Personality in context: An interpersonal systems perspective

Vivian Zayas

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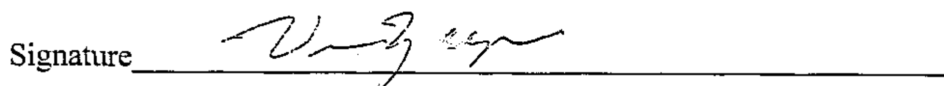

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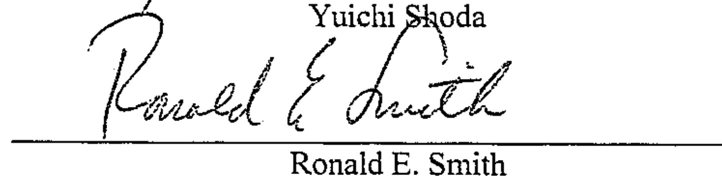
Chair of Supervisory Committee:

Yuichi Shoda

Reading Committee:

Anthony G. Greenwald

Yuichi Shoda



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Abstract

Personality in context: An interpersonal systems perspective

by Vivian Zayas

Chairperson of the Supervisory Committee

Associate Professor Yuichi Shoda
Department of Psychology

Because a significant part of individuals' lives involve close relationships, an important and substantial part of the situations they encounter consists of other people's behaviors. The present paper suggests that individuals' characteristic ways of behaving, which are typically attributed to "personality," arise from two processes: One lies primarily within the individual, conceptualized as individual differences in people's cognitive and affective processing system. The other process, which has received less attention in personality research, lies outside the person in the individual differences in the situations that people encounter in their everyday lives. This latter process is particularly relevant for understanding close relationships. By assuming that each partner's behavior provides the situational context for the other partner, a dyadic relationship is conceptualized as the "interlocking" of the cognitive-affective processing systems of both partners. This approach to personality-in-context is illustrated using a hypothetical scenario. Moreover, this framework is used to organize extant research on attachment styles, rejection sensitivity, self-fulfilling prophecy, the self in relation to others, and interdependence theory, along with present research on the inter and intra individual processes likely to play a role in interpersonal relationships.

TABLE OF CONTENTS

LIST OF FIGURES ii

LIST OF TABLES iii

INTRODUCTION: An Overview 1

CHAPTER 1: Personality-in-Context Approach 4

CHAPTER 2: Subliminal Priming with Names of Significant Persons 48

- Experiment 1 53
- Experiment 2 66

CHAPTER 3: Supraliminal Priming with Names of Significant Persons 76

- Study 1 78
- Study 2 92
- Study 3 97

CHAPTER 4: Individual Differences in Automatic Evaluations 109

- Study 1 116
- Study 2 128
- Study 3 137

CHAPTER 5: Individual Differences in Partner Preference 145

- Study 1 149
- Study 2 170

CONCLUSION 188

REFERENCES 191

APPENDIX A 208

APPENDIX B 209

APPENDIX C 210

APPENDIX D 211

APPENDIX E 212

APPENDIX F 213

APPENDIX G 214

APPENDIX H 215

LIST OF FIGURES

Number

1.1 "Mind" as a cognitive-affective processing system (CAPS).................. 9

1.2 *Inter*individual variability as a function of different CAPS networks........ 15

1.3 *Intra*individual variability as a function of different interaction partners.... 17

1.4 The "interlocking" of the CAPS networks of two members of a dyad....... 20

2.1 Unconscious evaluative priming effects (Ch. 2, Experiment 1)............... 63

2.2 Unconscious gender priming effects (Ch. 2, Experiment 1)................... 65

2.3 Unconscious evaluative priming effects (Ch. 2, Experiment 2)............... 70

2.4 Unconscious gender priming effects (Ch. 2, Experiment 2).....................71

3.1 *Expected* facilitation scores based on prime–target congruency and person positivity bias hypotheses (Ch. 3, Study 1)...............................79

3.2 Observed facilitation scores for object and significant person primes as a function of prime and target valence (Ch. 3, Study 1)..................... 87

3.3 Observed facilitation scores as a function of prime lexicality, prime type, prime valence and target valence (Ch. 3, Study 1)...................90

3.4 Observed facilitation scores for object and significant person primes as a function of prime and target valence (Ch. 3, Study 2).......................94

3.5 Observed facilitation scores for significant person primes on evaluative SPP task (Ch. 3, Study 3)..101

3.6 Observed facilitation scores for significant person primes on gender SPP task (Ch. 3, Study 3)..103

LIST OF TABLES

Number

2.1 Correlations between Social Avoidance and Distress (SAD) scale and priming effects (Ch. 2, Studies 1-2)........ 73

3.1 Expected and observed facilitation scores as a function of prime type and target valence (Ch. 3, Study 1)........ 88

4.1 Mean (*SD*) response latencies for combined discrimination tasks and IAT effects for the Partner-IAT and Self-IAT (in ms) (Ch. 4, Study1) 124

4.2 Correlations between Partner-IAT and Self-IAT Effects and Measures of Adult Attachment Style (Ch. 4, Study 1) 126

4.3 Mean (*SD*) response latencies for combined discrimination tasks and IAT Effects for the Partner, Mother, and Self-IAT (in ms) (Ch. 4, Study 2) 132

4.4 Correlations between Partner-IAT, Self-IAT, and Mother-IAT Effects Measures of Adult Attachment Style (Ch. 4, Study 2) 134

4.5 Correlations between Mother-IAT Effects and measures of adult attachment Style (Ch. 4, Study 3)........ 139

4.6 Average correlation coefficients from meta-analyses (Ch. 4, Studies 1–3).. 142

5.1 Mean (*SD*) ratings of potential for abusiveness and desirability as a dating partner for the sixteen personal ads used as stimuli (Ch. 5, Study 1)........ 154

5.2 Mean (*SD*) ratings of personality traits associated with an abusive personality for the sixteen personal ads used as stimuli (Ch. 5, Study 1).....155

5.3 Estimates for intercept-only model and level-1 predictors only model (Ch. 5, Study 1) 163

5.4 Estimates for full-model (Ch. 5, Study 1)........164

5.5 The relationship between women's preference for abusive ads and self-reports on each negative behavior scale (Ch. 5, Study 1)........166

5.6 Type of personal ad most preferred as a function of women's history of receiving psychological abuse (Ch. 5, Study 1)........167

5.7 Estimates for intercept-only model and level-1 predictors only model (Ch. 5, Study 2) 177

5.8 Estimates for the full-model (Ch. 5, Study 2)........179

5.9 The relationship between men's preference for negative view of self ads and self-reports on each negative behavior scale (Ch. 5, Study 2)........181

5.10 Type of personal ad most preferred as a function of men's history of inflicting psychological abuse (Ch. 5, Study 2)........182

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DEDICATION

I dedicate my dissertation to my parents, Aurora y Luis.
Gracias por todo tu cariño y apoyo.

INTRODUCTION: An Overview

Each friend represents a world in us, a world possibly not born until they arrive, and it is only by this meeting that a new world is born. – Anais Nin (1914-1977)

As eloquently expressed by Anais Nin, a 20th century writer and diarist, when two people meet and begin to develop a relationship, in a sense, a new world is born. The personality-in-context approach presented in this paper assumes that consistency and stability of behavior, which is normally associated with "personality," emerge from the continuous interactions between two processes: the personal characteristics residing *within* the individual, as well as the characteristics of the situations people encounter residing *outside* the individual. Because the situations people encounter play a critical role in producing individual differences in behaviors, the question that naturally follows is: "what are the key ingredients of 'situations'?" A key assumption of the personality-in-context approach is that, particularly within close interpersonal relationships, the most salient aspects of individual's physical, social, and psychological world are significant persons (e.g., one's romantic partner, a parent) and their behaviors (Zayas, Shoda, & Ayduk, 2003).

The aim of the present paper was to examine the numerous ways that significant persons impact, and are impacted by, one's feelings, thoughts, and behaviors within interpersonal contexts. Chapter 1 outlines in detail the personality-in-context approach that guides the empirical studies presented in Chapters 2 thru 5. For the purpose of illustrating the personality-in-context approach, Chapter 1 also provides a hypothetical scenario that highlights the key assumptions of the framework. Finally, Chapter 1 reviews the existing literature on adult attachment styles, rejection sensitivity, self-fulfilling prophecy, the self in relation to others, and interdependence theory and integrates the seemingly disparate findings within the personality-in-context framework.

If significant persons are salient aspects of a person's situation, then it is necessary to understand how information about significant persons is processed. Chapters

2 and 3 examined the question: Are there distinctive characteristics in the processing of information about people compared to processing of information about objects? One way in which the processing of information associated with significant persons may differ from the processing that occurs of non-people objects is in the extent to which they are chronically accessible. For example, given the importance of interpersonal relationships, it is likely that even when significant persons are not physically present thoughts of such persons still may be easily accessible and ready to be used in the processing of information." The two experiments reported in Chapter 2 assessed whether the gender and evaluative reactions associated with significant persons were processed unconsciously (i.e., outside of awareness) using a subliminal priming task (Abrams & Greenwald, 2000), in which names of significant persons were presented as masked primes.

Yet another way in which the processing of information associated with significant persons may differ from the processing that occurs of non-people objects is in the evaluative reactions elicited at an automatic level. Do significant persons elicit evaluative reactions similar to those elicited by objects? The three studies reported in Chapter 3 used a supraliminal priming methodology (Fazio et al., 1986) to assess the positive and negative evaluative reactions elicited by liked and disliked significant persons and compared such evaluative reactions to those elicited by objects.

A key assumption of the personality-in-context approach, as well as other theories, is that individuals differ in meaningful ways in how they process information about significant persons. For example, adult attachment theory proposes that differences in early relationship experiences with one's primary caregiver lead to *individual differences* in automatic evaluative reactions towards the specific caregiver, as well towards adult romantic partners. The three studies reported in Chapter 4 assessed such individual differences in cognitive-affective reactions and examined the question: Are individual differences in the cognitions and affects automatically activated when thinking

about one's romantic partner, mother, and self related to adult attachment styles, as proposed by adult attachment theory?

Finally, although people may differ meaningfully in the strength of their evaluative reactions towards significant persons, and these differences may be one reason why people experience relationships differently, in most instances, people do not interact with the same individuals in their everyday life. One reason why some people hold less positive evaluations toward their partner may be that their dating partner is in fact less supportive in actual interactions. Because people are able to choose their dating partners, they shape their social, physical, and psychological environments over the long term: Partner selection in effect exposes individuals to different sets of interpersonal situations, which in turn impacts the thoughts and feelings likely to become activated, as well as people's behavioral responses. Partner preference is a process that is probably most relevant to the study of abusive relationship dynamics. The two studies reported in Chapter 5 examined such person-situation linkages. Specifically, using a mock Internet dating service to assess individual differences in preference for romantic partners, Study 1 assessed the relationship between women's self-reports of receiving psychological abuse within their most recent romantic relationship and their preference for personal ads describing an abusive man. Study 2 assessed the relationship between men's self-reports of inflicting psychological abuse and their preference for personal ads describing a woman with a negative view of self attachment style, which past research has linked with receipt of abuse.

CHAPTER 1: Personality-in-Context Approach

What do interpersonal relationships tell us about personality? When attempting to begin answering this question, the paradoxical nature inherent in the question itself soon becomes apparent. Does "personality" even exist without an interpersonal context, real or imagined? It seems that many of the qualities usually attributed to "personality" (e.g., frequency of exhibiting a particular behavior) reflect not an individual in isolation, but an individual within specific interpersonal relationships. This realization is of course not new or unique. In fact, the idea that an individual's behavior at any given moment arises from interactions within the interpersonal systems of which the individual is a part has been repeatedly voiced by cultural psychologists (e.g., Gergen, 1973, 1990; Sampson, 1977, 1978; Shweder, 1991, 1993; Sullivan, 1984), and by George Herbert Mead and the symbolic interactionists (e.g., Mead, 1934, 1838; Cooley, 1922). Similarly, developmental psychologists and self theorists believe that the self and all of its diverse aspects, emotional, cognitive, and behavioral, are constructed, enacted, and maintained in the context of social relationships (e.g., Vygotsky, 1978; also see Mischel & Morf, in press; Athay & Darley, 1981; Hoyle, Kernbis, Leary, & Baldwin, 1999; Markus & Cross, 1990). The unifying theme among these historical and current perspectives is that human behavior commonly attributed to the individual are inseparable from the contexts in which they occur, and that some of them may not be meaningful or observable without placing individuals within contexts, particularly ones that involve interpersonal relations.

