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Use of differential framing to measure implicit social cognitions associated with aggression

James M. Lebreton
University of Tennessee

To the Graduate Council:

I am submitting herewith a dissertation written by James M. Lebreton entitled "Use of differential framing to measure implicit social cognitions associated with aggression." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Industrial and Organizational Psychology.

Lawrence R. James, Major Professor

We have read this dissertation and recommend its acceptance:

Joan R. Rentsch, Michael D. McIntyre, Michael Nash, Esteban Walker

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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USE OF DIFFERENTIAL FRAMING TO MEASURE IMPLICIT SOCIAL COGNITIONS ASSOCIATED WITH AGGRESSION

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

James Marshall LeBreton
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DEDICATION

I dedicate this dissertation to the five most influential people in my life. To my parents Marsha Rinetti and Jim LeBreton, who taught me to value learning, knowledge, and education. To my brother Dan LeBreton, you are not only my best friend but also my closest colleague. I look forward to our continued person and professional relationships. To my dear friend Mike Parent, your intellectual and academic accomplishments inspired me to my own.

Most importantly, I dedicate this work to my wife Beth. You have sacrificed and postponed your plans for mine. You have been with me through all the ups and downs. You have supported me, in every sense of the word. You have been a wonderful friend and wife. It is your unconditional love that keeps me going. Thank you. I love you.

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ABSTRACT

The purpose of this dissertation was to respond to the call offered by James (1998; James & Mazerolle, 2002; James et al., 2001) for the development and validation of new indirect measurement systems applicable to implicit social cognitions. Such a measurement system is described herein. This measurement system is based on the notion of differential framing—that is, the idea that individuals with different personalities tend to frame the same situations and stimuli in qualitatively different manners. A test based on differential framing was developed to assess framing proclivities associated with dispositional aggression. This test is called the Differential Framing Test or DFT. Data were collected and analyzed from four different samples. The DFT demonstrated strong predictive validity yielding cross-validities in the .30s and .40s. Furthermore, and in direct contrast to many indirect measurement systems (e.g., Thematic Apperception Test), the current measurement system demonstrated appropriate levels of internal consistency and test-retest reliability, given its early stage of development. Overall, it appears that differential framing represents a viable approach to measuring personality-related implicit cognitions. Furthermore, this approach yields results that are not redundant with other measures of implicit social cognitions (e.g., Conditional Reasoning Tests). Results are discussed in light of directions for future research.

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CHAPTER 1

INTRODUCTION

Hogan (1991) identifies two qualitatively different definitions of personality. The first definition refers to "a person's social reputation and the manner in which he or she is perceived by friends, family, co-workers, and supervisors"(p. 875). This definition emphasizes the public and explicit dimensions of personality. By definition, these dimensions are available for social observation and/or introspection on the part of the individual. Researchers subscribing to this definition are frequently interested in measuring observable trait behavior and/or the self-attributed (i.e., reputational) aspects of personality as manifested in explicit needs, motives, and values (cf. Cattell, 1957; Costa & McCrae, 1992; Edwards, 1959; Goldberg, 1993; Greenwald & Banaji, 1995; Hogan, 1991; Hogan, Hogan, & Roberts, 1996; Jackson, 1984; Lanyon & Goodstein, 1997; McClelland, Koestner, & Weinberger, 1989; McCrae & Costa, 1997; Winter, John, Stewart, Klohnen, & Duncan, 1998).

Hogan's (1991) second definition of personality refers to "the structures, dynamics, processes, and propensities inside a person that explain why he or she behaves in a characteristic way" (p. 875). This definition emphasizes the often implicit or unconscious cognitive-affective systems and structures that engender explicit behavior. By definition, these underlying dimensions of personality are not available for social observation and/or introspection on the part of the individual. Researchers subscribing to this definition are often interested in measuring such aspects of personality as

unconscious needs and motives, implicit cognitions, and latent cognitive-affective structures (cf. Brewin, 1989; Epstein, 1994; Freud, 1959; Greenwald & Banaji, 1995; Hogan, 1991; James, 1998; James et al., 2001; James & Mazerolle, 2002; Kihlstrom, 1987, 1999; Kihlstrom, Mulvaney, Tobias, & Tobis, 2000; McClelland et al., 1989; Mischel & Shoda, 1995; Murray, 1938; Westen, 1991, 1998; Westen & Gabbard, 1999; Winter et al., 1998).

To date, the vast majority of work within Industrial and Organizational Psychology (I/O psychology) and Organizational Behavior (OB) has focused on explicating and measuring personality variables associated with the first definition. That is, the majority of research has emphasized identifying taxonomies of explicit trait behavior and then building (largely) introspective assessment instruments to measure these explicit aspects of personality. These instruments most typically take the form of self-report surveys (cf. Costa & McCrae, 1992; Edwards, 1959; Hogan, 1991; Hogan & Hogan, 1995; Hough & Schneider, 1996; James & Mazerolle, 2002; Schwarz, 1999; Watson & Clark, 1992, 1994).

Accompanying this strong emphasis on the development and validation of explicit personality measures is the scarcity of recent research attempting to model and measure the implicit or unconscious aspects of personality (Greenwald & Banaji, 1995; James & Mazerolle, 2002). Researchers who have attempted to measure implicit personality characteristics typically have relied on indirect measures (i.e., those in which individuals are unaware that the answers they are providing are being used to measure a specific aspect of personality). Indeed, Greenwald and Banaji (1995) observe that indirect

measures are "theoretically essential" for the measurement of implicit cognitions. However, these authors continue by noting that the development of such measures

> ...has not yet been achieved in the efficient form needed to make research investigation of individual differences in implicit social cognition a routine undertaking. When such measures do become available, there should follow the rapid development of a new industry of research on implicit cognitive aspects of personality and social behavior (p. 20).

This dissertation attempts to address this research deficiency through the development and initial validation of a new measure of implicit social cognitions associated with dispositional aggression.

In the following sections the author 1) briefly reviews the construct of aggression, describing how it has been traditionally conceptualized and measured, 2) suggests that extant measurement systems fail to reliably assess individual differences in implicit cognitions associated with aggression, 3) describes how the Conditional Reasoning measurement system was specifically developed to assess these implicit cognitions, and 4) introduces a new measurement system derived from Conditional Reasoning designed to assess implicit framing proclivities associated with aggression.

Traditional Approaches to Defining and Measuring Aggression

Definition

Aggression refers to the desire or motive to harm, injure, attack, or punish another person (Murray, 1938). Aggressive individuals tend to dislike the target of aggression, have a strong desire to inflict harm on the target, and lack self-regulatory skills that

would permit alternative (i.e., non-aggressive) responding (cf. Baron & Richardson, 1994; Berkowitz, 1993; Crick & Dodge, 1994; James & Mazerolle, 2002; James et al., 2001). This definition highlights the disruptive, counterproductive, dysfunctional, and antisocial outcomes associated with uncontrolled or unharnessed aggression. As such, aggression is psychologically distinct from healthier and more functional constructs such as dominance, assertiveness, and achievement striving (cf. Berkowitz, 1993; Costa & McCrae, 1992; Hogan, 1991; Hogan & Hogan, 1995; James, 1998; James & Mazerolle, 2002; Murray, 1938).

Aggressive behavior may take many forms ranging from the obvious to the subtle. Although a number of different frameworks exist for classifying aggressive behaviors, Buss (1961) has offered one of the most comprehensive taxonomies. According to this taxonomy, aggressive behavior may be classified along three dimensions: physical-verbal, active-passive, and direct-indirect. Baron and Folger (1996) note that physical acts of aggression include unwanted touching, unwanted physical restraint, or assault with a weapon, whereas verbal acts of aggression rely on the use of words to convey threats, insults, or obscenities. Active forms of aggression "inflict harm through the performance of some behavior…[whereas] people inflict passive aggression by withholding some action" (p. 67, Baron & Folger 1996). Direct acts of aggression involve inflicting harm on the specific target of aggression. Indirect acts of aggression involve inflicting harm on something that the target values (Baron & Folger, 1996).

Thus this taxonomy is useful for classifying behaviors including, but not limited to, murder, assault, dirty looks, sarcasm, theft, sabotage, showing up late for meetings, plagiarism, intentional work slow downs, sexual harassment, cheating, failure to return

phone calls, hiding needed resources, threats, spreading rumors, failure to deny false rumors, failure to defend target, refusing target's request, arson, sabotage, unfair performance evaluation, yelling, and lying (Buss, 1961; Folger & Baron, 1996). Traditionally, psychologists interested in predicting these forms of aggressive behaviors have relied on either self-report personality surveys or projective personality tests.

Self-Reports

Self-report surveys are designed to directly assess those aspects of behavior, thought, and affect that are available for observation or introspection (Greenwald & Banaji, 1995; James & Mazerolle, 2002). Hogan (1991) refers to this explicit component of personality as one's "reputation", whereas McClelland et al. (1989) refers to this component as one's "self-attributed" motive. Regardless of how they are labeled, these components of personality emphasize explicit cognitions arrived at via introspective self-report or explicit behaviors measured via observation.

Most omnibus personality inventories contain a primary scale or subscale specifically designed to measure aggression and/or hostility (Costa & McCrae, 1992; Goldberg, 1999; Hogan & Hogan, 1995; Jackson, 1984). Within the context of the Five Factor model, these scales are typically associated with the general factors of agreeableness and/or neuroticism (cf. Costa & McCrae, 1992; Goldberg, 1999; Hogan & Hogan, 1995). The typical survey instructs respondents to endorse statements describing particular behaviors or emotions (e.g., "I have a violent temper", "I often get into fights with others"; "I am easily angered"). Respondents typically respond using either a "yes-no" format or a Likert-type format such as strongly agree, agree, neutral, disagree, and strongly disagree.

Though the popularity of self-reports in I/O psychology has been reestablished in recent years (cf. Barrick & Mount, 1991; Hurtz & Donovan, 2000; James & Mazerolle, 2002) they do have at least two major limitations. The first limitation stems from the ease with which respondents can consciously manipulate their scores on self-reports. The terms impression management, response distortion, socially desirable responding, and faking are often used to describe these overt and purposeful adjustments to self-report scores by respondents (Edwards, 1970; Ones, Viswesvaran, & Reiss, 1996; Paulhus, 1984; Rosse, Stecher, Levin, & Stokes, 1998; Snell, Sydell, & Lueke, 1999). The fakeability of self-reports may be related to the second major shortcoming—low empirical validity.

