1990)	-0.5815	-0.76 / -0.40	-.2800	.0000
4. Koopman et al. (1990)	+1.0015	+0.74 / +1.27	+.4500	.0000
5. Pitts et al. (1986)	+0.9932	+0.59 / +1.40	+.4500	.0000
6. Slonim-Nevo et al. (1991)	-0.2585	-0.64 / +0.12	-.1300	.1779
7. Wiley et al. (1991)	+0.0786	-0.35 / +0.51	+.0400	.7196

Table 16

Comparison of Mean Effect Sizes (r) Before and After Stepwise Homogeneity Analysis Across Domains

Attitudinal Domain	Range of r	Before		After	
		n	r	n	r
A	-.26 to +.44	14	+.19	5	+.31
B	-.31 to +.20	7	-.25	4	-.29
C	-.26 to +.23	10	+.08	7	+.03
D	-.09 to +.44	12	+.14	8	-.03
E	+.01 to +.22	3	+.14	2	+.21
F	-.37 to +.22	11	-.13	5	-.02
G	-.38 to +.36	6	+.18	3	+.29
H	-.09 to +.25	3	+.19	2	-.01
I	-.28 to +.45	7	+.01	4	-.00

Note. Domain A: Attitudes towards people with AIDS; Domain B: Attitudes towards homosexuals; Domain C: Self-reported risk behaviors; Domain D: Behavioral changes due to AIDS; Domain E: Intentions to change behavior; Domain F: Fear, worry or concern of AIDS; Domain G: Perceived personal risk of AIDS; Domain H: Perceived severity of AIDS; Domain I: Attitudes about AIDS in general.

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The final copies have been examined by the director of the thesis committee and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

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