Building on these traditions, a central assumption integrating the present research is the idea that each person in a close dyadic relationship is a significant part of the other person's situation. Drawing on basic principles from recent social cognitive conceptualizations of personality and human information processing, the present paper explores the implications of this key aspect of dyadic relationships, and suggests that behaviors normally attributed to "personality" arise out of the interactions between the individual and relational contexts, rather than from the qualities of each individual alone. Specifically, the present paper discusses how two individuals might create a dynamic and

continuously interactive interpersonal system within which the personal characteristics unique to each person are embedded, and from which each person's behaviors, as well as the behavioral patterns of the dyad emerge. This personality-in-context approach is illustrated with a hypothetical scenario. This framework is also used to organize the literature on selected topics within the study of personality, social processes, and close relationships, and also serves to integrate the studies on intra and inter individual processes presented in this paper. Finally, implications of the personality-in-context framework to past and future theory and research, as well as implications for enduring personality change, are discussed in the concluding section.

Interpersonal contexts: Confound, or an integral part of personality?

Controlling the effect of situations to study individual differences in behavior

Regardless of particular tradition, behavior has long been conceptualized as a joint function of individual characteristics and situational influences. For example, Lewin (1935, 1951) proposed the equation $B = f(P, E)$ to describe how behavior (B) is a function of the person (P) and his or her environment (E). This conceptualization implicitly influenced the assumptions that guided early research on personality and individual differences. While some psychologists investigated the effect of situations on behavior, focusing on the E of the Lewinian equation, others investigated the role of personality and individual differences on behavior, focusing on the P in the $B = f(P, E)$ equation. For instance, early studies on personality and individual differences typically involved exposing all participants to the same set of stimuli. Alternatively, when it was not possible to expose participants to the same set of situations, psychologists removed the effect of situations by statistically averaging observations of behaviors across situations. The goal of both of these approaches, therefore, was to focus on the role of P in the Lewinian $B = f(P, E)$, while holding E constant. Although few personality psychologists would doubt that behavior arises from the interplay between the person and his or her environment, the basic assumption guiding the research was that, in order to study the P

in the $B = f(P, E)$ equation, the powerful effect of situations needed to be held constant or controlled, lest it would be impossible to know whether differences in behaviors were caused by features in the situation or enduring characteristics of the person. These approaches ensured that differences in behaviors were not "confounded" with differences in situations (e.g., Ross & Nisbett, 1991; Snyder & Ickes, 1985).

Bringing the E back into the $B=f(P, E)$ equation: Individual Differences in Environments Encountered

Should the situations that individuals encounter always be controlled as is the case within laboratory studies or when researchers average across situations? Might some important information be lost by doing so? The situations individuals encounter in their real world, everyday lives are almost certainly *not* the same for all individuals, but differ systematically (e.g., Emmons, Diener, & Larsen, 1986; Snyder & Ickes, 1985; Buss, 1984, 1987; Caspi & Herbener, 1990). That is, just as individuals differ in their internal characteristics (*P*), they are also likely to differ in the environments (*E*) that they typically encounter in their lives. Therefore, controlling the effect of situations, paradoxically, may exclude a critical component of individual differences in behaviors.

The situations that people encounter, both in the immediate and distant future, are influenced, in part, by their behaviors: Individuals select some situations over others, manipulate their social environment, and evoke predictable responses from other people, thereby creating and shaping the situations that they will encounter (e.g., Buss, 1987). For example, an individual might have a tendency to speak up especially when she disagrees with the majority view or someone might prefer to go out to a party rather than to read a book. In both examples the person's behavior (e.g., expressing disagreement, choice of evening activity) will undoubtedly affect the situations he or she is likely to encounter next, which, in turn, may affect what the person feels, thinks, and does subsequently. Therefore, *individual differences* in situations are likely to play a critical role in producing observable, stable, individual differences in behaviors (Caspi & Herbener,

1990), which, starting the process anew, may further promote differences in the situations encountered. It is also possible that these processes, by which individuals shape their social world, become increasingly more powerful and influential as individuals age and gain more autonomy (Plomin, 1986; Scarr, 1988: Scarr & McCartney, 1983). This assumption is consistent with increases in intraindividual stability of personality with age (Caspi & Bem, 1990). Furthermore, adding another layer of complexity, individual differences in situations encountered (E) and individual differences in personal characteristics (P) may become increasingly intertwined resulting in person-situation linkages. For example, intuitive prototypes of people are often characterized by the typical situations associated with them (Cantor, Mischel, & Schwartz, 1982). In sum, although observable behaviors are traditionally viewed as arising from stable, internal characteristics of the person, it is likely that individual differences in the situations people encounter are another equally important process contributing to stability and coherence of behaviors.

Modeling the dyadic system using the Cognitive-Affective Processing System (CAPS) conceptualization of individuals

Currently, the conceptual tools available in psychology are primarily designed to understand a person (Reis, Collins & Berscheid, 2000). However, to the extent that each member of a dyad plays a key role in creating the situation for the other member, it is possible to apply these tools to model a significant part of the situation, or *environment* in the Lewinian equation.

P_1 and P_2: Modeling the Cognitive-Affective Processing System (CAPS) of Each Member of the Dyad

How does one model the "mind" of a person, that is, the P in the $B=f(P, E)$ equation? First, the model needs to incorporate, rather than exclude, the effect of situations. Second, the model should account for why the effect of situations are not the same for all individuals by addressing differences in how people respond, cognitively,

affectively, and behaviorally, to situations. Third, the model has to allow for a process in which individuals' behaviors influence the types and frequencies of situations they encounter in their lives. One theoretical framework that addresses these requirements is the Cognitive-Affective Processing System (CAPS) theory of personality (Mischel & Shoda, 1995; Shoda & Mischel, 1998; Shoda, LeeTiernan & Mischel, in press).

CAPS network. As shown in Figure 1.1, CAPS conceptualizes the "mind" of each member of a dyad, P_1 and P_2, as a distinctive network of interconnected cognitions and affects (referred to as each person's CAPS network). The CAPS approach draws from existing principles of social cognition, such as, availability and accessibility (e.g., Bruner, 1957; Higgins & King, 1981). Individuals' CAPS networks are expected to differ in the availability of specific cognitions or affects, as well as in the pattern and strengths of the associations among the cognitions and affects, which determines the ease with which they are activated (i.e., accessibility). Each person's CAPS network mediates the relationships between the situations a person encounters and his or her behavioral reactions to the situations, by guiding how a person construes and interprets the situations, and the cognitions and affects that become automatically activated.

If...then... situation-behavior relationships. One implication of the CAPS approach is that an individual's distinctive and stable network of cognitions and affects underlies distinctive and stable, observable *if...then...* relationships between features of situations and behavioral responses. These *if...then...* situation-behavior relationships are assumed to uniquely describe the consistency within a person's behavioral variability across situations. To elaborate, although the internal organization of each person's cognitive-affective processing *system* itself remains relatively stable and invariant, at least in the short term, from situation to situation, the particular thoughts and affects activated at a given moment change, depending on the situational input that activates them. Thus, the stable structural properties of the cognitive-affective processing system guide the dynamic activation (within the network) of particular cognitions and affects in a given situation. In turn, different sets of cognitions and affects lead to different behaviors. To

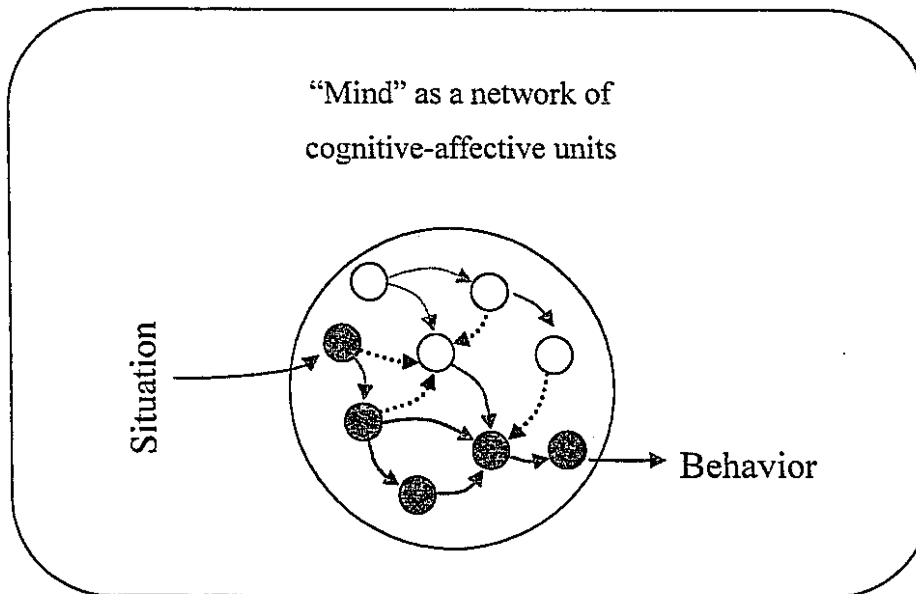

Figure 1.1. "Mind" as a cognitive-affective processing system (CAPS). The large circle in the figure above represents a person's mind as conceptualized as a *Cognitive-Affective Processing System* or *CAPS network.* Each person's CAPS network consists of a stable and unique network of cognitions and affects, which differs from that of another individual in the pattern and strengths of associations between concepts. The circles within the person's CAPS network represent all those cognitions and affects *available* for the processing of information. The darkened circles represent those thoughts and affects that are currently activated (i.e., highly *accessible*), while the undarkened circles represent those thoughts and affects that are not activated or accessible. The lines among the concepts indicate which concepts are connected with one another, and the strength of association, within a person's CAPS network. If there is a line, the concepts are assumed to be associated (i.e., activation of one concept results in the activation of the associated concept), and the thickness of the line reflects the strength of the association. If there is no line between two concepts, then the concepts are assumed to be *un*associated. In addition, the lines between concepts represent *how* concepts are connected with one another: Solid lines indicate that the activation of one concept *facilitates* activation of the associated concept, and dashed lines indicate that the activation of one concept *inhibits* activation of the associated concept. In the figure, features of the situation are assumed to activate the available, and relevant, cognitions and affects within the person's CAPS network and this activation is assumed to propagate through the network of association, and ultimately influences individual's subjective experiences and behavioral response.

the extent that a person encounters situations with similar features, the same CAPS subnetwork will become activated, generating similar behavioral responses. What results are distinctive and stable, observable *if...then...* relationships between features of situations and behavioral responses unique to each individual.

The "interlocking" of two CAPS networks: The dyadic system

Individuals rarely live in isolation. Indeed a significant part of individuals' lives involves the relationships that they develop with other people. Thus, people and their behaviors are undoubtedly a significant part of situations. Although one person's behavior is likely to influence the behavior of another person regardless of the nature of the relationship between the two individuals, close intimate relationships, particularly those that involve romantic partners, may differ in important ways from nonintimate relations.

E = f(?,?): One partner's behavior is a significant part of the other partner's situation, and vice versa. As an individual develops a close relationship with another, the frequency of interactions and exposure to the partner's behaviors increases, creating many more opportunities for one party's behavior to influence the other person. In addition, as two individuals grow closer, they become more invested in the relationship, and the psychological significance of the interactions and partner's behaviors is also likely to increase. Thus, because in close, intimate relationships there is a greater likelihood that each partner's behaviors will be psychologically significant for the other, behaviors of one's partner are more likely to be noticed and encoded, and more likely to affect behavior.

Thus, it seems reasonable to assume that as close relationships develop, particularly those that involve romantic partners, the thoughts, feelings, and behaviors of one partner come to matter more, and a large and integral part of one partner's environment is the behavior of the other partner. Substituting the E in the Lewinian equation with the respective partners' behavior, the behavior of one partner (B_1) emerges

from the interaction between her "mind" (P_1) and the situational input provided primarily by her partner's behavior (B_2), hence $B_1 = f(P_1, B_2)$. Similarly, the behavior of the other partner in the dyad (B_2) can be conceptualized as a function of the interaction between his "mind" (P_2) and the situational information provided by his partner's behavior (B_1), hence $B_2 = f(P_2, B_1)$.[1] To the extent that one person's environment consists primarily of his or her partner's behaviors, this in turn allows us to model the environment. That is, the environment encountered next (E_1) can be thought of, at least in part, as a function of one's own behavior (B_1) as well as the "mind" of one's partner (P_2), which interprets, encodes, and ultimately responds (B_2) to one's initial behavior. Thus, $E_1=f(P_2, B_1)$, and $E_2=f(P_1, B_2)$.