Numerous primary and meta-analytic studies have demonstrated that self-reports tend to have low correlations with behavioral criteria such as job performance, academic performance, and performance in training programs (Barrick & Mount, 1991; Hurtz & Donovan, 2000; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Spangler, 1992; Tett, Jackson, & Rothstein, 1991). Indeed, James and Mazerolle (2002) report that the mean (uncorrected) criterion-related validity for self-reports is approximately .12. This suggests that, on average, self-reports account for roughly 1 to 2 % of the variance in important behavioral criteria such as job performance. (This suggests nearly all of the variance in many important criterion behaviors may be attributed to other causes, one of which may be implicit personality characteristics such as latent needs and motives [James & Mazerolle, 2002].)

Even with these shortcomings, the fact that self-reports measure explicit cognitions and overt behavior in a psychometrically reliable and consistent manner has

secured their place in personality measurement. Indeed, Hogan and colleagues (1991; Hogan & Hogan, 1995; Hogan et al., 1996) aptly note that an individual's self-ascribed cognitions and emotions (i.e., self-perceptions) contribute to a full understanding of his or her personality. Though self-perception is necessary for understanding an individual's personality, it only represents a piece of the personality puzzle. By focusing solely on explicit descriptions of one's personality, researchers may be overlooking other important aspects of personality—namely, the implicit cognitions noted above (Greenwald & Banaji, 1995; James & Mazerolle, 2002). What is needed then, are reliable and valid measures that assess implicit cognitions associated with personality.

Projective Techniques

Traditional approaches to measuring implicit cognitions may be described as "projective techniques." Whereas self-reports represent a direct measurement system, projective techniques are indirect measurement systems because they "neither inform the subject of what is being measured nor request self-report concerning it" (p. 5, Greenwald & Banaji, 1995). The typical projective test has participants provide unstructured responses to vague stimuli (Anderson & Anderson, 1951; James & Mazerolle, 2002; Lanyon & Goodstein, 1997; Lilienfeld, Wood, & Garb, 2000; Murray, 1938). The unstructured answers are then interpreted by one or more psychologists who make inferences concerning the respondent's implicit needs, motives, values, or cognitions.

One of the more popular projective tests in I/O psychology has been the Thematic Apperception Test or TAT (James & Mazerolle, 2002). The TAT consists of 30 black and white pictures containing ambiguous situations. Respondents are asked to describe a story that could explain the contents of one or more of the pictures. Little structure is

imposed on the respondents; rather they are left to their own devices to generate the story. Psychologists then interpret and evaluate the unstructured responses using a variety of scoring protocols ranging from very simple to highly complex (James & Mazerolle, 2002; Lilienfeld et al., 2000). Any single story can be scored for multiple latent needs or motives. Within I/O psychology, the TAT has been used to measure implicit motives such as power, achievement, dominance, and autonomy (e.g., McClelland et al., 1989). As an aside, it is worth noting that within I/O psychology the TAT (or any other projective test for that matter) has rarely been used to measure implicit cognitions associated with "dark side" constructs such as aggression or narcissism (cf. Baumeister, Smart, & Boden, 1996; Gustafson & Ritzer, 1995; Hogan, Curphy, & Hogan, 1994; Hogan, Raskin, & Fazzini, 1990; Kagan, 1990; Lowman, 1996).

The general popularity of projective tests has waned since its zenith during the 1940s, due in part to several shortcomings associated with these techniques. Similar to self-report surveys, projective tests tend to have low empirical validity. Many reviews suggest correlations between projective techniques and behavioral criteria rarely exceed .30, and are often in the .10s and .20s (cf. James & Mazerolle, 2002; Lilienfeld, et al., 2000; Spangler, 1992). Furthermore, the subjective nature of the testing and scoring process often yields low estimates of internal consistency and test-retest reliabilities for these techniques (Anastasi, 1982; James & Mazerolle, 2002; Lilienfeld, et al.; Nunnally, 1978). Finally, projective techniques tend to be difficult and time consuming to administer (James & Mazerolle, 2002). Within I/O psychology, these shortcomings have born witness to the dearth of research examining implicit cognitions as they relate to individual and organizational variables (James & Mazerolle, 2002).

Nevertheless, outside of I/O psychology, momentum is building for the inclusion of implicit cognitions in theory and research, due in part to the belief that these cognitions may account for additional variance in import criterion behaviors (cf. Brewin, 1989; Dreessen, Arntz, Hendriks, Keune, & van-den-Hout, 1999; Epstein, 1994; Greenwald & Banaji, 1995; Greenwald & Farnham, 2000; Greenwald, McGhee, & Schwartz, 1998; James & Mazerolle, 2002; Kihlstrom, 1987, 1999; Kihlstrom, et al., 2000; Koole, Dijksterhuis, & van-Knippenberg, 2001; McClelland et al., 1989; Mischel & Shoda, 1995; Russo, Fox, & Bowles, 1999; Westen, 1991, 1998; Westen & Gabbard, 1999; Winter et al., 1998; Wittenbrink, Judd, & Parks, 2001). However, the principal factor limiting the widespread integration of implicit social cognitions across all areas of psychological theory has been the lack of valid and reliable measurements systems (Greenwald & Banaji, 1995; James & Mazerolle, 2002). Traditional measurement systems are simply ill equipped to reliably capture the important individual differences in implicit cognitions.

Conclusions

The expansion of implicit cognitions into many areas of psychological theory and research has not been met by a similar expansion in the development of measurement systems designed to assess these cognitions. This is unfortunate because existing measurement systems are simply inadequate for assessing these implicit cognitions. Though self-reports do have redeeming qualities (e.g., high reliability, stable five-factor taxonomy), by definition, they are incapable of assessing unconscious cognitions. Projective techniques on the other hand were specifically designed to assess these cognitions, however, they are limited by poor reliability and, similar to self-reports, tend

to have low empirical validity. Taken together this suggests new indirect measurement systems are needed that: 1) reliably assess implicit cognitions, 2) have strong criterion-related validity, and 3) are applicable to a wide range of psychological constructs. Research on James' (1998) Conditional Reasoning measurement system suggests that it meets these minimum criteria.

Use of Conditional Reasoning to Measure Implicit Cognitions

Addressing the need for psychometrically sound measures of implicit cognitions, James (1998; James & Mazerolle, 2002; James et al. 2001) has offered a new measurement technology applicable to personality assessment called Conditional Reasoning. This measurement system indirectly assesses implicit cognitions associated with a wide range of personality dispositions. The measurement system has been used for assessing both "functional" personality constructs such as achievement motivation, fear of failure, and reliability, as well as "dysfunctional" constructs such as aggression, narcissism, and anti-social personality characteristics.

Tests designed using this new methodology have demonstrated strong psychometric characteristics including internal consistency reliability, test-retest reliability, and criterion-related validity (James, 1998; James & Mazerolle, 2002; James et al. 2001). In fact, James et al. report an average uncorrected validity of .43 against a range of behavioral criteria. These impressive validities are likely due, at least in part, to the indirect nature of Conditional Reasoning Tests or CRTs. The indirect nature of CRTs makes them less susceptible to conscious response biases such as faking (LeBreton, Burgess, & James, 2000). That is, because individuals are unaware of the purpose of

assessment, they are not able to intentionally manipulate, distort, or enhance their scores on these tests.

At the heart of the Conditional Reasoning system is the idea that individuals want to believe that their behavior is rational, reasonable, logical, and appropriate. In order to maintain the illusion of rationality, aggressive individuals rely on implicit reasoning biases to enhance the logical appeal of their aggressive behavior (James & Mazerolle, 2002; James et al., 2001). James (1998) refers to these implicit biases as justification mechanisms (JMs) to emphasize the critical role they play in justifying aggressive behavior.

Figure 1-1 was adapted from the discussion presented in James and Mazerolle (2002; Chapter 3) and presents a general overview of the Conditional Reasoning process. As this figure suggests, people with different personality dispositions tend to rely on a number of different cognitive biases (e.g., rationalization, attributional biases) when observing and interpreting people, situations, and events.

James and Mazerolle (2002) present nine general categories of cognitive bias that produce any number of specific personality-driven JMs. These JMs are used to enhance the rational appeal of dispositional or motive-based behavior by impacting the reasoning and analysis used by individuals when evaluating their behavioral responses to various situations and stimuli. Although these JMs may be generally classified into the broad categories of implicit cognitive biases identified by James and Mazerolle (2002), each personality disposition will have a unique set of JMs (James, 1998; James et al., 2001). That is, aggressive individuals rely on a unique set of JMs to justify their aggressive behavior. These JMs impact how aggressive individuals perceive, think, and analyze