Dyadic system. How does a dyadic system develop between two individuals? As discussed above in the brief description of the CAPS approach to personality, situations with similar features tend to activate the same CAPS subnetworks, which in turn are expected to generate similar behavioral responses. This idea, in conjunction with the assumption that in close relationships the behavior of one partner is the situational input for the other, is particularly relevant for understanding the formation and development of dyadic systems. If one partner's behaviors are relatively consistent over time (e.g., one person tends to give the silent treatment when in conflict), then in effect the other partner is repeatedly exposed to situations that involve similar features, which in turn will repeatedly activate a specific subset of cognitions and affects in her CAPS network (e.g., when her partner gives her the silent treatment, she feels a need to "draw out" her partner and get closer). Over time the particular cognitive-affective dynamics that become activated in one partner in response to the other partner's specific behaviors may become increasingly more accessible and may in future interactions start to become activated with minimal behavioral input. Furthermore, as a relationship develops, each partner is learning (implicitly or explicitly) about how her partner behaves in different situations

[1] The present paper uses the term "behavior" broadly defined, including a person's physical appearance, social status, etc., which are not strictly what the person "does" but nonetheless are a part of the situational stimuli.

and in a sense, begins to develop a mental representation of the partner (e.g., "he's a loner"). Once this representation is formed, an individual may be more likely to engage in top-down, schema-driven processing (rather than bottom-up, stimulus-driven processing) and consequently, may interpret the behaviors of her partner as consistent with the schema.

To summarize, to the extent such a dyadic system is formed, one partner's behavior is expected to repeatedly and predictably activate certain subsets of thoughts and affects within the other partner's CAPS network, leading to a particular behavioral response. In turn, the resulting behavioral response serves as the situational input of the other partner, and the process continues anew. Eventually, stable and predictable behavioral interaction patterns between the two members of the dyad should become established, and the CAPS networks of both partners may in effect become functionally "interlocked," forming a dyadic and continuously interactive dyadic system.[2]

Furthermore, the model proposed predicts that the patterns of interactions emerge will be unique to each dyadic system. For example, the impact of specific behaviors (e.g., partner giving the silent treatment) may depend on how the behaviors are interpreted in the context of the other thoughts and affects that are activated in the perceiver's CAPS network, which are likely to involve the mental representation of their partner (e.g., Sandra uses the silent treatment when her feelings have been hurt, but Lisa uses the silent treatment to get her way). Thus, because the personality-in-context framework assumes that each relationship partner provides the other partner with a unique set of situations

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[2] For the purpose of illustrating the key ideas of the personality-in-context approach, the scenarios focus on the simplest instances in which one partner's behavior activates a particular cognitive-affective dynamic in the other partner's CAPS network, which in turn leads to that partner's behavior. Dyadic systems, however, are likely to involve parallel pathways, such as when multiple behaviors activate multiple cognitions and affects. Thus, behavior is likely to be multidetermined with several simultaneously operating pathways contributing to the emergence of predictable and stable behavior interactions. In addition, pathways that lead to a behavior may not always include every step discussed. For example, if a person engages in a particular behavior, the simple act of engaging in the behavior may make certain thoughts in their CAPS network more salient, without requiring a response by the partner. Although there are many complexities to the more general model proposed, the present paper chooses to focus on the simplest case in order to describe the key assumptions.

(i.e., behaviors), the behaviors of each individual and the interactions that emerge from a dyadic system should be expressed differently as a function of the specific relationship. This possibility was recently demonstrated by a computer simulation of a dyadic system consisting of two CAPS networks (Shoda, LeeTiernan, & Mischel, 2003).

Stable and predictable interaction patterns arise from ever-changing activation of cognitions and affects. What aspects of the *dynamic* dyadic system are stable and predictable? The resulting dyadic system is dynamic in the sense that the specific cognitions and affects that become activated within the CAPS network of each person of the dyad, as well as the observable behaviors that each CAPS network produces, are not constant, but vary from moment to moment depending on the situational input. The stable aspects of the dyadic system (i.e., "interlocked" CAPS networks) are expressed in terms of predictable and stable interaction patterns that emerge amidst what appears to be the ever-changing activation of cognitions and affects.

What is the nature of E? The term "environment" or "situation" may conjure images of static and impersonal physical settings. However, the most significant aspect of *E*, psychologically speaking, is likely to be inherently dynamic and changing, because in all likelihood, it will consist of other people whose very nature is dynamic. Thus, by conceptualizing *E* as consisting, in large part, of the behaviors of one's partner, the environment is itself a living thing – something that is continuously changing, personal, active and reactive. In addition, to facilitate discussion of the personality-in-context approach, the immediate set of situational information, or "stimuli," to which a person is exposed (regardless of whether a person is consciously aware of the stimuli) is referred to as *E*. Note that *E* is distinguished from aspects of the partner that are relatively stable and enduring (e.g., CAPS network) and that give rise to the ever changing flow of situational input.

Personality-in-context approach for modeling dyadic systems: A hypothetical scenario

In the section that follows, the personality-in-context approach is illustrated by considering a hypothetical scenario. For the purpose of clarity, the illustration is divided into parts. The first part (referred to as *Phase 1*) describes the two key processes at work when individuals are not yet a part of a dyadic system: *Aspect 1* refers to stable *intra*individual cognitive-affective processes modeled as a CAPS network and *Aspect 2* refers to *inter*individual processes that generate stable individual differences in situations encountered. The second part of the hypothetical scenario (referred to as *Phase 2*) illustrates how when two individuals interact over time, these two aspects work conjointly to form a dyadic system between the individuals. That is, *Phase 2* illustrates how a dyadic system develops between two individuals via an "interlocking" of their CAPS networks, wherein each person in the dyad provides the situational input for the other. Finally, it shows how the stable behavioral interactions of a dyad, as well as each person's behaviors, emerge from such a dyadic system.

Hypothetical scenario

Suppose that during the first day of his seminar, a student named Mark is briefly introduced to two other students, Sydney and Jane. Mark finds them both attractive. After class one afternoon, when both Sydney and Jane are present, he mentions, as if thinking out loud, that it might be fun to go to a coffee shop to study together.

Phase 1, Aspect 1: Seeing the situation through a CAPS network: Encoding the psychological meaning of situations

A key assumption of the personality-in-context approach is that Mark's behavior constitutes a significant part of each woman's situational input. However, as shown in Figure 1.2, the psychological meaning of the situation (i.e., Mark's behavior) will differ depending on each woman's cognitive-affective system (i.e., CAPS network), which in turn influences her subjective experience and behavioral response to Mark.

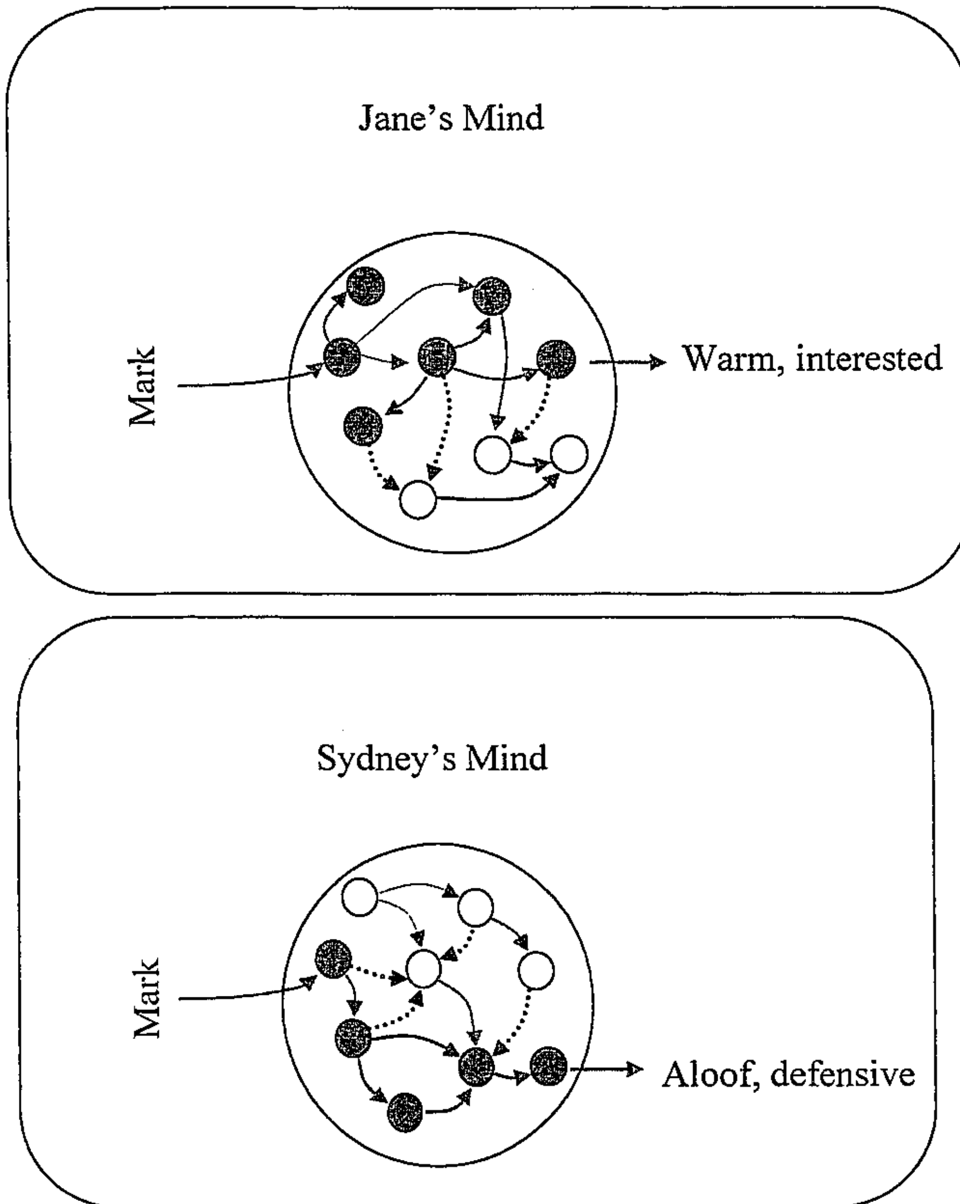

Figure 1.2. Interindividual variability as a function of different CAPS networks. Sydney and Jane encounter the same situation, which in this example consists of Mark and his behaviors. Because of each woman's unique CAPS network, the thoughts and affects that become activated as a result of the situation are expected to differ, which, in turn, leads each woman to behave differently towards Mark.

To elaborate, suppose that Sydney's CAPS network is such that situations in which she feels self-aware activate in her thoughts that she is unworthy of affection and that rejection by others is inevitable sooner or later. These thoughts, in turn, may lead Sydney to think that the invitation to coffee was not extended to her personally because she was not asked explicitly. She may instead readily conclude that Mark is interested in Jane, encoding his behavior as a rejection of her. These thoughts and affects activated within Sydney's CAPS network are likely to influence Sydney's behavioral response to Mark's invitation. Feeling hurt and unwanted, she may for instance make a cynical remark to Mark or act dismissive and aloof.

Suppose that in contrast to Sydney, whenever Jane is made self aware, thoughts that she is likeable and that others are accepting become accessible. Thus, although Mark's invitation is somewhat ambiguous, Jane may still automatically assume that she is one of the people invited. The thoughts and affects activated, in turn, will influence Jane's behavioral response to the situation. For instance, Jane may behave in a manner that is warm and shows interest in Mark.

Phase 1, Aspect 2: Cognitive-affective processes influence situations encountered: $E_1=f(P_2, B_1)$

How will Mark respond to each woman? First, as suggested by the original Lewinian equation, $B = f(P, E)$, Mark's subsequent behavioral response will depend on the interpersonal situation. Just as Mark provided the situational input for Sydney and Jane, now each woman's behavioral response to the initial invitation serves as Mark's new situational input. As shown in Figure 1.3, because each woman is providing Mark with a different set of situational inputs (Sydney by her cynicism, and Jane by her warmth), the cognitions and affects activated within Mark when he interacts with Sydney differ from the cognitions and affects activated when he interacts with Jane. Subsequently, Mark's behavior toward each woman will also differ.