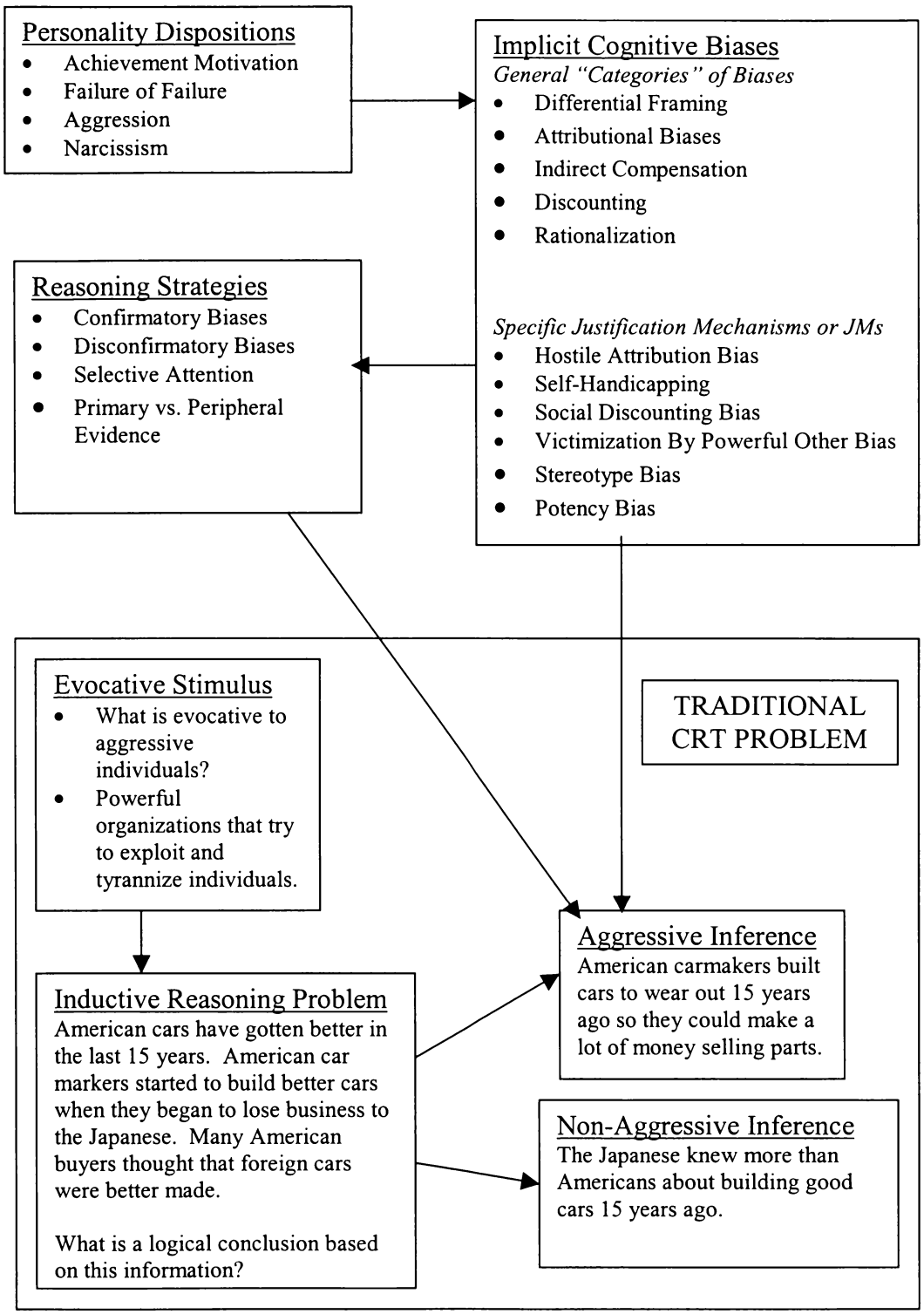

Figure 1-1

General Overview of the Conditional Reasoning Process

situations and their responses to these situations. Specifically, JMs impact cognitive processes such as perception (e.g., selective attention), information search strategies (e.g., confirmatory biases), reasoning, and causal inference. Aggressive individuals use these JMs to enhance the rational appeal of their aggressive behavior and to provide a context for the self-perception of rationality and appropriateness.

Take for example two individuals working on a report for their boss. Both individuals receive feedback from a co-worker regarding some potential problems with the report. The aggressive individual may frame and interpret this feedback as overly critical, malicious, hostile, and combative. Furthermore, he or she suspects the coworker is trying to degrade and embarrass them. As a result, this individual may verbally assault the coworker and storm out of the room. On the other hand, the non-aggressive individual frames and interprets the feedback as helpful, considerate, developmental, and instrumental toward improving his or her performance. He or she would likely thank the coworker and adopt his or her suggestions for improving the report.

In this example, the aggressive individual framed the comments of his or her coworker as critical and combative, whereas the non-aggressive individual framed these exact same comments as helpful and supportive. According to James and Mazerolle (2002), these differences in how feedback was framed and evaluated represent an example of differential framing. Differential framing is defined as the qualitative disparities in the meaning assigned to the same situations, attributes, or events by individuals with different personalities (James, 1998; James & Mazerolle, 2002).

Here the aggressive individual's initial framing was further shaped by another personality-related cognitive bias (i.e., an attributional bias). That is, the aggressive

individual's attribution that the behavior of the coworker was hostile, malicious, and intended to be degrading was affected by a hostile attribution bias related to his or her aggressive personality (Crick & Dodge, 1994). In contrast, the non-aggressive individual's observations and interpretations were not impacted by this same bias. The aggressive individual may further rely on this bias if asked to justify his or her aggressive behavior (e.g., "My reaction was appropriate because my coworkers are all out to get me and I needed to defend myself"). Aggressive individuals who routinely call upon this bias to interpret situations and draw causal inferences regarding the behavior of others, as well as to justify their own aggressive behavior are said to have the JM of hostile attribution bias (Crick & Dodge, 1994; James, 1998; James & Mazerolle, 2002; James et al. 2001).

For another example, aggressive individuals may frame others using the contrast of strength versus weakness. For the aggressive individual, acts of aggression connote bravery, strength, and assertiveness, whereas non-aggressive acts connote weakness, impotence, and fear. Individuals who routinely frame others in this manner and rely on this framing to justify their aggressive behavior are said to have the JM of potency bias (James, 1998). Other JMs have been identified and explicitly discussed in James (1998), James and Mazerolle (2002), and James et al. (2001) and are presented in Table 1-1.

It is important to recognize that differential framing underlies all of the JMs presented in Table 1-1. That is, each JM may be thought of as the combination of differential framing with one or more additional cognitive biases (e.g., attributional bias; leveling, rationalization). The two examples provided above demonstrate how dispositionally aggressive individuals may rely on implicit framing and other cognitive

Table 1-1

Justification Mechanisms Associated with Aggression

Hostile Attribution Bias: tendency to see malevolent intention in the actions of others. Even benign or friendly acts may be seen as having hidden, hostile agendas designed to intentionally inflict harm. An especially virulent form of this bias occurs when benign or positive acts are attributed to selfish concerns and negative incentives.

Potency Bias: tendency to frame and reason using the contrast of strength versus weakness. For example, people with a strong potency bias tend to frame others on a continuum ranging from (a) strong, assertive, powerful, daring, fearless, or brave to (b) weak, impotent, submissive, timid, compliant, conforming, or cowardly.

Derogative of Target Bias: an attempt to make the target more deserving of aggression. For example, a number of negative characteristics may be ascribed to the target (e.g., evil, corrupt, immoral, unethical) or the positive traits of the target may be ignored, undervalued, or depreciated.

Victimization Bias: tendency to frame the self as a victim and to see the self as being exploited and taken advantage of by powerful others (e.g., supervisor, government). Sets the stage for arguing that aggression is acting out against tyranny, oppression, and injustice.

Social Discounting Bias: tendency to call on socially unorthodox and frequently antisocial beliefs to interpret and to analyze social events and relationships. Individuals using this bias tend to be disdainful of traditional beliefs and unfettered by social customs. They are directly cynical or critical with few subliminal channels for routing antisocial framing and analyses.

Retribution Bias: tendency to confer logical priority to retaliation over reconciliation. Reflected in implicit beliefs that aggression is warranted in order to restore respect or exact restitution for perceived wrongs. This bias underlies classic rationalizations for aggression based on wounded pride and disrespect.

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biases to interpret people, situations, and events. Individuals who systematically rely on a specific implicit cognitive bias when interpreting and analyzing situations may also use this bias to further justify their aggressive responses to these situations. That is, habitual reliance on a particular implicit cognitive bias (e.g., framing others as strong or weak) is indicative of a justification mechanism (e.g., potency bias) that may be used to rationalize the individual's aggressive behavior. Whereas differential framing impacts how aggressive individuals observe and interpret people, situations, and events, JMs move beyond simple interpretation to include biases in causal inferences, reasoning, and the justification of subsequent aggressive behavior. Thus, differential framing may be thought of as the foundational content used to comprise the psychologically more complex JMs.

James and Mazerolle (2002) describe how JMs directly shape the types of reasoning strategies (i.e., processes) employed by an aggressive individual; exemplars of these strategies are presented in Figure 1-1. To illustrate, consider someone with the JM of hostile attribution bias. Such an individual might selectively attend to information that indicates others should not be trusted. Furthermore, they may engage reasoning strategies that seek to confirm this initial impression and thus justify aggressive behavior against this untrustworthy person (they may also discount salient information and over emphasize tertiary information).

JMs become the target of assessment in Conditional Reasoning Tests or CRTs (James, 1998; James & Mazerolle, 2002; James et al, 2001). Measurement of JMs is accomplished indirectly by asking respondents to solve inductive reasoning problems. An example of a Conditional Reasoning problem is presented in the lower portion of

Figure 1-1. Each problem starts with a situation or scenario thought to be evocative to aggressive individuals. In this example, a general situation emphasizing the exploitive potential of powerful organizations was used as the evocative situation. From this situation, an inductive reasoning problem was constructed. This problem asks individuals to determine why 15 years ago Japanese automakers made superior automobiles compared to American automakers. One solution is based on aggressive reasoning associated with the JMs of "victimization by powerful others" and "hostile attribution bias" (e.g., 15 years ago American automakers intentionally built poor cars so they could make additional money on parts and repairs). This solution is designed to be more logically appealing to aggressive individuals than the solution based on non-aggressive (prosocial) reasoning (e.g., Japanese automakers knew more about building good cars 15 years ago). For each item, respondents must decide if the non-aggressive reasoning or the reasoning based on JMs is more logically persuasive.

James (1998) referred to this approach as Conditional Reasoning because what is deemed as an appropriate solution to an inductive reasoning problem is conditional on the personality of the respondent (e.g., aggressive or non-aggressive). That is, the reasoning and inferences drawn depends on whether the reasoner is aggressive or non-aggressive. To summarize how CRTs are constructed, inductive reasoning problems are created that are evocative to one or more reasoning strategies typically employed by an aggressive individual. These reasoning strategies are related to one or more JMs that are in turn, related to a specific personality disposition or motive.

As stated earlier, James and Mazerolle (2002) reviewed a number of implicit cognitive biases that are potentially related to JMs. These biases include attributional

biases, illusory correlations, negative leniency, positive leniency, indirect compensation, identification, discounting, leveling, and rationalization. These authors suggest that in addition to measuring JMs engendered by these biases, measurement of these biases could yield additional insights into an individual's personality. Indeed, they suggest that the cognitive bias underlying all JMs, differential framing, may be particularly promising for researchers interested in personality.

To recapitulate, framing is the process of assigning "interpretative adjectives with behaviors, people, situations, or events" (James & Mazerolle, 2002). Differential framing occurs when individuals with different latent motives (e.g., aggression) frame the same people, situations, or events in qualitatively different ways. James and Mazerolle (2002) observe that,

> Differences in framing are rapidly becoming one of the prominent research topics in psychology. We suspect that the popularity of this area will grow because differential framing opens that door to a much more powerful measurement system, namely one based on qualitative differences among individuals.

Thus, while framing represents a potentially powerful foundation for measuring personality, to date no fully independent measurement system exists to capture these qualitative differences in framing (James & Mazerolle, 2002). The purpose of the current paper is to describe the development and initial validation of a new measurement system designed to fill this research void. This new measurement system, derived from its parent system Conditional Reasoning, is illustrated using the construct of dispositional aggression. This measurement system seeks to complement the types of implicit

cognitions measured by CRTs (i.e., justifications for aggressive behavior) with a related type of implicit cognition (i.e., the initial biases in framing and perception). Stated alternatively, the new approach seeks to measure the initial framing biases that become the foundation for subsequent justification mechanisms.

Differential Framing

Differential Framing: Aggression

James has identified and summarized a number of framing proclivities associated with aggressive individuals (James, 1998; James & Mazerolle, 2002; James et al., 2001). At the most general level, highly aggressive individuals tend to frame others through a prism of strength versus weakness. Acts of aggression connote strength, bravery, and assertiveness, whereas non-aggressive acts connote weakness, impotence, and fear. Aggressive individuals may also implicitly frame the actions of others as hostile, malicious, or malevolent. Finally, aggressive individuals frame others as deserving of aggressive actions because they are evil, corrupt, dishonest, dysfunctional, immoral, or untrustworthy. This is especially true of powerful others who aggressive individuals see as exploitive, tyrannical, and antagonistic. These framing proclivities are imbedded throughout the JMs presented earlier in Table 1-1.