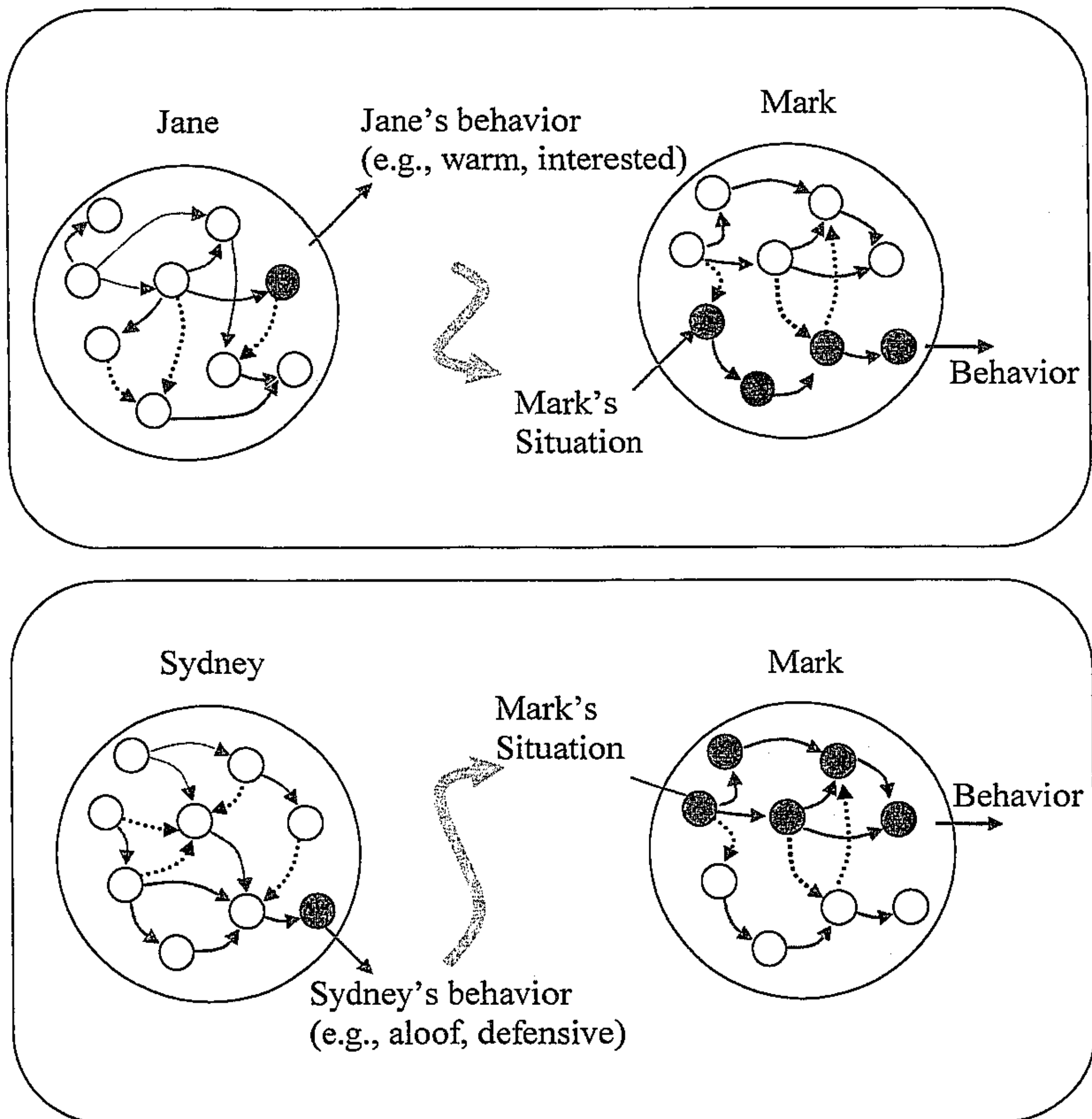

Figure 1.3. Intraindividual variability as a function of different interaction partners. Although Mark's CAPS network is the same regardless of whether he is interacting with Jane (top panel) or Sydney (bottom panel), the cognitions and affects that become activated within his network (i.e., the particular cognitive-affective dynamic) does differ depending on which woman he is interacting with. As a result, Mark's behaviors are also expected to differ as a function of his interaction partner.

A second factor impacting Mark's behavioral response to each woman is his unique CAPS network. Imagine that Mark's CAPS network is such that he perceives Jane's warmth and interest as fawning and possibly insincere, but finds Sydney's cynicism and aloofness as challenging and compelling. Mark may even be particularly attracted to women who appear distant and emotionally reserved. Thus, although people on the whole may find it more pleasant to interact with Jane than with Sydney, the particular network of cognitions and affects that makes up Mark's CAPS system may lead him to approach Sydney more than Jane despite her negative behavior. Conversely, from Sydney's perspective, her personal characteristics may be such that she is likely to attract suitors, who like Mark have particular qualities or CAPS networks. Thus, Sydney's personal characteristics may unintentionally be attracting particular individuals.

The process outlined illustrates at least three ways, namely selection, evocation, and manipulation, through which one's behavior may shape and create their social world (Buss, 1987). First, individuals select the situations that they are likely to encounter in their real world, by seeking out some situations, and avoiding others. For example, if Sydney ultimately chooses not to go with Mark to the coffee shop whereas Jane readily accepts the offer, each woman is selecting the types of situations that she is likely to encounter in the *future*. Similarly, if Mark decides to continue to get to know Sydney rather than Jane, he too will be influencing the situations that he is likely to encounter in the future. In addition, individuals also influence their social world, unintentionally by virtue of enduring personal characteristics (i.e., evocation), as well as intentionally by behaving in ways that provoke consistent and predictable responses in others who are present in the environment (i.e., manipulation). Thus, intentionally or unintentionally, each woman's behavior (i.e., Sydney's cynicism and Jane's warmth) in response to Mark's initial comment affects her social world. In the above illustration, although Sydney's interpersonal style of emotional distance and aloofness may attract individuals with particular interpersonal styles, goals, and motives, such as Mark, Sydney's defensiveness will more often than not predictably elicit unfavorable reactions from others.

In sum, each woman's environment (E_1) can be conceptualized as a function of her own behavior (B_1) and how Mark is likely to respond to her behavior, which is determined for the most part by his own CAPS network (P_2). That is, $E_1=f(P_2, B_1)$. Likewise, Mark's environment can be conceptualized as a function of his own past behavior and how each woman is likely to respond to it, which is determined for the most part by each woman's unique CAPS network.

Phase 2: The Dyadic System

Let us consider what might happen if Mark and Sydney end up dating more seriously. As shown in Figure 1.4, over time a stable dyadic system may develop whereby the CAPS networks of the two individuals become "interlocked," thus, generating predictable interaction patterns. To illustrate, suppose that conflicts or disagreements with Mark activate in Sydney thoughts and feelings associated with rejection, similar to those that characterized her initial reaction to Mark. Sydney may, for example, interpret conflict to mean that Mark really does not care for her. These feelings of rejection may lead her to become withdrawn, distant, and defensive. Over time, Sydney's stable cognitive-affective dynamics in response to conflict (e.g., *if* conflict *then* withdraw) may create a situation in which Mark also becomes worried and concerned after a conflict or disagreement. For example, he may interpret Sydney's distant behavior as a reflection that she does not really care about him. If Mark tries to respond to this situation (i.e., Sydney's withdrawal) by attempting to "draw out" Sydney, a recurrent interaction pattern may emerge over time – one that involves Mark approaching and Sydney withdrawing.

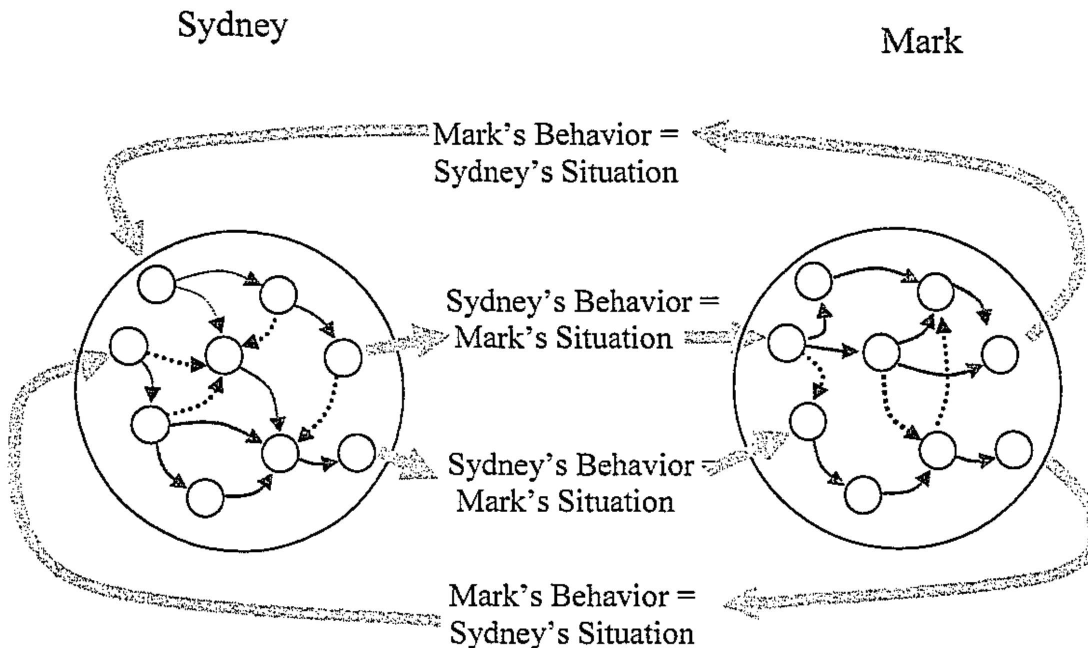

Figure 1.4. The "interlocking" of the CAPS networks of two members of a dyad. As individuals develop a relationship, the CAPS networks of each partner become "interlocked" so that the significant part of the situations encountered by one partner consists of the behaviors of the partner, and vice versa. In the hypothetical scenario, Sydney and Mark have begun to form a relationship. The resulting a dyadic system which consists of Sydney's and Mark's CAPS networks begins to become interconnected in such a way that the behavioral output from Sydney's CAPS network, becomes Mark's situation. This situation, in turn, is the input that activates a particular cognitive-affective dynamic in Mark, leading to Mark's behavior. Similarly, the behavioral output from Mark's CAPS network becomes Sydney's situation, which in turn, activates in Sydney a particular cognitive-affective dynamic, leading to her behavior. In this manner, a dyadic interpersonal system starts to develop, and once formed may account for consistency and stability within interpersonal relationships.

Taking stock

Several points about the above illustration are worth highlighting. First, the scenario illustrates the CAPS theory approach to personality (*Aspect 1* of *Phase 1*, above). Specifically, it shows how the same interpersonal situation – a situation consisting of an invitation, albeit ambiguous one activated a different pattern of cognitions and affects in each woman, leading them to perceive, interpret, and respond differently to the situation. Second, the hypothetical scenario illustrates how individuals (i.e., Sydney and Jane) are able to shape their interpersonal world by the behaviors they elicit in others, the situations they attract, as well as the situations they choose to be in (*Aspect 2* of *Phase 1*, above). These processes may create self-fulfilling prophecies. For example, even though there will be variability in people's reactions when interacting with a defensive person such as Sydney, on average, people enjoy interacting with a nondefensive person more than a defensive person. This general tendency increases the chance that Mark will in fact not like Sydney, reinforcing her preexisting view of herself as unworthy and of others as rejecting. Finally, the illustration shows how a stable interaction pattern between two people develops, emerging out of the stable cognitive-affective processing systems of both individuals (*Phase 2*, above). Note how Mark's behavior might have been drastically different if he pursued a relationship with Jane instead of Sydney. It is likely that his behaviors, although he is still the same person, with his own unique qualities (e.g., CAPS), would be very different from those in a relationship with Sydney. Thus, the same individual can display quite different, but equally stable behaviors when in the context of different relationships that provide a different set of situation inputs.

Relevant research illustrating personality-in-context approach and the formation of dyadic systems

As illustrated by the example above, if a person's "mind" is conceptualized as a stable cognitive affective processing system, it becomes possible to model the

interpersonal aspects of the environment, and address reliable individual differences in situations encountered. Such a conceptualization may also help build a framework from which the field of personality and interpersonal relationships can begin to unify seemingly disparate approaches and research findings. Indeed, there has been a call for a unifying model of personality that elucidates both the *intra*individual psychological processes, as well as the *inter*individual dynamics within close relationships (see Reis, Capobianco, & Tsai, 2002).

In the section that follows, the goal is to show how various approaches and research findings, ranging from work on attachment styles and interdependence theory to self-fulfilling prophecy, can be organized and integrated using the model of personality-in-context proposed in the present paper. Similar to the illustration, the literature review is divided into parts for the purpose of clarity. *Phase 1, Aspect 1* reviews research on stable *intra*individual cognitive-affective processes. *Phase 1, Aspect 2* examines studies on *inter*individual processes that generate stable individual differences in situations encountered. Finally, *Phase 2* assesses the research being conducted on behavioral interactions that emerge from dyadic systems.

Aspect 1: Seeing the situation through a CAPS network: Encoding the psychological meaning of situations

Recent approaches to personality and individual differences (Baldwin, 1992, 1993; Greenwald, Banaji, Rudman, Farnham, Nosek, & Rosier, 2000; Baldwin & Meunier, 1999; Mischel & Shoda, 1995) are highly consistent with the phenomenon illustrated in the hypothetical scenario thus far. These recent approaches conceptualize each person's mind as a stable pattern of automatic associations between specific cognitions and affects. Because the pattern and strengths of automatic associations among cognitions and affects within a person's network are hypothesized to reflect a lifetime of experiences as well as genetic makeup, such approaches are highly consistent with

several theories of individual differences in interpersonal behaviors, such as relational schemas, adult attachment theory and model of rejection sensitivity.