Where traditional CRTs measure the biases in reasoning and causal inference, the current paper describes a new test that simply measures the biases in initial implicit framing. Because differences in framing are manifested in the adjectives people use to describe situations, people, events, and other stimuli (James, 1998; James & Mazerolle, 2002; James & McIntyre, 1996), this new test takes the form of synonym test. Figure 1-2

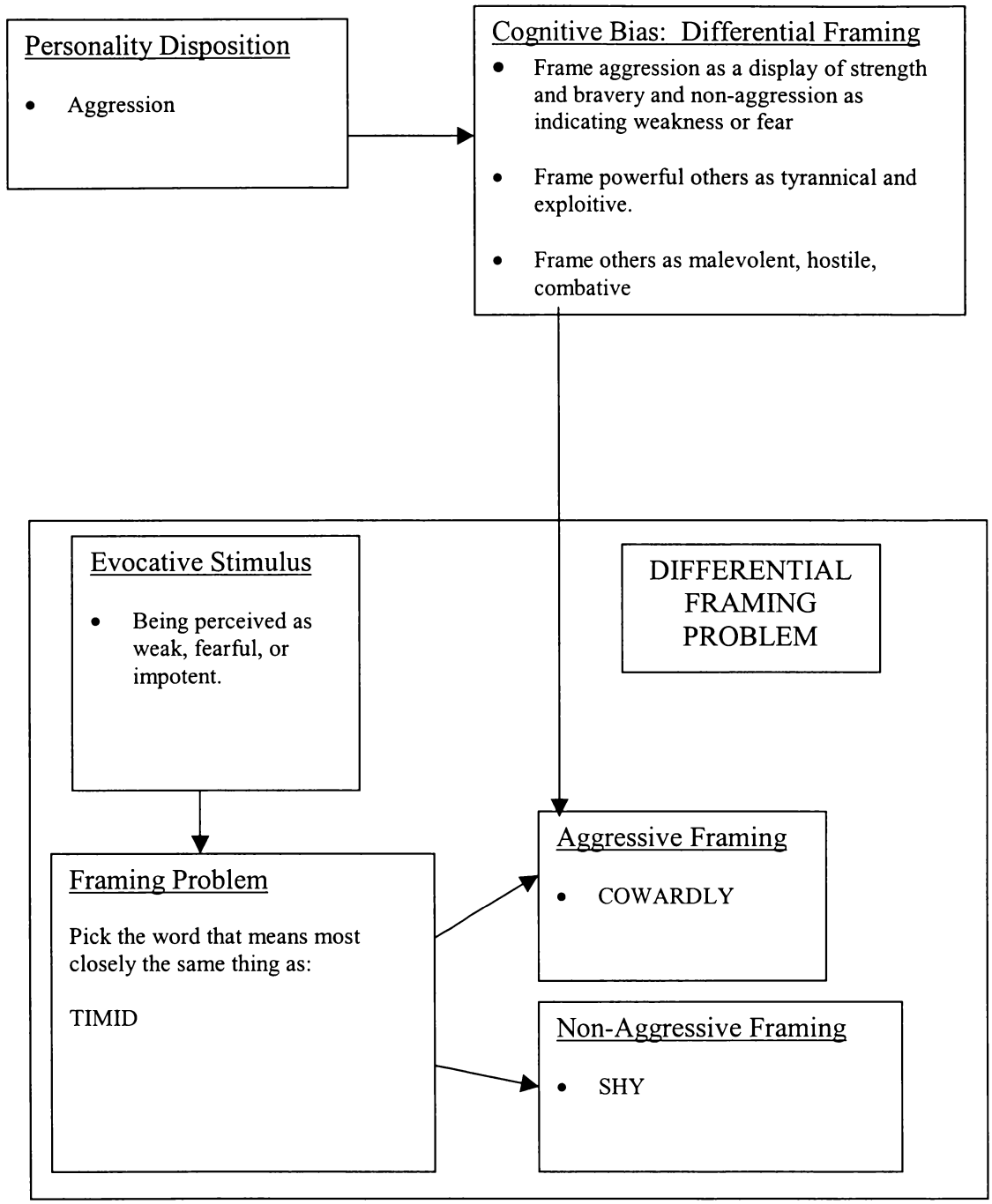

Figure 1-2

General Overview of the Differential Framing Process for Aggression

contains an overview of this measurement system as it is applied to dispositional aggression.

Differential Framing Test (DFT)

The process of differential framing is subsumed under the more general process of Conditional Reasoning. As such, comparison of Figures 1 and 2 reveals the process of differential framing is less complex than the overall process of Conditional Reasoning. The basic idea is that aggressive individuals tend to rely on unique biases in how they frame their environments. These biases may be mapped into consciousness by examining the adjectives they use to describe people, events, and situations. It is these adjectives that become the foundation for measurement in differential framing tests. A synonym (or word association) test represents one recommended approach to measuring these differences in framing (James & Mazerolle, 2002; James & McIntyre, 1996) and was the approach adopted in the current study.

Several sample items from this new test are presented in Table 1-2. The basic idea is that a stimulus word is provided, followed by four possible synonyms. Respondents are asked to choose from these four words the one that most closely matches the meaning of the stimulus word. In truth, two of the responses represent potential synonyms. One response is based on framing associated with aggressive personalities the other is based on framing associated with non-aggressive or prosocial personalities. Each item presented in Table 1-2 consists of four components. The first component represents the stimulus word. Each stimulus word was designed to be evocative to aggressive individuals. (Evocative meaning that each word was designed to "activate" implicit framing associated with aggression.) The second component of each item

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Table 1-2

Sample Items from the Differential Framing Test (DFT) for Aggression

STIMULUS	Option 1	Option 2	Option3	Option4
TIMID	Cowardly	Shy	Foolish	Peaceful
COMMANDER	Dictator	Director	Detective	Dunce
TRUSTING	Gullible	Accepting	Greedy	Invisible
TO CONFORM	To give up	To adapt	To ignore	To quicken

comprising the Differential Framing Test (DFT) was the response option that would specifically appeal to the framing proclivities of aggressive individuals. These options are presented in column two of Table 1-2. These framing proclivities were extracted from the descriptions of the JMs offered in Table 1-1. Specifically, each JM contains some component of framing (in addition to other implicit cognitive biases) and it was this framing that was used to facilitate the construction of the DFT items. For example, the first item presented in Table 1-2 (and also in the lower portion of Figure 1-2) was based on the framing associated with the potency bias JM, whereas the second item was based on the framing associated with the JMs of hostile attribution bias and victimization by powerful others bias.

The third component of each DFT item was the response option that would appeal to framing proclivities of non-aggressive or prosocial individuals. The final component was the inclusion of "wrong" answers or distractors. Just as the items on a synonym or word association test measuring critical intellectual skills contain incorrect answers, so too do the items on the DFT. The inclusion of incorrect responses enhances the face validity of the measurement system and secures its circuitous nature (see James, 1998; James et al., 2001). These distractors were specifically designed to appear as incorrect options and thus should draw less than 5-10% of the responses on each item. That is, roughly 90 to 95% of the responses to each item should be endorsements of one of the logical responses created using the aforementioned implicit dispositional framing proclivities.

Summary and Overview

This dissertation describes the development and initial validation of a new measurement system designed to assess implicit cognitions associated with aggression. This new measurement system was designed to compliment the types of cognitions assessed by Conditional Reasoning. Specifically, CRTs measure a number of implicit cognitive biases (including differential framing and other biases in reasoning and causal inference) that are ultimately used to justify aggressive behavior. In contrast, the DFT was designed to solely measure implicit cognitions associated differential framing. Thus, the DFT was not designed to be redundant with the CRT; however, there will likely be some overlap between the cognitions assessed by the CRT and DFT. As such, low to moderate correlations are expected between these two tests (e.g., .20s or .30s).

Additionally, because self-reports are designed to measure explicit cognitions, it is expected that they will have near zero, and largely non-significant, correlations with the implicit cognitions measured by the DFT and CRT (e.g., .00s to .10s). Finally, because the DFT is measuring a general or global tendency to frame events, situations, and people in an aggressive manner, it is expected to have significant correlations with a general or global measure of aggressive behavior (i.e., student conduct violations).

Thus, this dissertation represents an initial demonstration study designed to determine if the differential framing methodology was a viable methodology for measuring implicit cognitions and to determine how it would correlate with other measures of aggression. The following research questions are addressed in the next three chapters:

1. Could a methodology be developed to measure differential framing?

2. If so, would the methodology be predictive of behavioral criteria?

3. If so, would the methodology be redundant with Conditional Reasoning?

Chapter 2 describes the development of this test along with the samples and procedures used to collect data. Chapter 3 contains validity and reliability analyses on the DFT. Finally, Chapter 4 recapitulates the findings from Chapter 3, identifies potential limitations of the current studies, and offers directions for future research.

CHAPTER 2

METHODOLOGY

Data were collected on two slightly different versions of the Differential Framing Test (DFT). Data on the first version (DFT-V1) were collected during the Fall 2000 term from an introductory course in management information systems. Several minor changes were made to the original version and then data were collected on a second version (DFT-V2) from students enrolled in this same course during the Spring 2001 term. Finally, test-retest data were collected from a course in human resource management during the Fall 2001 term on DFT-V2. The descriptions of the participants, methods, and surveys used in this dissertation are divided into those who completed the original survey and those who completed the slightly modified survey. A similar division is made in Chapter 3 when discussing the results of this dissertation. A summary of the participants is presented in Table 2-1.

DFT Version 1

Participants

Data for Sample 1 and Sample 2 were collected from students in a large undergraduate course in management information systems (N = 423). This class was randomly split into two samples (Sample 1, N = 212; Sample 2, N = 211). A double cross-validation design was employed to provide criterion-related validity evidence (Binning & Barrett, 1989; James, 1973) for the DFT. That is, the empirical key developed for the DFT using Sample 1 was cross-validated in Sample 2, and vice versa.

Table 2-1

Summary of Study Participants

Sample	Term	N	Scale	Class
Sample 1	Fall, 2000	212	DFT-V1	Intro. to Mgmt. Information Systems
Sample 2	Fall, 2000	211	DFT-V1	Intro. to Mgmt. Information Systems
Sample 3	Spring, 2001	217	DFT-V2	Intro. to Mgmt. Information Systems
Sample 4	Fall, 2001	48	DFT-V2	Human Resource Management

Sample 1. A total of 212 undergraduates from a large Southeastern university comprised this sample. Students were provided with extra credit in exchange for their participation. The majority of participants were White (92%) and male (55%). All participants used in this dissertation were treated in accordance with the APA Ethical Guidelines (American Psychological Association, 1992).

Sample 2. A total of 211 undergraduates from a large Southeastern university comprised this sample. Students were provided with extra credit in exchange for their participation. The majority of participants were White (87%) and female (53%).

Data Collection Procedures

Participants were asked to complete a number of different measures at the beginning or end of multiple class periods during the semester. When possible, the surveys were administered separately so as to avoid potential context and cueing effects (Council, 1993; Harrison, McLaughlin, & Coalter, 1996) as well as to reduce potential percept-percept inflation among self-report surveys (Crampton & Wagner, 1994; Feldman & Lynch, 1988; Podsakoff & Organ, 1986). This resulted in a total of six independent waves of data collection. Three of the six waves of data collection were used in this dissertation. Surveys collected at different points in the semester were matched using student identification numbers. Once all data were collected and matched to each participant, information on the identification numbers was removed from the data files.

Measures

Differential Framing Test (DFT-V1). This dissertation involved measuring implicit framing associated with dispositional aggression. The first version of this test

consisted of 41 items. The items were structured as a synonym test. Specifically, a stimulus word was provided, followed by four possible answers. Respondents were instructed to choose from these words the one that most closely matched the meaning of the stimulus word.

The DFT was developed theoretically based on earlier work by James and colleagues (James, 1998; James & Mazerolle, 2002; James & McIntyre, 1996). An original list of 10 synonyms presented by James & Mazerolle (2002) was expanded by the author to approximately 30 synonyms. This expanded list was then reviewed by his advisor, another faculty member, and two graduate students all of whose primary research involved measuring implicit social cognitions (in general) and use of the Conditional Reasoning methodology (in particular). These subject matter experts provided comments, criticisms, and suggestions regarding earlier drafts of the synonym test. They also helped generate a number of additional synonyms. After several iterations of comments and revisions an initial test of 41 synonyms was constructed. This test is formally designated DFT-V1. Sample items were presented in Table 1-1 in Chapter 1.

As stated in Chapter 1, in order to assess implicit cognitions, indirect measurement systems are needed. The DFT represents such a measurement system because it neither "informs the subject of what is being assessed nor requests self-report concerning it" (Greenwald & Banaji, 1995; p. 5). In order to further maintain the circuitous nature of assessment, a coversheet was included with the DFT. This coversheet asked about the participants' interests in solving word problems, the number of English or writing courses they had taken during college, and their scores on the verbal

sections of the ACT and SAT. By directing participants' thoughts towards verbal hobbies and abilities, the likelihood that participants would associate the DFT with any type of personality-related survey should have been reduced. To further maintain the indirect nature of assessment, data on the DFT were collected independent of additional measures (e.g., self-reports of aggression).

The DFT-V1 contained roughly twenty synonyms designed to measure implicit framing associated with dispositional aggression. The remaining twenty synonyms were exploratory in nature and were designed to measure framing associated with other constructs (e.g., fear of failure, depression). These extra items were included 1) to reduce the transparency of the DFT (i.e., so that every item was not trying to measure aggressive framing) and 2) to gather preliminary data on items that could be used to assess these constructs in future research efforts (see Chapter 4).

Self-Report Aggression Scale. Self-reported aggression was measured using the 20-item scale from the Jackson Personality Research Form (1984). This scale assesses explicit cognitions associated with the non-pathological personality dimension of aggression. Participants were asked to respond to items using a 5-point Likert-like scale ranging from strongly agree to strongly disagree. Sample items include "I have a violent temper" and "I seldom feel like hitting anyone" (reverse keyed).

Conditional Reasoning Test of Aggression (CRT-A). The CRT-A consists of 22 inductive reasoning problems that are designed to assess implicit cognitive readiness to engage in aggressive behaviors (James, 1998; James et al., 2001). Answers to these problems are derived from the justification mechanisms (JMs) for aggression described in Chapter 1. Items are scored such that a +1 is given for each response based on a JM for

aggression and 0 is given for all other responses (i.e., socially adaptive responses and distracter responses). The resulting number provides an index of implicit cognitive readiness to engage in aggressive behavior. The potential range of this scale is from 0 to +22, with higher scores indicating a greater propensity to engage in aggressive behaviors.

In addition to the overall index of readiness to aggress, scale scores were computed based on earlier factor analyses (James at al., 2001). Scores were computed for the following subscales: antisocial reasoning bias (ASR), potency bias (PB), hostile attribution bias (HAB), victimization by powerful others bias (VBP), and retribution bias (RB). The interested reader is referred to James (1998) and James et al. for additional information concerning this test.

Conduct Violations. Records of student misconduct were collected from the University registrar. These conduct violations were issued for a wide range of behaviors including plagiarism, theft, public drunkenness, possession of illegal drugs, physical assault, forgery, vandalism, and cheating. The registrar does not code for the specific violation, only if a violation had occurred. Thus, this variable was dichotomously scored such that individuals having engaged in a conduct violation were assigned a value of +1 and those without conduct violations were assigned a value of 0. These data were used as behavioral indicators of aggression in the criterion-related validity analyses described in the next chapter (see also Green, 1999).

It is critical to note that the conduct violation criterion is not a perfect criterion. Violations, like so many criteria used in applied psychology, are at least partially deficient and contaminated. It is likely that many of the individuals who earned conduct violations did so by behaving aggressively. In this instance, keying items against conduct

violations would be appropriate because it represents a "pure" aggression criterion. However, it is equally likely that a number of individuals earned conduct violations for reasons not associated with aggression. In this instance, keying items against conduct violations would be inappropriate because individuals earned these violations for non-aggressive reasons. At this early stage of development, I was seeking to test a correlational, not a causal model. I simply hoped to identify a criterion variable that would be (at least partially) predicted by aggressive framing.

Similar logic was used during the initial validation efforts of the CRT-A. For example, absenteeism and job performance were used as criteria in early validation studies (James, 1998; James et al. 2001). However, just because an individual is absent (or performs poorly) doesn't mean he or she is aggressive. An individual might be absent because they are sick or had a family conflict. Or, an individual might be a poor performer because they lack the necessary skills and abilities to perform effectively. On the other hand, an individual may be absent or perform poorly because they are acting in a passive-aggressive manner towards a powerful other (organization) that they view as tyrannical and exploitive. Thus, in the current study, the conduct violation criterion represents a fairly vague criterion that may be engendered by a number of different causes. Aggression may be one such cause.

The proportion of men and women with conduct violations is presented in Table 2-2. Chi-square tests indicated that the proportion of men with violations was significantly greater than the proportion of women with violations in Sample 1 ($\chi^2 = 15.89$, $p < .05$) but not in Samples 2 or 3 ($\chi^2 = 0.76$, $p > .05$, and $\chi^2 = 0.95$, $p > .05$, respectively).

Table 2-2

Number of Male and Female Participants with Conduct Violations

Sample		With a Violation	Without a Violation
Sample 1	Males	23	92
	Females	2	93
Sample 2	Males	5	95
	Females	3	108
Sample 3	Males	5	88
	Females	11	113

Composite Key Development

DFT items were empirically keyed against the aggression criterion of conduct violations. Each aggressive response was scored as +1, each non-aggressive response was scored as -1, and each distractor response was scored as 0. These item-scoring protocols are consistent the protocols used during the early validation efforts of Conditional Reasoning tests (James, 1998; James et al., 2001). Polychoric correlations were computed between each DFT item and the behavior conduct criterion. Polychoric correlations were deemed the appropriate statistic because both the criterion and the predictors were categorical indicators of continuous latent constructs.

Any theoretically appropriate item correlating with the criterion .30 or greater was retained for inclusion in a composite scale. Following these initial item analyses, composite scores were computed within Sample 1 and Sample 2. These scores were then cross-validated in the appropriate holdout sample. Thus, a double cross-validation design was utilized, yielding two initial validities and two cross-validities. All results are presented in Chapter 3.

Though some authors have cautioned against the use of empirical keys in test development (e.g., Nunnally & Bernstein, 1994), the approach was deemed reasonable for three primary reasons:

1. The initial item pool was based on the professional judgments of five individuals with experience in item development and validation (especially with tests measuring implicit social cognitions). Furthermore, though the final keys were empirically developed, the initial item pool was based on theoretically driven items.

2. This approach is consistent with the discussion of construct validity presented in James (1973) and Binning and Barrett (1989). To recapitulate, one of the best ways to generate construct validity evidence for a test (e.g., implicit aggressive framing) is to correlate it with an external criterion (e.g., conduct violations) from the broader construct domain (e.g., aggression). See also the approaches utilized by James (1998) and James et al. (2001) and the discussion by Ozer (1999) of validity and construct validation in personality research.
3. A major limitation of the empirical approach to item validation is the possibility of capitalizing on sampling error. In the current study, large samples ($N > 150$) and a double-cross-validation design were utilized to specifically overcome this potential limitation. Additionally, only theoretically appropriate items correlating with the criterion would be included. Thus, if one of the extra synonyms designed to measure some other construct (e.g., depression) correlated with conduct violations, this item would not be included in the aggression composite score. Fortunately, such theoretically "spurious" correlations rarely emerged in the analyses. Finally, the keys developed using Samples 1 and 2 were further validated in Sample 3 (see below).

Participants

Sample 3. A total of 217 undergraduates from a large Southeastern university comprised this sample. Students were provided with extra credit in exchange for their participation. The majority of participants were White (90%) and female (57%).

Sample 4. A total of 48 undergraduates from a Midwestern university comprised this sample. Students were provided with extra credit in exchange for their participation. Specific data were not collected on the race or gender of the participants. However, at this University students were equally divided between males and females and predominately White. Most students were at least in their junior year of college.

Data Collection Procedures

Participants comprising Sample 3 were asked to complete the CRT-A and the DFT on different days during the Spring 2001 semester. A total of 151 participants completed the CRT-A and 130 participants completed the DFT-V2. The DFT data were scored using the a priori keys developed in Samples 1 and 2.

Participants in Sample 4 were asked to complete the DFT during the middle of the semester and again three weeks later. Participants were assigned a three-digit personal identification number to be used to link Time 1 and Time 2 test administrations. A total of 58 students completed a survey at either Time 1 or Time 2; however, only 48 participants completed the survey at both times. Thus, because the data from Sample 4 were used solely for test-retest reliability analyses, the effective sample size was 48.

Measures

Differential Framing Test Version 2 (DFT-V2). The DFT-V1 was slightly revised prior to collecting data from Samples 3 and 4. Specifically, a number of "real" synonyms were added to the beginning of the DFT. The addition of these synonyms was done in order to further secure the indirect nature of assessment and is consistent with the methods used by James (1998) and James et al. (2001). Additionally, several items were dropped and several new items were included. This resulted in a revised test containing a total of 51 items.