Of particular importance is Baldwin's (1992) conceptualization of *relational schemas*. Consistent with earlier theorists who stated that people notice how others respond to them and internalize these responses into self-concepts (Cooley, 1902; Mead, 1934), Baldwin defines relational schemas as "cognitive structures representing regularities in patterns of interpersonal relatedness" (p. 461). These structures include representations of self-in-interpersonal-relationships, representations of others-in-interaction, and interpersonal scripts for the interaction pattern. In addition to being cognitive structures, however, relational schemas also include affective reactions (e.g., Brennan & Shaver, 1995; Downey & Feldman, 1996; Hazan & Shaver, 1987) – feelings about self-in-interpersonal-relationships, about others-in-interaction, and about the interpersonal scripts that guide behaviors within close relationships. Thus, relational schemas can be conceptualized as a particular configuration of cognitions and affects about the self and significant others in interactions that become activated by relevant relationship situations. This approach to relational schemas is highly consistent with the CAPS approach to personality and provides a fruitful place to start outlining the links between the personality-in-context model and the existing literature.

Individual differences in relational schemas. Attachment theory provides an illustration of research and theory on individual differences in relational schemas. Adult attachment theory assumes that through repeated interactions with a primary caregiver an infant develops a general attachment representation – a mental model, or "map" of oneself and one's social world. Although attachment representations are assumed to consist, for the most part, of automatic nonconscious cognitive and affective processes (Bowlby, 1969; Crowell & Treboux, 1995), such processes have been shown to impact a wide range of responses, including conscious judgments and attitudes, expressed thoughts and language, as well as nonverbal behaviors (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Once the first attachment representation is formed, it serves as the basis from which

specific representations of subsequent relationships develop, for instance relationships with friends and romantic partners in adulthood. Thus, not only do these mental models contribute to individuals' consistency and stability of relationship experiences with different relationship partners, but also promotes stability of experiences throughout the lifespan. The most compelling support for this comes from a longitudinal study of women spanning 31 years (assessed at ages 21, 27, 43, and 52). This study found that compared to secure women, those with an avoidant attachment style showed a consistent cognitive-affective and behavioral style characterized by interpersonal distance, defensiveness, distrustful reliance, and vulnerability, and experienced trajectories of increasingly unhappy and unstable relationships (Klohnen & Bera, 1998).

Individual differences in such self and other representations are two dimensions that underlie the four attachment styles: Dismissing, preoccupied, fearful, and secure (Bartholomew & Horowitz, 1991), and have been shown to have far reaching implications for quality of life, mental health, and relationship satisfaction (Kobak & Hazan, 1987; Cozzarelli, Sumer, & Major, 1998; Collins & Read, 1994; Feeney & Noller, 1990; Griffin & Bartholomew, 1994; Brennan & Shaver, 1995; Murray & Holmes, 1999; Collins, 1996). For example, it is assumed that people who have had negative, rejecting early experiences develop mental models of others that lead to discomfort with intimacy, anxiety about abandonment, and beliefs that others are untrustworthy and undependable (Hazan & Shaver, 1987). Early experiences with either a rejecting or inconsistent caregiver are also assumed to impact representations of self that develop, such as whether an individual believes he or she is worthy of love (e.g., Bowlby, 1969; Baldwin, 1992; Bersheid, 1994).

One way that mental representations may exert their influence on individuals' lives is by leading people to engage in schema-driven processes in interpreting and reacting to a variety of interpersonal behaviors. Consistent with this idea, Andersen and colleagues (Andersen, Glassman, Chen, & Cole, 1995) found that even in the absence of priming, people go beyond the information given about a new person by inferentially

filling in the blanks about him or her when the new person resembles a significant other. That is, people use existing mental models of significant others to process subsequent information about a new person.

Understanding intraindividual dynamics of relational schemas: Network relationships and trigger features. The research reviewed so far shows that there are stable individual differences in people's relational schemas, and that these differences are meaningfully related to a host of behaviors and outcomes. Understanding how relational schemas impact behaviors and influence outcomes, however, also requires examining the *intraindividual cognitive and affective processes* that underlie relational schemas. What are some of the more specific *associations* among interpersonally relevant cognitions and affects, as well as the types of situations that activate them?

Recent research (Zayas & Shoda, 2002) suggests that key aspects of mental representations are automatic evaluative associations toward significant persons – the extent to which a significant person automatically activates positive thoughts and elicits positive affective reactions. Using the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998), Zayas and Shoda found that people with a secure or preoccupied attachment style (i.e., hypothesized to hold a positive view of others) had stronger automatic positive reactions toward their current romantic partner, and stronger automatic supportive evaluations toward their mother, compared to individuals with a dismissing or fearful attachment style (i.e., hypothesized to hold a negative view of others). Furthermore, automatic evaluative reactions toward current romantic partner were related to concurrent automatic evaluative reactions toward one's mother, providing some support for the long-standing assumption that feelings and thoughts that develop through repeated interactions with a primary caregiver early in life shape the feelings and thoughts that develop in subsequent relationships with adult romantic partners (e.g., Bowlby, 1969; Hazan & Shaver, 1987).

While some cognitions and affects require no or little external stimuli for activation, other attachment relevant cognitions and affects become activated only under specific circumstances (e.g., threat or loss of the relationship, separation from the significant person). Research by Baldwin and colleagues (1993) for example, examine attachment style differences in interpersonal expectancies that take the form of *if...then...* contingencies, and how these *if...then...* contingencies, which are conceptualized as cognitions and affects involving the self and others linked with one another through an associative network, become activated within a particular interpersonal context. Baldwin's research (1993) suggests that for individuals with an avoidant attachment style (i.e., those who have negative views of others), relational statements (e.g., "*If* I trust my partner *then* my partner will..."), prime thoughts of negative outcomes (e.g., hurt), but nonrelational statements (e.g., "*If* I wash the dishes *then* my partner will...") do not. For individuals with a secure attachment style, in contrast, relational thoughts activate thoughts about positive relationship outcomes. Not only is this pattern of results consistent with theoretical expectations, more generally, this research suggests that interpersonal expectancies consist of cognitive-affective reactions involving self and other and that these cognitive-affective dynamics are not always active, but become activated only within particular contexts, namely those that involve interpersonal (vs. nonrelational) situations.

The situational features that trigger relational schemas have been extensively studied in the relationships of violent men, who disproportionately hold insecure attachment styles (Dutton, Saunders, Starzomski, & Bartholomew, 1994; Holtzworth-Munroe, Stuart & Hutchinson, 1996). This research shows that violent men attribute more negative intent, selfish motivation and blame to wife than nonviolent husbands specifically in situations that involve jealousy and rejection (e.g., wife not interested in sex when husband is), and show more anger to videotaped male-female conflicts when the scenario involves an anticipated loss of the relationship (e.g., partner wants to spend more time with friends; Dutton & Browning, 1988). However, violent husband's reactions do not differ from nonviolent husbands' in situations that do not directly

involve rejection, (e.g., wife wants to talk about an uncomfortable issue, wife wants husband to complete a household job) (Holtzworth-Munroe & Hutchinson, 1993). Thus, rejection cues seem to have a distinctive link to cognitive-affective and behavioral anger responses for violence prone men.

Another illustration of the CAPS framework to personality and close relationships, and more specifically, how situational features trigger a particular cognitive-affective dynamic, is Downey's and her colleagues' model of individual differences in rejection sensitivity (RS; Downey & Feldman, 1996). People who are high in RS enter into relationships anxiously expecting rejection. Their fears and expectations are elicited specifically by rejection cues, or situations that allow for interpersonal rejection. For example, high RS people show an exaggerated startle response, which, indexes the activation of the defensive motivational system and indicates the person is under heightened negative arousal, when looking at pictures depicting scenes of rejection but not when looking at pictures depicting negative but noninterpersonal scenes (Magios, Downey & Shoda, 2001).

Research on RS also outlines how intraindividual cognitive and affective processes associated with this personality type lead to certain negative outcomes. This research has shown, for example, that because high RS people expect rejection, they also more readily encode relevant cues in the environment as actual rejection (Downey & Feldman, 1996). Perceived rejection confirms their worst fears, and automatically triggers negative cognitive-affective reactions (Ayduk, Downey, Testa, Yen, & Shoda, 1999). To illustrate specifically, there seems to be a stronger automatic mental association between thoughts of rejection (primed in a priming-pronounciation task) and thoughts of anger and hostility in women high in RS (Ayduk et al., 1999; Study 1). These automatic reactions, in turn, emerge in defensive responses including aggressive behavior (Ayduk et al., 1999; Downey, Feldman, & Ayduk, 2000; Downey, Freitas, Khouri, Michaelis, 1998) as well as depressive symptomatology (Ayduk, Downey & Kim, 2001).

Overall, the theoretical and empirical work on attachment styles, interpersonal expectancies, and rejection sensitivity illustrate the utility of conceptualizing individuals in terms of the patterns of automatic associations among cognitions about self and others and their relationships, as well as the affective responses they activate. The findings are consistent with the CAPS framework in which a particular pattern of inter-connected expectations, encodings, and affects within a person's CAPS network, becomes activated by specific features of the interpersonal situation, and gives rise to a particular *if...then...* profile of personality.

Activation of different relational schemas across different relationships. The research discussed so far has focused on the similarity in individuals' experiences within relationships, regardless of the particular relationship. For example, individuals with a fearful attachment style are believed to have a particular cognitive-affective dynamic (e.g., *if* he trusts his partner, *then* his partner will reject him). This cognitive-affective dynamic is assumed to become activated across many different relationships, promoting consistency and stability of experiences even when interacting with different individuals. However, is this always the case? Do individuals always experience relationships similarly regardless of whom the relationship is with?

Research examining the variability of experiences of a single person across different relationships has found that although individuals may have a preferred style of relating to others within their close relationships, they do not simply have one single style. Rather, individuals have vastly different experiences depending on the relationship. To account for this variability, it has been suggested that individuals have available to them various mental models of relationships, acquired either directly via their own interpersonal experiences, or indirectly by observation (Baldwin, et al. 1996). Each mental model can be thought of as a subset of interconnected cognitions and affects within a person's CAPS network that leads to a particular behavioral response. Therefore, although multiple models may exist and be available within an individual's network, it is

assumed that only the mental model activated at a given time will influence the thoughts and feelings accessible, as well as individual's subjective experience and behaviors.

Consistent with the assumption that individuals have various mental models, research by Andersen and colleagues (1996) has found that the consequence of mental models on the processing of information depends on which mental model is activated at a particular time. For example, meeting a new person, who resembles a positive significant other, activates the mental representation of the significant person, which in turn leads to automatic positive affective reactions toward the new person. In contrast, if the new person resembles a negative significant other, then activating the mental representation of the significant person leads to negative affective reactions toward the new person. Similarly, Baldwin and colleagues (1996) have shown that visualizing accepting significant others makes thoughts related to *acceptance* (versus rejection) more accessible after being primed with a *success* cue. In contrast, visualizing a significant other who was contingently accepting makes thoughts related to *rejection* (versus acceptance) more accessible after being primed with a *failure* cue (Baldwin et al., 1996).

Yet another consequence of such mental models is their effect on the self. Because mental models of relationships involve thoughts and affects associated with the self as well as significant others, recent research has begun examining the malleability of the self-concept as a function of interpersonal relationships. Andersen and colleagues, for instance, have proposed a theory of the entangled-self that is highly consistent with the CAPS model proposed. First, within the entangled-self framework, the self-construct is conceptualized as a network of cognitions and affects. Although any subset can become activated at a given time, the self-relevant cognitions and affects that actually become activated depend on the contextual cues provided by the significant other (e.g., Hinkley & Andersen, 1996; Andersen, Reznik, & Chen, 1997; Anderson & Glassman, 1996;). Similar to the CAPS model, idiosyncratic but stable variability of cognitions, affects, and behaviors across different situations are central to the theory of the entangled self. The significant-other representations that are activated in any given moment influence the

encoding and construal of situations and lead to a particular set of affective, motivational, and behavioral responses. Another example is provided by Baldwin and colleagues' studies finding that experiencing disapproval from significant others (e.g., the pope for self-identified Catholics) results in more critical self-evaluations, whereas no such effect is found when individuals experience disapproval from a nonsignificant other (Baldwin, Carrell, & Lopez, 1993).