Additional Measures. In Sample 3, data were also collected on the CRT-A and conduct violations. As stated earlier, Sample 4 was being used solely to compute test-retest reliability, thus no other data were collected from this sample.

CHAPTER 3

RESULTS

DFT Version 1

Key Development

Sample 1. As stated in Chapter 2, any theoretically appropriate DFT item correlating .30 or greater with the criterion was retained for inclusion in the composite key. Using these scoring protocols, five aggression items keyed empirically against the conduct violation criterion. A unit-weighted composite scale was created for these items and is designated Key 1. The initial validity between this composite and the criterion was .45.

Sample 2. Using the above scoring procedures, eight aggression items keyed empirically against the conduct violation criterion in Sample 2. A unit-weighted composite scale was created for these items and is designated Key 2. The initial validity between this composite and the criterion was .74.

Key Cross-Validation

The keys initially developed in each sample were then cross-validated in the appropriate hold-out sample. The aggression key developed in Sample 1 had a cross-validity of .34 while the key developed in Sample 2 had a cross-validity of .51. This yielded an average cross-validity of .43 (see Table 3-1). The magnitude of these cross-validities indicated that many of the items contained in both keys were highly predictive

Table 3-1

Initial- and Cross-Validities for the DFT-V1

	Sample 1	Sample 2
	Key	Key
Sample 1 Data	.45	**.34**
Sample 2 Data	**.51**	.74

Note. Correlations are based on N=171 and N=170 for Samples 1 and 2, respectively. Cross-validities are in boldface.

of the conduct violation criterion and not necessarily a function of random chance or sampling error. Table 3-2 contains the 20 aggression framing items and a summary of which items keyed in Sample 1 (Key 1), Sample 2 (Key2), or both samples. As this table indicates, a total of nine items keyed between Samples 1 and 2, with four of those items keying in both samples. Table 3-3 compares the mean scores on the CRT-A, Key 1, and Key 2 for individuals having a conduct violation versus those not having a conduct violation. These results suggest that individuals with conduct violations tended to have significantly higher scores on the DFT but not the CRT-A.

Supplemental Validity Evidence

The strongest form of construct validity evidence is furnished by correlating the DFT with a known behavioral indicator of aggression such as conduct violations (Binning & Barrett, 1989; James, 1973; Ozer, 1999; Schmitt & Landy, 1993). Such evidence was presented in the preceding section, however secondary construct validity evidence was also sought by examining the correlations between the DFT and other measures of aggression. Because the DFT was designed to measure implicit framing cognitions associated with aggression, it was expected to have low to moderate correlations with the implicit cognitions measured using the CRT-A (i.e., justification mechanisms). Alternatively, near zero correlations were expected between the DFT and measures of explicit cognitions (cf. Bing et al., 2001; Greenwald & Banaji, 1995; James, 1998; James, et al., 2001; Lilienfeld, et al., 2000; McClelland et al., 1989; Winter et al. 1998).

Secondary construct validity evidence is presented in Table 3-4 for Sample 1 and Table 3-5 for Sample 2. As expected, non-significant correlations between the DFT and

Table 3-2

Summary of Differential Framing Items Keying in Samples 1 and 2

Stimulus Word	Aggressive Frame	Non-Aggressive Frame	Sample 1 Key	Sample 2 Key
TO CRITIQUE	To Criticize	To Evaluate	No	No
CAUTIOUS	Timid	Careful	No	Yes
TO MISLEAD	To Deceive	To Misinform	No	No
COMMANDER	Dictator	Director	No	No
TO RETREAT	To Flee	To Pull Back	No	No
TRADITIONAL	Unprogressive	Conventional	Yes	Yes
TRUSTING	Gullible	Accepting	Yes	No
TO SUPERVISE	To Control	To Oversee	No	No
PASSIVE	Submissive	Inactive	No	Yes
PATHETIC	Weak	Sad	No	No
TO CONFORM	To Give up	To Adapt	Yes	Yes
UNUSUAL	Strange	Uncommon	No	Yes
RELUCTANT	Unwilling	Hesitant	Yes	Yes
COMPETITIVE	Cut-throat	Ambitious	No	Yes
TO DOUBT	To Distrust	To Question	No	No
A COMPROMISE	A Concession	An Agreement	No	No
CONFLICT	Hostility	Disharmony	No	No
DISCIPLINE	Control	Order	No	No
SUBMISSIVE	Obedient	Passive	No	No
TIMID	Peaceful	Cowardly	Yes	Yes

Table 3-3

Mean Scores on CRT-A and DFT as a Function of Conduct Violations

Sample	Scale	With Violation	Without a Violation	t-test
Sample 1	CRT-A	4.06	3.59	-0.94
	Key 1	-2.90	-4.25	-3.83*
	Key 2	-3.20	-4.74	-3.03*
Sample 2	CRT-A	3.20	3.61	0.44
	Key 1	-2.86	-4.31	-3.27*
	Key 2	-1.29	-4.94	-5.04*
Sample 3	CRT-A	3.08	3.60	0.90
	Key 1	-3.67	-4.37	-1.39
	Key 2	-3.33	-4.64	-1.48

* $p < .05$

Table 3-4

Supplemental Validity Evidence: Sample 1

	1	2	3	4	5	6	7	8	9	10
1. Conduct	--									
2. CRT-A	0.13	0.70								
3. CRT-ASR	0.24*	0.77*	.79							
4. CRT-VBP	0.12	0.49*	0.24*	.78						
5. CRT-RB	0.07	0.62*	0.12	0.35*	.74					
6. CRT-HAB	-0.06	0.15	-0.13	0.16*	0.07	.73				
7. CRT-PB	-0.07	0.45*	0.16*	-0.19*	0.04	0.11	.85			
8. PRF-A	0.25*	0.12	0.15	0.09	0.15	0.01	0.04	.81		
9. Key-1	0.45*	0.22*	0.23*	0.09	0.20*	-0.08	0.11	0.08	--	
10. Key-2	0.34*	-0.07	-0.02	0.01	-0.03	0.00	-0.09	-0.07	0.69*	--

Note. Conduct=Conduct Violations; CRT-A = Conditional Reasoning Test of Aggression; CRT-ASR = antisocial reasoning subscale of CRT-A; CRT-VBP = victimization by powerful others subscale of CRT-A; CRT-RB = retribution bias subscale of CRT-A; CRT-HAB = hostile attribution bias of CRT-A; CRT-PB = potency bias subscale of CRT-A; PRF-A = Aggression scale from the Jackson Personality Research Form; Key-1 = DFT score based on the key developed in Sample 1; Key-2 = DFT score based on the key developed in Sample 2. Correlations are based on sample sizes ranging from 130 to 172. Internal consistency reliability estimates are presented in the diagonal.

* $p < .05$

Table 3-5

Supplemental Validity Evidence: Sample 2

	1	2	3	4	5	6	7	8	9	10
1. Conduct	--									
2. CRT-A	-0.10	0.73								
3. CRT-ASR	-0.02	0.81*	0.75							
4. CRT-VBP	0.24*	0.34*	0.04	0.79						
5. CRT-RB	-0.20*	0.71*	0.37*	0.23*	0.84					
6. CRT-HAB	-0.08	-0.02	-0.30*	0.23*	-0.01	0.75				
7. CRT-PB	-0.91*	0.62*	0.45*	-0.21*	0.23*	-0.01	0.84			
8. PRF-A	-0.06	0.06	-0.01	0.18*	0.02	0.21*	0.09	.76		
9. Key-1	0.51*	0.06	-0.06	0.14	0.17*	0.25*	0.11	-0.07	--	
10. Key-2	0.74*	-0.09	-0.11	0.06	-0.02	0.12	0.04	0.15	0.54*	--

Note. Conduct=Conduct Violations; CRT-A = Conditional Reasoning Test of Aggression; CRT-ASR = antisocial reasoning subscale of CRT-A; CRT-VBP = victimization by powerful others subscale of CRT-A; CRT-RB = retribution bias subscale of CRT-A; CRT-HAB = hostile attribution bias of CRT-A; CRT-PB = potency bias subscale of CRT-A; PRF-A = Aggression scale from the Jackson Personality Research Form; KEY-1 = DFT score based on the key developed in Sample 1; KEY-2 = DFT score based on the key developed in Sample 2. Correlations are based on sample sizes ranging from 121 to 170. Internal consistency reliability estimates are presented in the diagonal.

* $p < .05$

self-reported aggression were obtained in both samples using both keys. This replicated earlier research on the relationship between implicit and explicit cognitions and suggested that the types of implicit cognitions being measured by the DFT are not correlated with the types of explicit cognitions being measured by the self-report aggression scale (James & Mazerolle, 2002; James et al., 2001).

Somewhat inconsistent results emerged for the correlations between the DFT and the CRT-A. The expected small (but significant) correlation between the CRT-A and Key 1 was observed in Sample 1 ($r = .22$), but not in Sample 2. However, after computing scores for the subscales identified by James et al. (2001), several additional correlations emerged in both samples. In Sample 1, Key 1 correlated with the subscales for antisocial reasoning ($r = .23$), and retribution bias ($r = .20$). In Sample 2, Key 1 correlated with the subscales for retribution bias ($r = .17$) and hostile attribution bias ($r = .25$). No significant correlations emerged between Key 2 and the CRT-A in either sample.

At first glance these low correlations could be perceived as potentially damaging to the construct validity of the DFT; however, remember that the DFT was not designed to be redundant with the CRT. Rather, the DFT was designed to measure only a small component of the family of implicit cognitions also measured by the CRT-A. That is, the DFT was limited to measuring differential framing, whereas the CRT-A measured differential framing along with a number of other cognitive biases (e.g., attributional biases, rationalizations). Thus, the low to moderate correlations between the DFT and the CRT-A indicate that the DFT is measuring an aspect of implicit cognitions that is related

to, but not necessarily redundant with those measured by the CRT-A (see also the results obtained by Thoreck, 1994 using similar methods for assessing achievement motivation).

Additionally, this is the first study to undertake a formal examination of the relationships between the JMs measured by the CRT-A and differential framing measured by the DFT. As such, this dissertation is most appropriately framed as an exploratory study into relatively uncharted scientific territory. Additional research is obviously needed to better understand the relationship between differential framing and the justification mechanisms measured by the CRT-A. Nevertheless, slightly higher and more consistent correlations would have allowed a more substantive link between these two sets of implicit cognitions. The issue of obtaining additional validity evidence linking differential framing to Conditional Reasoning is revisited in Chapter 4.

A peculiar finding in both samples was the lack of substantial correlation between the CRT and the conduct violation criterion. Past research has shown the CR methodology can be predictive of this particular criterion. Specifically, a dissertation by Green (1999) demonstrated that a 14-item developmental verbal-visual CRT or V-CRT significantly correlated with this student conduct violation criterion. Twelve of the 14 V-CRT items correspond to items found on the current CRT-A. Of these 12 items, five loaded on the antisocial reasoning subscale and four loaded on the victimization by powerful others subscale. Thus, one might expect these factors to have higher correlations with the criterion compared to the overall CRT-A score or the other scale scores. Examination of Tables 3-4 and 3-5 show this expectation holds. Specifically, in Sample 1, the correlation between conduct violations and the antisocial reasoning

subscale was .24. In Sample 2, the correlation between conduct violations and the victimization by powerful others subscale was .24.

All the same, these correlations are still lower than past findings using the developmental V-CRT. Several possible explanations exist for the lower observed correlations. First, the magnitude of these correlations could be attributed to differences between the V-CRT and the CRT-A (i.e., fewer distractors, reduced item complexity, supplemental verbal-visual instructions). This is unlikely, however because previous research indicates these measures are highly correlated ($r = .82$). A second possibility for the lower correlations is that there was something atypical about scores on the CRT-A compared to previous samples. Table 3-6 contains the distributional characteristics for the CRT-A, DFT, and the conduct violation criterion.

The means and standard deviations reported for the CRT-A in Samples 1 and 2 were consistent with previous research (James & Mazerolle, 2002; James et al., 2001). However, unlike previous research only Sample 2 demonstrated the significant positive skew (Sample 1, $t(164) = 1.58$, $p > .05$; Sample 2, $t(150) = 2.74$, $p < .05$) and neither sample demonstrated the typical leptokurtotic distribution (Sample 1, $t(164) = -0.77$, $p > .05$; Sample 2, $t(150) = 0.61$, $p > .05$). Thus, one viable explanation for the lack of correlation between the CRT and the conduct violation criterion were the gross differences observed in the marginal distributions.

High correlations may only occur under conditions of marginal distribution congruence. In Sample 1 only 12% of the participants had recorded conduct violations and in Sample 2 this number dropped to 4%. This resulted in distributions that were highly skewed (Sample 1, $t(209) = 13.94$, $p < .05$; Sample 2, $t(209) = 28.65$, $p < .05$) and

Table 3-6

Comparison of the Distributions of CRT-A, DFT, and Conduct Violations

Sample	N	Mean	St.Dev.	Skew	(st.error)	Kurtosis	(st. error)
Sample 1							
Conduct	210	.12	.33	2.37	(.17)	3.65	(.33)
CRT-A	165	3.64	2.00	.30	(.19)	-.29	(.38)
KEY 1	172	-4.09	1.53	1.98	(.19)	4.75	(.37)
KEY 2	172	-4.57	2.19	.38	(.19)	-.24	(.37)
Sample 2							
Conduct	210	.04	.19	4.87	(.17)	21.96	(.33)
CRT-A	151	3.60	2.05	.54	(.20)	.24	(.39)
KEY-1	170	-4.25	1.19	1.58	(.19)	2.29	(.37)
KEY-2	170	-4.79	2.01	.41	(.19)	.39	(.37)
Sample 3							
Conduct	217	.07	.26	3.29	(.17)	8.87	(.33)
CRT-A	151	3.56	2.02	.66	(.20)	.42	(.39)
KEY-1	130	-4.34	1.22	1.83	(.21)	2.67	(.42)
KEY-2	130	-4.58	2.11	.69	(.21)	.93	(.42)

Note. Conduct=Conduct Violations; CRT-A = Conditional Reasoning Test of Aggression; KEY-1 = DFT score based on the key developed in Sample 1; KEY-2 = DFT score based on the key developed in Sample 2. Because conduct violations are dichotomously scored, the means correspond to the proportion of individuals having a registered conduct violation.

kurtotic (Sample 1, t (209) = 11.06, $p < .05$; Sample 2, t (209) =66.55, $p < .05$). Given that the DFT was specifically designed to predict this highly skewed and kurtotic criterion (and thus itself was significantly skewed [Keys 1 and 2 were skewed in both samples] and kurtotic [Key 1 was kurtotic in both samples]) it is not surprising that the correlations between the CRT and the DFT were also slightly lower than expected.

A third, and final explanation resides in the match between the predictor and the criterion. Previous (unpublished) attempts by the author to replicate Green (1999) using the CRT-A and samples independent of the current study have not been highly successful. One explanation for this inability to replicate the correlations derives from the very general nature of the criterion. Conduct violations are assigned for any number of different behaviors ranging from lesser to extreme forms of aggression and antisocial behavior. Thus, a measure designed to assess specific rationalizations (driven largely by antisocial reasoning; James et al., 2001) would correlate with the conduct violation criterion only to the extent that individuals earned those violations for engaging in extremely aggressive/antisocial behaviors versus less antisocial behaviors.

It is possible that Green's (1999) sample simply contained a greater proportion of individuals who earned violations for engaging in extremely antisocial forms of behavior. If similar proportions of antisocial behavior were not present in subsequent samples, correlations between the CRT-A and conduct violations would be lower. If data were available on the specific behaviors that resulted in the conduct violation, it might be possible to construct criterion composites that would be better predicted by the CRT-A or its specific subfactors (e.g., antisocial reasoning). Unfortunately, in the current study, such data were not available.

In sum, the lack of observed correlations between the CRT-A and DFT, and the CRT-A and the criterion are potentially attributable to differences in the marginal distributions among the variables, the potential lack of extreme antisocial behaviors comprising the criterion space, or real differences in the overlap of the construct domains measured by differential framing and Conditional Reasoning. Chapter 4 discusses potential avenues for future research concerning the latter point.

One other unexpected finding worth mentioning was the exceptionally high (and negative) correlation between the potency bias subscale and the conduct violation criterion ($r = -.91$) observed in Sample 2 (see Table 3-5). Complete data were available for 151 individuals on both the CRT-A and the conduct violation criterion. Of these 151 individuals five had conduct violations and none of these individuals endorsed a single CRT item loading on the potency bias subscale. However, other individuals without conduct violations did endorse items loading on the potency bias subscale. Thus, the high correlation is an accurate depiction of the relationship between the criterion and the potency bias subscale and not necessarily due to instabilities in the algorithms used to compute the polychoric correlations. However, given that this correlation did not replicate in either Sample 1 or Sample 3 (or in other unpublished samples examined by the author) it is likely more an effect of sampling error than a meaningful psychological phenomena.

Reliability of the DFT

Internal consistency reliability was estimated using a derivative of the KR-20 formula (see James et al., 2001). This formula, presented below, computes internal consistency reliability using item-total polyserial correlation coefficients.

$$r_{XX} = \frac{K}{K-1}\left(1 - \frac{\sum_g s_g^{\,2}}{\left(\sum r_g s_g\right)^2}\right) \qquad (1)$$

Where K refers to the number of items, s_g^2 refers to the variance of the items and $r_g s_g$ refers to the product of the item-total polyserial and the standard deviation of the item. Following James et al. (2001), standardized variables were assumed, thus variances are set to unity. This yielded the computational formula,

$$r_{XX} = \frac{K}{K-1}\left(1 - \frac{K}{\left(\sum r_g\right)^2}\right) \qquad (2)$$

Using Equation 2, reliabilities were estimated for both keys in both samples. The results presented in Table 3-7 suggest high levels of internal consistency reliability. Nunnally and Bernstein (1994) suggest the lower bound reliability for tests in the early stages of development should be at least .70. All of the estimates presented in Table 3-7 exceeded this threshold, indicating modest to strong levels of internal consistency.

DFT Version 2

Validity and Reliability of the DFT: Sample 3

Internal Consistency Reliability Analysis. Internal consistency reliability was again estimated using Equation 2 on the data collected in Sample 3. In addition to Keys 1 and 2, additional keys were developed based on the results obtained in Samples 1 and 2. Key 3 contained the four items found in both Key 1 and Key 2 (i.e., the intersection of these two keys; Hays, 1988). The final key, Key 4 contained the nine items found in

Table 3-7

Internal Consistency Reliability of the DFT

	Sample 1 Key	Sample 2 Key
Sample 1 Data	.88	.77
Sample 2 Data	.84	.73

Note. Coefficients based on N's ranging from 168 to 172 and N's ranging from 169 to 170 for Sample 1 and Sample 2 respectively.

either Key 1 or Key 2 (i.e., the union of these two keys; Hays, 1988). These keys were also used in the validation analyses presented below. The results of the reliability analyses are presented in Table 3-8. All estimates of internal consistency reliability exceeded the recommended lower bound of .70 (Nunnally, 1978) suggesting anywhere from modest to strong reliability.

Criterion-Related Validity Analyses. Data from Sample 3 were scored using the four a priori keys developed in Samples 1 and 2. Table 3-9 contains the validities between these four keys and the conduct violation criterion. The magnitude of these four validities (Mean = .39) provides further evidence that the implicit framing items were related to manifestations of aggressive behavior and not a function of sampling error.

Supplemental Validity Evidence: Sample 3

In addition to the validity evidence presented above, secondary evidence was again sought by examining the correlations between the DFT and the CRT-A. These results were similar to those obtained in Samples 1 and 2 (see Table 3-10). Specifically, non-significant correlations were obtained between scores on the CRT-A and DFT. However, small to moderate correlations were again obtained between the DFT keys and the retribution bias subscale from the CRT-A. Specifically, the retribution bias subscale correlated with Keys 1, 2, 3, and 4 with values of .27, .23, .29, and .24, respectively. These results replicate those presented earlier suggesting that implicit cognitions measured by the DFT do overlap slightly with those measured by the retribution bias JM on the CRT-A. However, the degree of overlap indicates that the implicit cognitions measured by the DFT are not redundant with the implicit cognitions measured by the CRT-A.

Table 3-8

Reliability of the DFT

Key	Sample 3[a] Internal Consistency	Sample 4[b] Test-Retest
Key 1 (Sample 1)	.87	.77
Key 2 (Sample 2)	.74	.68
Key 3 (Intersection of Keys 1 & 2)	.87	.81
Key 4 (Union of Keys 1 & 2)	.77	.69

[a] Correlations based on samples sizes ranging from 129 to 130.

[b] Correlations based on sample size of 48.

Table 3-9

Validities of the A Priori DFT Keys in Sample 3

Key	Sample 3[a] Validities
Key 1 (Sample 1)	.33
Key 2 (Sample 2)	.42
Key 3 (Intersection of Keys 1 & 2)	.39
Key 4 (Union of Keys 1 & 2)	.43

[a] Correlations based on sample size of 130.