Thus, significant-other representations and associated self-with-significant-other knowledge structures mediate the relationship between *situation...behavior...* (i.e., *if...then...*) relationships. On a final note, this research takes the idea that cognitions and affects are activated as a function of the situation one step further: The situation is no longer simply whether it involves an interpersonal situation versus a nonintimate situation. Rather, now each relationship partner is seen as its own unique situation, and the effects of activating the cognitions and affects associated with the attachment system should be expressed differently as a function of the specific relationship. Moreover, this approach highlights how the behaviors of one individual are generated by factors within the person working in combination with factors present in the situation (i.e., behaviors provided by the partner). Thus, the idea that behaviors emerge from the person and the situation are supported.

Aspect 2: Cognitive-affective dynamics influence the situations encountered: $E_1=f(P_2, B_1)$

How do individuals influence the situations they encounter in their everyday lives? What types of behaviors have been shown to influence subsequent situations encountered? Buss (1987) described three mechanisms (selection, evocation, and manipulation) by which individuals influence the social situations they encounter. Moreover, researchers have examined situation-person linkages, finding support for the hypothesis that the situations individuals create for themselves may reflect their personal tendencies, and their personal tendencies may be reinforced or sustained by the situations

they create (e.g., Emmons, Diener, & Larsen, 1986; Snyder & Ickes, 1985; Caspi & Herbener, 1990).

Generating individual differences in situations encountered: Selection, evocation, and manipulation. First, individuals can exert a great deal of control by *selecting* to be in some situations over others. Romantic partner selection is one way that people encounter different physical and psychological situations (Buss, 1989, 1992; Ellis, 1992; Snyder & Ickes, 1985), and therefore, can have powerful consequences on individuals' lives. By choosing to interact with some people over others – whether it is selecting friends or romantic partners – individuals open the door to one set of experiences, while at the same time closing the door on others. When individuals select their friends and mates they simultaneously select the behaviors that they will be exposed to over a relatively long period of time (Buss, 1984). Consequently, who one decides to interact with is also likely to impact a person's subjective experiences. For example, research on adult attachment styles has found that individuals with an anxious ambivalent attachment style are less adept at caregiving behaviors (Collins & Feeney, 2000). Because, Collins and Feeney also found that effective caregiving leads to improved mood on the part of the individual seeking support, a person seeking support from an individual with an anxious ambivalent attachment style might experience less elevated mood as a consequence.

Moreover, the impact that selection of partners and friends has on people's lives is not limited to individuals' immediate subjective experiences within the particular relationship, but they may impact other concurrent and subsequent relationships. It is hypothesized that individuals form mental models of each relationship (e.g., Bowlby, 1969; Baldwin, et al. 1996). These mental models are expected to not only guide behaviors within the respective relationship, but they may also become activated and used for processing of information in subsequent relationships (e.g., Andersen et al., 1995). Thus, the interactions that individuals experience as a result of selecting a mate or friend are likely to carry over and impact experiences in other concurrent and subsequent

relationships, as outlined by attachment theory and demonstrated empirically by research reviewed previously (e.g., Klohnen & Bera, 1998).

Various factors have been shown to influence selection of dating partners. On the one hand, research has found that people prefer to affiliate with people who are similar to themselves (e.g., Holland, 1966; Kandel, 1978; Kohn & Schooler, 1983), and choose marriage partners who are similar to them in a variety of domains, such as physical appearance, intellectual abilities, and personal characteristics (Epstein & Guttman, 1984; Jensen, 1978; Vandenberg, 1972). On the other hand, studies have found that complementarity between members of a couple, not similarity, plays a role in how much satisfaction members experience in their interactions (Dryer & Horowitz, 1997).

Is there any evidence that past relationship experiences influence the dating partners that people select? A recent study by Zayas and Shoda (2002) utilized a mock Internet dating service to explore the relationship between past relationship experiences and preferences in dating partners. Among females, self-reports of receiving psychological abuse were positively related to selection of personal ads, which had been rated by a separate sample of women, as describing potentially abusive males. Among males, self-reports of inflicting psychological abuse were related to selection of personal ads describing a female with an adult attachment style with a negative view of self – associated in past research (O' Hearn & Davis, 1997; Henderson, Bartholomew, & Dutton, 1997) with abusive relationships.

Research by Swann and colleagues (1992) suggests that one reason that accounts for who people select for dating partners involves self-verification processes: People tend to seek out self-confirming relationships. Consistent with self-verification theory, one study (Swann, Stein-Seroussi, & Giesler, 1992) found that individuals with positive self-concepts preferred to interact with an evaluator, who described them favorably, whereas individuals with a negative self-concept preferred to interact with an evaluator, who described them unfavorably. Moreover, analysis of the verbalized thoughts participants

made during the decision-making process revealed that individuals who chose self-verifying partners were more likely to do so based on epistemic and pragmatic reasons.

According to Buss (1987), a second mechanism by which individuals' shape and control their environment is through *evocation.* Individuals can unintentionally evoke or elicit responses from their present situation. Individuals evoke actions and strategies consistently and predictably in others as a result of their enduring physical (e.g., appearance, racial and gender identity, occupational role) and psychological features. For example, competitive individuals tend to elicit competitive behaviors in other people (even when interacting with cooperative individuals) (Kelley & Stahelski, 1970). This interaction pattern occurs without the awareness of the competitor.

Evocation processes may also play a role in selection of dating partners. In a recent study, Zayas and Shoda (2002) found that sometimes individuals do not seek situations in as much as situations (i.e., other people) seek them. That is, females with a fearful or preoccupied attachment style – attachment styles associated with receipt of abuse in previous literature (e.g., Henderson, Bartholomew, & Dutton, 1997; O'Hearn & Davis, 1997) – were preferred more often (compared to females with a secure or dismissing attachment style) by males who self-reported engaging in psychologically abusive behaviors. Thus, these women were not selecting abusive males, but their personal characteristic (i.e., their attachment style reflecting low self-esteem) attracted and elicited the attention of males with a prior history of psychological abuse.

The third mechanism for influencing situations described by Buss (1987) is *manipulation*. Manipulation refers to intentionally modifying, changing, and influencing others who are in the present environment. For example, an individual who is characterized as "social" might be the one to suggest moving a seminar to the local tavern (Snyder, 1987). Buss and colleagues (Buss, Gomes, Higgins, & Lauterbach, 1987) conducted a series of studies to examine the types of manipulation strategies that people use, as well as how the various strategies relate to situational demands and personal

characteristics. Not only were six tactics of manipulation identified (i.e., charm, silent treatment, coercion, reason, regression, debasement), they also found stable individual differences in strategies employed, and more importantly, that individual differences in manipulation strategy were related to individual differences in personal characteristics. For example, individuals who scored high on neuroticism tended to also used regression (e.g., pouting) and silent treatment as ways to manipulate and control the behaviors of others.

In a separate study also examining how individuals shape the behaviors of others either through evocation or manipulation, Collins and Feeney (2000) found that individuals with an avoidant attachment style (i.e., hypothesized to hold a view of others as unsupportive) engaged in less effective support seeking behaviors, which resulted in less helpful forms of caregiving from partners. The findings from Collins and Feeney's study highlight the dynamic interactions between the person and the situation. That is, individuals with an avoidant attachment style shape their environment in such a way as to magnify, or make accessible, the thoughts and feelings associated with a view that other people are unsupportive and rejecting. Research by Swann and colleagues also suggests that individuals manipulate their social world so that it confirms their views of self. In one study on married couples, individuals with a positive view of self were more committed to relationship partners that confirmed their view of self. Likewise, individuals with a negative view of self were more committed to spouses who evaluated them negatively, and were more likely to withdraw from spouses, who evaluated them positively (Swann, Hixon, Gregory, & de la Ronde, 1992).

Person-situation linkages. Although the present paper has reviewed three ways that individuals are able to influence the situations they encounter as if the processes occur one at a time, research suggests that multiple processes are in all likelihood operating simultaneously in order to generate individual differences in the situations encountered. For example, individuals may be manipulating their environment as well as eliciting certain reactions from others. Moreover, the situations that individuals select, evoke,

and/or create are assumed to be those that set in motion processes of social interchange that reinforce and sustain personal characteristics and initial tendencies (e.g., Emmons, Diener, & Larsen, 1986; Snyder & Ickes, 1985; Buss, 1984). It is not therefore surprising that research has found evidence for strong person-situation linkages.

Perhaps most relevant to research on stable individual differences in situations encountered, as well as highlighting the multiple processes operating simultaneously, is the work of Bolger and his colleagues (Bolger & Schilling, 1991; Bolger & Zuckerman, 1995). They hypothesized that neuroticism – assessed as a global personality dimension – may affect and reflect individuals' affective lives through two potential mechanisms: leading them to encounter stressful events more frequently (exposure hypothesis) or increasing their reactivity to stressful events (reactivity hypothesis). Using daily diary studies of couples, Bolger and Schilling (1991) found that people who score high in neuroticism were different from those who score low both in exposure and reactivity.

Recent work by Gable, Reis, and Elliot (2000) examined individual differences in situations encountered as well. Through a series of daily diary studies, Gable and colleagues were interested in teasing apart exposure versus reactivity hypotheses: Specifically, do people high in the appetitive-approach system (Behavioral Activation System, or BAS), which is sensitive to rewards, encounter more positive events (i.e., rewards) in their life leading them to experience higher overall levels of positive affect or do they just feel more positive affect in response to the same number of positive events? Conversely, do people high in aversive-avoidance system (Behavioral Inhibition System, or BIS), which is sensitive to punishments, encounter a greater frequency of negative life events (i.e., punishment) elevating their overall level of negative affect or do they just experience stronger negative affective reactions in response to the same number of negative events? Results supported the exposure hypothesis: People with high BAS reported greater exposure to positive events, a significant percentage of which were social and interpersonal in nature (e.g., going out with friends). In contrast, people high in BIS encountered a higher frequency of negative events. Results also partially supported

the reactivity hypothesis: People high in BIS also experienced greater levels of negative affect in response to negative events.

The picture thus far is one where individuals influence their environment in a number of ways (e.g., through selection, evocation, and manipulation), and where these individual differences in situations encountered amplify personal tendencies, as reflected by a person's most chronically available thoughts, feelings, goals, and values. The personality system that develops between the individual and reliable features in his or her environment may be one where the situations encountered allows for the activation of the subset of affects and thoughts that the individual most commonly experiences, and which will lead to expression of habitual, familiar, and well-practiced behaviors. Indeed, there is an abundance of research providing evidence consistent with this assumption. Tidwell, Reis, and Shaver (1996), for example, through the use of a diary methodology, found that individuals with an avoidant attachment style reported fewer instances of participating in social activities in their day-to-day lives, suggesting that they may arrange social activities to decrease interpersonal closeness. In addition, compared to secure and preoccupied individuals, avoidant individuals systematically focused on opposite-sex, nonromantic interactions, suggesting selective avoidance of intimacy.

That individuals shape their social world in a way that reflects and reinforces their underlying cognitive-affective processes is also exemplified by research on self-fulfilling prophecy in the rejection sensitivity dynamic. Both experimental and daily diary studies indicate that during conflicts, high RS men become jealous and controlling and high RS women behave in more unsupportive and hostile ways towards their partners (Downey & Feldman, 1996; Downey, Freitas, Michealis, & Khouri, 1998). As a consequence, partners show greater anger, resentment and relationship dissatisfaction, which, in turn leads to actual rejection and relationship break-ups in the long-term for people high in RS (Downey, et al., 1998). In summary, then, it is possible to see a vicious cycle where HRS individuals' expectations of rejection become activated during conflict and lead to

negative behaviors, which ironically reinforce and confirm their initial fears and perpetuate expectations of rejection.

The overall pattern that emerges from this set of studies support the notion that observable individual differences in behavior stem at least partly from stable individual differences in the social situations that people encounter. That is, people's personal characteristics, regardless of whether they are conceptualized as cognitive-affective processes or as global personality dimensions, may predispose them to create certain situations in their environment (by seeking them out, creating, or evoking them). Their environment in turn, tends to magnify, reinforce, or sustain these personal characteristics.

Phase 2: The Dyadic System

Whether stated explicitly or implicitly, many theories have assumed that a person who consistently behaves toward others, over time and across a variety of situations, in a particular manner (e.g., aggressively) is not just expressing a global behavioral predisposition (e.g., a tendency to behave aggressively), but rather the person's behavior reflects interpersonal dynamics. Thus, several researchers have suggested viewing the relationships between two individuals as an interpersonal system (e.g., Margolin, 1981; Raush, Barry, Hertel & Swain, 1974), where the behaviors of one partner are not considered in isolation, but examined in relation to one another. In turn, what emerges from the resulting interpersonal system are stable and consistent interaction patterns between the two individuals. The personality-in-context approach builds upon these and other previous frameworks by suggesting that one way to understand the dynamics that generate dyad-specific characteristics is by assuming that a large part of one partner's environment is the behavior of other partner. By conceptualizing a dyadic system as the "interlocking" of two minds, it is thus possible to further understand how the stability of the person emerges, as well as understand why and how couples develop stable interaction patterns over time as suggested by a plethora of recent research.