Table 3-10

Supplemental Validity Analyses: Sample 3

	1	2	3	4	5	6	7	8	9	10	11
1. Conduct	--										
2. CRT-A	-0.11	0.72									
3. CRT-ASR	-0.09	0.82*	0.73								
4. CRT-VBP	0.05	0.45*	0.25*	0.86							
5. CRT-RB	-0.10	0.67*	0.30*	0.25*	0.82						
6. CRT-HAB	0.08	-0.04	-0.32	0.14	-0.01	0.78					
7. CRT-PB	-0.18*	0.54*	0.35*	-0.24*	0.27*	-0.18*	0.79				
8. Key-1	0.33*	0.11	-0.04	0.10	0.27*	0.11	-0.15	--			
9. Key-2	0.42*	0.09	-0.04	0.17	0.23*	0.08	-0.01	0.60*	--		
10. Key-3	0.39*	0.06	-0.07	0.17	0.29*	0.03	-0.20*	0.97*	0.74*	--	
11. Key-4	0.43*	0.12	-0.02	0.16	0.24*	0.11	-0.01	0.78*	0.99*	0.75*	--

Note. Conduct=Conduct Violations; CRT-A = Conditional Reasoning Test of Aggression; CRT-ASR = antisocial reasoning subscale of CRT-A; CRT-VBP = victimization by powerful others subscale of CRT-A; CRT-RB = retribution bias subscale of CRT-A; CRT-HAB = hostile attribution bias of CRT-A; CRT-PB = potency bias subscale of CRT-A; Key 1 = DFT score based on the key developed in Sample 1; Key 2 = DFT score based on the key developed in Sample 2; Key 3 = intersection of Key 1 and Key 2; Key 4 = union of Key 1and Key 2. Correlations are based on sample sizes ranging from 105 to 151. Internal consistency reliability estimates are presented in the diagonal.

* $p < .05$

As an aside, the lack of correlation between the CRT-A and the conduct violation criterion may again be related to the marginal distributions of these two variables. Specifically, only 8% of the participants in Sample 3 had a conduct violation (see Table 3-6), resulting in a highly skewed ($p < .05$) and kurtotic ($p < .05$) distribution. Though the CRT-A was significantly skewed ($p < .05$) it again was not kurtotic ($p > .05$). Thus, in Samples 1, 2, and 3, the distribution on the CRT-A was quasi-normal, making it difficult for significant correlations to emerge between the CRT-A and the conduct violation criterion which was grossly non-normal.

Reliability of the DFT: Sample 4

Test-Retest Reliability. In order to compute test-retest reliability, the four keys described above where computed for data collected at Time 1 and three weeks later at Time 2 from participants comprising Sample 4. The Time 1 keys were then correlated with the Time 2 keys to yield test-retest reliabilities coefficients. Using .70 as a minimum reliability threshold (Nunnally, 1978), the results presented earlier in Table 3-8 suggested modest to strong levels of stability across time.

CHAPTER 4

DISCUSSION

Validity and Reliability of the Differential Framing Methodology

Reliability

The data collected and analyzed from four samples indicated moderate to high levels of test reliability. Specifically, internal consistency reliability estimates in three samples met or exceeded the recommended lower bound reliability thresholds for tests in the early stages of development (Nunnally, 1978). Additionally, data collected from a fourth sample demonstrated moderate levels of test-retest reliability after a three-week interval. Overall, these results suggest the differential framing methodology is applicable to the reliable and consistent measurement of implicit social cognitions.

Validity

Ozer (1999) noted, "Validity is the sine qua non of personality assessment" (p. 678). Based on the results presented in Chapter 3 the initial validation efforts for the differential framing methodology have been fairly successful, given its early stage of development. Specifically, the methodology demonstrated substantial predictive validities and cross-validities in three different samples. Additionally, the expected low correlations between differential framing and self-reports emerged. Though significant correlations between differential framing and Conditional Reasoning did emerge, they were slightly lower and less consistent than anticipated. This may be taken as evidence that differential framing is measuring implicit cognitions related to, but not redundant

with, the implicit cognitions measured by Conditional Reasoning. It is important to note that the manner in which the DFT items were scored resulted in a distribution on the DFT that was not congruent with the CRT, perhaps attenuating a number of correlations. This issue is revisited below.

Limitations and Directions for Future Research

One of the primary limitations of the current study resides in the use of a single (and less than optimal) criterion measure. Before it can be concluded that aggressive cognitions measured via the differential framing relate to subsequent aggressive behavior, additional validation studies must be undertaken to examine if the items and keys developed in the current samples are predictive in other (non-student) samples using alternative indicators of aggression. Now that the differential framing methodology has shown some progress, the next phase of research should involve validation of items against more precise indices of aggression. Buss' (1961) taxonomy of aggressive behaviors offers a rich framework from which to draw criteria for use in laboratory experiments that will permit more precise analyses of these framing cognitions. As the domain of criteria predicted by the differential framing methodology increases, so too will the construct validity evidence for the methodology. One particular issue in need of additional research is whether framing, like Conditional Reasoning, can be predictive of specific criteria such as theft, lying, and physical assault. Or, on the other hand, is differential framing better suited to predict more general (i.e., heterogeneous) criteria?

A second, but related limitation of the current study relates to the inconsistent correlations observed between the differential framing scales and the CRT-A. Though the mean and variance of the CRT-A were consistent with past research, the distribution

of scores in the current studies lacked a strong positive skew and leptokurtic structure. Indeed, the CRT-A was quasi-normally distributed, making it nearly impossible for higher correlations to emerge with both the framing scales and the criterion (both of which were grossly skewed and kurtotic).

Also worth noting, the current differential framing items were written in an attempt to measure a wide range of framing cognitions. Because the differential framing methodology appears to be a viable approach for measuring implicit cognitions, future research might benefit from the construction of subscales designed to assess the implicit cognitions corresponding to the framing contained in the individual JMs comprising the CRT-A. For example, attempts could be made to build subscales (e.g., potency framing) that should theoretically show greater convergence with scores on the CRT-A subscales (e.g., potency bias) vis-à-vis the overall CRT-A scale score. Additionally, efforts could be made to validate these scales against more specific criteria such as those suggested above. As research on the differential framing methodology progresses, additional validity and reliability analyses, such as those described above should be conducted along with exploratory and confirmatory factor analyses. Such advanced analyses were simply not appropriate at this early stage of development. Once true scales and subscales are created and validated such analyses will be both necessary and appropriate.

Because the initial results are promising, future research should also seek to expand this or a similar methodology to other construct domains. Indeed, James and Mazerolle (2002) suggest that differential framing could be used to assess negative affectivity. Most affect researchers recognize that negative affectivity is best modeled as a hierarchical construct, with hostility/aggression, anxiety/fear, and depression/sadness as

potential subfactors comprising affectivity (Bagozzi, 1993; Costa & McCrae, 1992; Watson & Clark, 1992, 1994). If one adopts this model, then the current study, along with a dissertation by Thoreck (1994), represents an initial foundation from which to build an implicit framing measure for negative affectivity. Thoreck (1994) applied a similar differential framing technology for assessing fear of failure and achievement motivation. His approach used a slightly different item format. However, his initial validation efforts suggested that the differential framing methodology applied to achievement motivation and fear of failure could be predictive of criteria such as course grades and grade point average.

As research on differential framing progresses and reliable and valid scales are developed, another avenue for future research might include adapting the methodology to alternative populations, especially ones that might not be receptive to the traditional Conditional Reasoning formats. For example, highly aggressive adolescents may not be willing to spend 30 minutes completing the traditional CRT-A. However, this same sample might be willing to spend the 5 to 10 minutes it would take to complete a synonym-based differential framing test. Alternatively, younger children may not have the cognitive and verbal ability to complete the traditional CRTs, this is especially true of the more cognitively complex CRT designed to measure achievement motivation and fear of failure (James, 1998). Perhaps, the differential framing methodology could be adopted for use with these younger children. One possible approach would involve nesting differential framing within the context of a "choose your own adventure" story.

The format of these stories makes them ideally suited for measuring differential framing (and Conditional Reasoning). These stories start by presenting several pages of

information to the child and then bringing them to a decision point. At the decision point, the child chooses the path of the story (e.g., if you choose option A, jump to page 16; if you choose option "B" jump to page 48). It might be possible to construct stories around various themes such as academic achievement. The child would be asked to make a number of decisions regarding the direction of the story. These decisions could be based on framing engendered by either achievement motivation or fear of failure. Researchers could then correlate a child's response pattern to subsequent manifestations of achievement behavior (e.g., persistence, school performance). Similar approaches could be developed for measuring framing associated other constructs (e.g., aggression).

As research on differential framing progresses, a final avenue for future research might involve integrating implicit framing cognitions with traditional self-report measures of explicit cognitions. Similar integrations have been undertaken using the CRT to measure implicit cognitions associated with aggression and achievement motivation (Bing, Burroughs, Whanger, Green, & James, 2000; Bing, LeBreton, Migetz, Vermillion, Davison, & James, 2002; James & Mazerolle, 2002). Initial results indicate that a combination of self-reports and Conditional Reasoning tests may lead to enhanced prediction of such organizationally relevant variables as deviant workplace behaviors, job performance, persistence, academic performance, and dispositional affectivity. Similar integrations using differential framing tests might also prove useful.

Conclusions

In conclusion, this study responds to the call offered by James (1998; James & Mazerolle, 2002; James et al., 2001) for new indirect measurement systems by developing a new measure of implicit cognitions based on differential framing. This

measurement system demonstrated strong predictive validity yielding cross-validities in the .30s and .40s. Furthermore, and in direct contrast to many indirect measurement systems (e.g., TAT), the current measurement system demonstrated appropriate levels of internal consistency and test-retest reliability, given its very early stage of development. The current approach also offers several advantages compared to CRTs such as being easier to construct, quicker to complete, and perhaps applicable to broader populations (e.g., children and adolescents). Overall, it appears that differential framing represents a viable approach to measuring personality-related implicit cognitions; however, much additional research is needed before a measure of differential framing can be developed that is comparable to the CRT-A.

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VITA

James Marshall LeBreton was born in Bloomington, Illinois on May 10, 1972. He was raised in Normal, Illinois, along with his brother Daniel, by his parents Jim LeBreton and Marsha Rinetti. He attended Sugar Creek Elementary School, Chiddix Junior High School, and Normal Community High School. He earned his B.S. in psychology in 1995 from Illinois State University, graduating with Departmental Honors and the Magna Cum Laude distinction. Two years later he earned his M.S. in Industrial and Organizational Psychology from Illinois State University working with Dr. John F. Binning on his thesis. In August of 1997, he enrolled in the Industrial/Organizational Psychology doctoral program at the University of Tennessee, Knoxville. While in graduate school, in the summer of 1998, he married Beth Angela Gerace. He received his doctorate in Spring, 2002 working with Dr. Lawrence R. James. Currently, James is an Assistant Professor in the Department of Psychology at Wayne State University, Detroit MI.