Theorists and researchers have long acknowledged that much of the consistency and coherence of the individual exists within, and as a result, of interpersonal relationships (e.g., Caspi & Herbener, 1990; Gottman, 1998; Maccoby, 1990; Patterson 1982). That is, qualities normally attributed solely to the individual (e.g., behavioral consistency, frequency of expressing a certain behavior) arise from intraindividual cognitive-affective dynamics as well as stable individual differences in situations encountered. Using Q-sort data obtained through longitudinal studies of couples (assessed in 1970 and 1981), Caspi and Herbener (1990) found that individuals, who married spouses with a similar personality organization, were more likely to show consistency in their own personality across adulthood. The authors, providing a relational approach to understanding individual continuity and change, suggested that personality stability is possible because individuals create environments (through selection of mates, friends, occupations, and hobbies) that are compatible with their personal characteristics. These environments, in turn, are those that set in motion processes of social interchange that reinforce and sustain personal characteristics and initial tendencies (e.g., Emmons, Diener, & Larsen, 1986; Snyder & Ickes, 1985; Buss, 1984).

Behavioral interactions. An implicit assumption among such approaches to interpersonal relationship functioning, as well as the personality-in-context approach is that the relationship between two individuals is not simply "a common context." Facilitated by the development of sophisticated observational and statistical methods, recent research has begun to examine complex behavioral *interactions* and dynamics, focusing on the dyad as the unit of analysis rather than the individuals of the dyad in isolation (see Gottman, 1998 for a review of the study of dyadic interactions; Karney, 2001; Karney, Bradbury, & Johnson, 1999; Gonzalez & Griffin, 1999; Gonzalez & Griffin, 1997; Griffin & Gonzalez, 1995; Karney, & Bradbury, 1995; Ickes & Gonzalez, 1994).

Studies on behavioral interactions within a dyad acknowledge how one partner's behaviors are heavily influenced by sequential and temporal ordering of the other partner's behaviors and events. Indeed, people often describe their own behaviors within

their relationship in terms of *if...then...* contingencies, describing interactions with statements such as "*if* my partner behaves X, *then* I behave Y." Research has found evidence that certain behavioral interactions (e.g., *if* one partner behaves X, *then* the other partner behaves Y) are related to relationship outcomes (e.g., relationship satisfaction, conflict). For example, demand/withdraw interactions, which are characterized by one partner demanding discussion of a relationship problem, while the other partner remains relatively silent and withdraws to avoid the discussion, is a behavioral sequence associated with unhappy marriages and a decline in relationship satisfaction over time (Christensen & Heavey, 1993; Christensen & Heavey, 1990; Levenson & Gottman, 1985).

Research examining the interaction patterns of couples over a short period of time are extremely consistent with the central assumption of the model, namely, that one partner's behavior is a significant part of the other partner's situation, and that after repeated encounters with the same type of behavior, stable interaction sequences between both members of the dyad develop. One study found that distressed couples showed negative reciprocity (i.e., one partner expresses negativity and the other partner responds in kind), whereas nondistressed couples did not (Margolin & Wampold, 1981). Similarly, seventeen interaction sequences have been found to distinguish distressed from nondistressed couples (Revenstorf, Vogel, Wegener, Halweg, & Schindler, 1980). For instance, Revenstorf and colleagues found that in distressed couples, one partner's positive statement was followed by no immediate response from the other partner, whereas in nondistressed one partner's positive statement was followed by a positive statement by the other partner. Yet another interaction sequence identified was that in distressed couples, one partner's negative statement was followed by a negative response from the other partner, whereas in nondistressed couples a negative statement was followed by no immediate response. In addition, Revenstorf and colleagues found that after a problem was expressed, it was followed by a negative response in distressed couples, and a positive response in nondistressed couples. One conclusion that can be drawn from these basic findings is that greater reciprocated negative affect in interactions

leads to negativity as an "absorbing state" for dissatisfied couples (e.g., Gottman, 1998). Moreover, the negative state is one that is difficult to terminate once it begins.

On a related note, although couples, much like individuals, are likely to encounter different situations in their everyday lives, one thing is certain, according to Gottman and his colleagues, both happy and unhappy couples have conflict and disagreement (p. 28, Gottman, 1994). The distinguishing feature of relationship functioning, however, is in *how* couples deal with the situation. In unhappy couples, disagreement is more likely to lead to a series of destructive behaviors, referred to as "The Four Horsemen of the Apocalypse," which have also been linked to a predictable pattern in the deterioration and failure of marriages. Whereas in happy couples disagreements and conflict lead to talking openly about them, among unhappy couples they do not, leading to attacking behaviors (i.e., complaining about a person's character rather than a behavior), contempt (i.e., intention to insult, deprecate, and psychologically abuse the partner), defensiveness (e.g., denying responsibility, counter-attacks), and stonewalling behaviors (i.e., when a partner stops communicating and responding).

While most of this research has focused on behavioral interactions distinguishing happy from unhappy couples, some findings also suggest that the personal characteristics of the individual members of the dyad are associated with specific behavioral interaction patterns. In one study, among violent husbands, wife withdrawal was a significant predictor of violence for males with a preoccupied attachment style, whereas wife defensiveness was a significant predictor for males with a dismissing attachment style (Babcock, Jacobson, Gottman, & Yerington, 2000). It is noteworthy that these interaction patterns are consistent with attachment theory's assumption that for preoccupied individuals, fear of abandonment is likely to activate the attachment behavioral system, and for dismissing individuals issues regarding control are assumed to activate the attachment behavioral system.

In addition, research has found that qualities of relationships, such as satisfaction and conflict, emerge from the interaction of both members' unique cognitive-affective processes. For example, when members of a dyad hold goals that differ from one another conflict may result (Christensen & Heavey, 1993; Surra & Longstreth, 1990; Lamke, Sollie, Durbin, & Fitzpatrick, 1994). Also, although compatibility of specific cognitions among partners may increase positive relationship functioning, a general sense of understanding and common interest, despite specific contents of cognitions, may also increase positive outcomes. For example, research has found that happy spouses were more likely to project their own thoughts onto their partners, resulting in more assumed similarity (e.g., Thomas, Fletcher, & Lange, 1997; Murray et al., 1999).

Situations of interdependence and dyadic interactions. Interdependence theory (Kelley, 1979; Kelley & Thibaut, 1978) is primarily concerned with *situations of interdependence* –situations in which the behavior of each partner influences the outcomes (i.e., rewards, such as pleasure and gratification, as well as costs, such as physical or mental effort, pain, embarrassment, anxiety) of the other partner (e.g., situations involving conflict of interests). Although not focusing on relationships per se, to the extent that situations of interdependence are at the core of close intimate relationships, interdependence theory is particularly relevant to the present approach.

First, interdependence theory assumes that the personal significance of one partner's behavior increases as the relationship develops overtime. Over time, as a relationship progresses the cost of leaving the relationship increases, resulting in a decrease in the outcomes associated with alternative relationships. Consequently, as the outcomes in one's current relationship exceed the outcomes in an alternative relationship by more and more, partners become more dependent on the relationship as unique source of experiences (Thibaut & Kelley, 1959; Kelley & Thibaut, 1978). This phenomenon is indeed consistent with one of the central assumption of the personality-in-context approach, namely, that within close, intimate relationships one of the most salient and significant features of a person's situational input is the behavior of his or her partner.

A second assumption shared by the current approach is interdependence theory's suggestion that patterns of interdependence are shaped by each person's dispositions, strategies, and goals, and consequently impact the functioning of the dyadic relationship. How do patterns of interdependence reflect the unique qualities of each person? Individuals at first are assumed to view situations of interdependence from a purely self-interested perspective. Their preferences, outcomes, and behavioral options are conceptualized in terms of a matrix, referred to as the *given* matrix. In situations of interdependence, the given matrix undergoes a transformation process in which other factors such as the partner's well being and social desirability are taken into account. The resulting matrix, referred to as the *effective* matrix, represents each person's desire to maximize partner's outcome, joint outcomes, and achieve equity (Kelley & Thibaut, 1978). It is the effective matrix that guides actual behaviors within situations of interdependence. Thus, similar to the approach of the present paper, through the transformation process, interdependence theory assumes that the interaction (*I*) between two individuals of a dyad (person *A* and person *B*) as a function of both individual's personal characteristics in relation to one another within a particular situation of interdependence (*S*). This may be represented as $SAB \rightarrow I$ (Holmes, 2000).

Illustrating the utility of applying principles of interdependence to understanding relationship functioning is research by Rusbult and colleagues on accommodation situations. People face accommodation situations when a significant other in an interdependence relationship behaves in a negative, destructive way and the other partner responds by accommodating (i.e., inhibits the impulse to respond destructively) (e.g., Rusbult, Johnson, & Morrow, 1986; Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991). Normally, when confronted with a negative behavior, people respond in kind. However, in situations of interdependence, individuals often inhibit responding destructively. Rusbult and colleagues suggest that via transformation of the given matrix, which is based on purely self-interests, to the effective matrix, which is based on joint-interests, individuals take into account the perspective of their partner. Consequently, this leads individuals to accommodate rather than retaliate in close relationships. Indeed, research

has shown that inhibition of automatic destructive response tendencies in accommodative dilemmas is contingent upon activating a "partner-perspective" (Arriaga & Rusbult, 1998). Moreover, taking into account one partner's thoughts and feelings not only inhibits responding destructively, but it promotes relationship preserving processes, such as making more benign attributions, engaging in constructive problem-solving strategies, and experiencing greater feelings of commitment to the relationship (Arriaga & Rusbult, 1998).

In summary, the personality-in-context approach is highly consistent with other theories of personality, social processes, and relationship functioning, such as interpersonal expectancies and relational schemas, self-fulfilling prophecies, attachment theory, rejection sensitivity, and interdependence theory. It provides one framework from which to link research on behavioral interactions (*Phase 2*, discussed above) with findings from social cognition (discussed in *Phase 1, Aspect 1*) to studies on social psychological processes (discussed in *Phase 1, Aspect 2*).

Personality phenomena emerging from the interpersonal system

The challenge and ultimate goal of personality psychology is twofold: first, it aims to identify the underlying organization that can account for each person's uniqueness, that is, individual differences among people. Second, this system has to account for the stability and coherence of a person's behaviors, on the one hand, and the vast range and variability of experiences – thoughts, feelings, and behaviors – that characterize a person's life, on the other.

Reflecting the complexity of the task, the personality construct has come to be associated with different observable aspects, and not surprisingly has led to different conceptualizations of personality. For example, one observable aspect most commonly associated with personality is individuals' overall level of observed behavior – just how often, how intensely, or to what degree, a person displays a particular behavior. Describing a person as "violent" suggests that the person behaves violently more often

relative to other people. Yet, a second observable aspect that has been thought to reflect "personality" is the characteristic situations in which individuals are likely to be found. Individuals differ in the situations they select, in the ways they manipulate responses from their social world, and in the reactions that they unintentionally elicit in others. For example, extraverted individuals are assumed to prefer social situations, while introverts are assumed to prefer solitary activities. That situations are associated with personality is also illustrated in the effect a person has on others (i.e., the reactions they elicit) (e.g., Allport, 1937). For example, a "charming" person is thought to be a person who has the effect of pleasing and delighting others. Finally, more recently, researchers have suggested that *if...then...* contingencies also reflect "personality." For example, a "self-confident" person is someone who, *if* in a high-pressure or challenging situation, *then* rises to meet the challenge, while the person's behavior may be no different from others when not in a high pressure or high challenge situation. Indeed, studies have shown that people's lay theory of personality involves inferring others' cognitive-affective processing (e.g., construals, goals) that can account for observable *if...then...* situation-behavior patterns (Shoda & Mischel, 1993). Moreover, making inferences about a person's cognitions and affects is likely to increase (relative to situation-free trait inferences) as the target person becomes more personally relevant (Idson & Mischel, 2000).

Such observable aspects (e.g., overall level of behaviors, situations encountered, and *if...then...* contingencies) are referred to as *personality phenomena*. Although traditional approaches to personality assume that these phenomena emerge from processes that reside primarily within the person, the present paper proposes instead that they arise from a dynamic system that incorporates systematic intraindividual differences, as well as stable situational differences. In other words, many aspects of personality are characteristics of an interpersonal system(s), not of an individual in isolation. For this reason, the present paper has deliberately referred to a person's cognitive-affective processing system as their "mind" rather than as their personality, highlighting that observable aspects of personality emerge from the continuous interactions between a

person's unique characteristics (i.e., CAPS network), as well as the situations in which they tend to find themselves in.

The personality-in-context framework suggests one reason why various approaches within the field of personality may, at first glance, appear incompatible. Although mean level of behaviors, situations encountered, and *if...then...* contingencies are all personality phenomena, they reflect different aspects of the underlying system. One aspect refers to individual differences in the situations a person encounters, or the "*if*'s," while another refers to the behaviors, or the "*then*'s," and yet another aspect refers to the *if...then...* contingencies rather than the frequencies of the "*if*'s" and "*then*'s." To the extent that various approaches differ in their focus, it is not surprising that often they infer different conclusions about the organization accountable for individual differences in behavior.

On a final note, what does the personality-in-context model say about the "existence" of personality? The view of personality proposed is akin to the light reflected by an object. In this analogy, qualities that uniquely characterize an individual are analogous to the surface characteristics of a physical object, the individual differences in situations encountered is the light, and the observable aspects of personality is the light that is reflected. Just as the light reflected by the object depends on the object's surface structure but also on the nature of the light that illuminates the object, so too individual's behaviors that are typically attributed to his or her "personality" depend on individual's unique cognitive-affective processing structure and the situations they routinely encounter in everyday life. Unlike the color analogy, however, individuals' behaviors in turn influence the situations likely to be encountered in the future, making it difficult to locate "personality" at any point in the continuous chain of interactions. Perhaps it would make sense to say that "personality" is nowhere, and everywhere, as it is an emergent property of the *entire* system consisting of interaction partners.

Relativism of personality phenomenon and implications for personality change over time

One important implication of the personality-in-context approach is that one cannot predict how often a person will behave in a particular manner, unless one knows something about the types of situations the person is likely to encounter in their everyday life, and the frequency in which they encounter them. In order to predict how often a person will behave in a particular manner, one needs to know something about her as a person (e.g., her *if...then...* situation-behavior contingencies, which are assumed to reflect her CAPS network), as well as the situations she is likely to encounter in everyday life (i.e., the nature and frequencies of *if*'s).

For example, it is possible that two people, person *A* and person *B*, who are identical in terms of their cognitive-affective dynamics, or *if...then...* contingencies, behave quite differently. To illustrate, suppose that both person *A* and *B* have a CAPS network associated with an "*if* rejection *then* violence" situation-behavior contingency. Also, suppose that person *A* tends to select dating partners who tend to become cold and distant as a result of conflict, while person *B* tends to select dating partners who make extra efforts to reach out under such circumstances. As a result, person *A* is more likely to face interpersonal situations that can be perceived as rejecting and thus is more likely to behave in a violent manner compared to person *B*, who encounters fewer interpersonal situations that activate the cognitive-affective dynamics producing a violent reaction. Thus, by simply looking at one aspect of the system (i.e., only noting individuals' overall tendencies for engaging in violent behaviors, or only assessing *if...then...* contingencies), one may draw very different conclusions about the unique qualities of a person. It is only by knowing the frequencies of *if*'s (i.e., situations), along with the *if...then...* contingencies (i.e., CAPS network) can one predict the frequencies of *then*'s (i.e., behaviors).

Does the personality-in-context approach inform the processes that promote stability versus change in behaviors throughout a person's lifespan? The type of change

discussed so far, which involves moment-to-moment variability in thought, feelings, and behaviors that produce stable *if...then...* relationships, is distinct from change that is enduring and that occurs over time. The latter is likely to involve change in the structure of an individual's CAPS system itself (e.g., new or altered patterns of associations among cognitions and affects), or an enduring change in the types of situations a person encounters (e.g., change in dating partner, divorce, birth of a child). Although long-term structural changes are beyond the scope of the present article, there are some clear implications from the approach presented here.

As already discussed one factor that may either promote continuity or promote change is the dating partners individuals select. Selection of dating partners may have the effect of exposing an individual to a *series* of future social situations, while at the same time making other situations less likely. To the extent that individuals select romantic partners that reinforce their own personal tendencies, continuity and behavioral consistency throughout the lifespan may be promoted (e.g., Caspi & Bem, 1990; Caspi & Herbener, 1990). Individuals are of course capable of changing. To the extent, that individuals select romantic partners that provide situations that do not necessarily reinforce personal tendencies or generate destructive interpersonal dynamics, the social and interpersonal situations that the romantic partner provides may lead to long-term change. That is, at the individual and dyadic level, successful, long-term change may be facilitated when the interpersonal system of which an individual is a part is also altered, affecting the features of the physical and psychological situations that the person encounters. For example, a person may come to learn that relationships with certain dating partners lead to unsatisfactory outcomes (e.g., she feels worthless and depressed when her partner is controlling and jealous). Such a realization may lead to changes in the type of partners chosen: Instead of continuing to select dating partners with similar characteristics, she may make a conscious effort to date romantic partners with other qualities – qualities that will not activate feeling and thoughts of low self worth.

CHAPTER 2: Subliminal Priming with Names of Significant Persons

"... we can think of a person in solitary confinement for the rest of his life, but who still has himself as a companion, and is able to think and to converse with himself as he had communicated with others."

Mead, 1934, p. 140

Are significant people are on the "tip of one's mind"? That is, are individuals who are personally significant, such as a parent, romantic partner, or close friend, always present in a person's unconscious mind even if they are not present in a person's immediate physical environment? Research in social cognition has repeatedly found evidence that the mental representation one has of a significant person influences how information is processed at an automatic and unconscious level (e.g., Baldwin, Carrell, & Lopez, 1990). In stark contrast, however, recent research focusing more exclusively on unconscious cognition has found that unconscious evaluative priming occurs only when primes are *practiced* (i.e., shown visibly as targets to be classified during practice trials). Unconscious priming does *not* occur, or occurs at much weaker levels, when primes are *not practiced* (i.e., never shown visibly as targets during practice trials). How does one reconcile these two distinct, and seemingly contradictory, findings? One way of resolving this discrepancy involves the distinction between chronic and temporary accessibility (e.g., Bruner, 1957; Higgins & King, 1981). In particular, research in social cognition has used primes that refer to chronically accessible constructs (e.g., a well known personally significant individual). Research on unconscious cognition, on the other hand, has used primes that do not necessarily refer to chronically accessible constructs and have manipulated the temporary accessibility of these generic primes instead.

One of the goals of the present paper was to apply the most recent methods in the assessment of unconscious cognition to the interpersonal domain and revisit the question: Are aspects associated with significant persons, such as evaluations and gender, processed unconsciously? In two experiments, names of liked and disliked significant persons were used as masked primes that were never presented visibly as targets. The

extent to which the evaluations associated with these primes produced unconscious evaluative priming effects was assessed. In addition, the present experiments also examined unconscious gender priming. Although gender is a salient attribute, particularly within interpersonal contexts, few studies have examined whether gender is processed unconsciously. The present experiments, therefore, examined whether the difference observed between *practiced* and *not practiced* primes observed in the evaluative priming tasks extends to gender priming tasks and whether names of significant men and women, which are never presented visibly as targets, produce unconscious gender priming effects. Finally, several theories on interpersonal behaviors, as well as social cognition hypothesize that there are *individual differences* in various aspects related to mental representations. The present experiments examined the relationship between the extent to which names of significant persons are processed unconsciously and individual differences in social avoidance and distress.

Unconscious Priming

By definition unconscious cognition refers to the processing of information that occurs outside of conscious awareness. Among the first studies to observe this phenomenon are Kunst-Wilson and Zajonc's "exposure breeds liking" studies (1980). Pictures of shapes were presented to participants subliminally (i.e., presented for a duration time that is shorter than the time required for the stimuli to be consciously apprehended). Participants were then presented with an "old" picture (one that had been presented subliminally) and a "new" picture (one that had not been presented). Although participants were not able to identify which of the two pictures had been presented previously, they indicated liking the "old" picture better than the "new" picture. Kunst-Wilson and Zajonc interpreted these data as suggesting that people's evaluative reaction to stimuli does not depend on their conscious awareness of the stimuli. Subsequent studies have also found support that unconscious cognition occurs independently of conscious apprehension (Seamon, Brody, & Kauff, 1983; Bargh, Litt, Pratto, & Spielman, 1989) and that it may play a role in attribution processes (Taylor & Fiske,

1978), impression formation (Higgins & King, 1981), and emotional experience (Strauman & Higgins, 1987).

Chronically Accessible Constructs and Unconscious Cognition

Unconscious processing of information is assumed to be even more robust for information that is personally significant. Past theorizing and research on construct availability and accessibility (e.g., Bruner, 1957; Higgins & King, 1981), for example, hypothesizes that people develop constructs to represent events and interactions that they encounter frequently (Kelly, 1955). As these concepts are used with greater frequency, they become chronically available, highly accessible and are relied on heavily for the processing of information (Markus, 1977). Because of its effects on the ease in which people process information, chronic accessibility is considered a heightened baseline of construct activation (Bargh, Bond, Lombardi, & Tota, 1986) and has been linked to an ability to process construct-relevant stimuli even without attentional resources (e.g., Bargh, 1982; Bargh & Pratto, 1985; Bargh & Thein, 1985; Bargh & Tota, 1985).

Constructs that are likely to be chronically available and accessible for most individuals are those that involve mental representations of important, signiciant others (e.g., romantic partners and parents). Several theories assume that the key cognitive-affective processes associated with such mental representations operate, for the most part, automatically, without effort or intention, and outside of individuals' conscious awareness (e.g., Baldwin, 1992; Bersheid, 1994; Bowlby, 1969; Crowell & Treboux, 1995). Consistent with these assumptions, Baldwin, Carrell, and Lopez (1990) found that graduate students exposed subliminally (2 ms duration) to a disapproving, personally known, authority figure (i.e., Robert Zajonc, a well reknowned social psychologist) evaluated their own research ideas more negatively compared to those students who were exposed to an approving other. Similarly, in a follow up study, Catholic participants reported less positive self evaluations after being primed subliminally with a photo of Pope John Paul II with a disapproving expression compared to being primed with a photo

of an unfamiliar other with a disapproving expression. This unconscious priming effect was strongest for high practicing (i.e., highly identified) Catholic participants. These studies have been cited frequently as evidence that persons, who are personally significant, are chronically accessible and that information involving such significant persons may be processed without conscious awareness.

Temporarily Accessible Constructs and Unconscious Cognition

Although social and personality psychologists have repeatedly found evidence that unconscious cognition occurs within interpersonal contexts, Greenwald's review of the literature (1992) suggests that the evidence supporting unconscious cognition is mixed, at best. At the core of his critique is Greenwald's main assertion that unconscious cognition appears to occur at low levels of analysis, such as physical features of word parts, rather than at higher, more complex levels of analyses, such as phrases and sentences.

A series of studies were consistent with the possibility that unconscious priming occurs at the level of word parts, not whole word meaning. First, Abrams and Greenwald (2000) found that masked primes (presented for 33 ms with forward and backward masks) referring to pleasant or unpleasant concepts produced evaluative priming effects only when participants had been visibly exposed to the words as targets to be classified during the practice phase of the task. For brevity, these primes will be referred to as *practiced.* In contrast, masked primes produced no, or at best small, evaluative priming effects when participants had *not* never been exposed to the words during the experiment (i.e., as targets to be classified during the practice phase of the task). For brevity, these primes will be referred to as *not practiced.* This *practiced v. not practiced* effect has since been replicated and extended to a size judgment task. In Experiment 2, Abrams and Greenwald (2000) found more convincing support for the hypothesis that unconscious priming occurs at the level of word parts. Masked primes composed of combined opposite-valenced subword parts produced significant priming effects. However, the

effect of the prime was based on the valence of the subword parts, not whole word meaning. For example, the positively-valenced masked prime *smile* functioned as a negatively-valenced prime if the word *sm*ut and b*ile* had been presented visibly as targets to be classified.

Present Experiments

How does one reconcile the finding that primes need to be presented visibly as targets in order to produce unconscious priming effects with research in social cognition repeatedly finding evidence of unconscious cognition? While the methodology used to assess unconscious cognition varies considerably from study to study (e.g., duration of prime, masking procedures, location of prime presentation, outcome measure, and methods used to assess prime visibility) and is likely to contribute to the differences in results observed (for a discussion see Greenwald, 1992), another potentially more psychologically interesting explanation involves the distinction between *chronic* and *temporary accessibility*. The primes used in the experiments producing the *practiced v. not practiced* findings (Abrams & Greenwald, 2000; Damian, 2001) were not personally meaningful to the participants. Unconscious priming occurred only for those words that were made *temporarily accessible* (i.e., these primes were also presented as visible targets to be classified). In contrast, the primes typically used in social cognition experiments tend to refer to concepts that are *chronically accessible*, that is, more personally relevant (e.g., the pope or one's advisor). Thus, one possibility is that while unconscious priming may be driven by lower level analysis of word parts when primes consist of generic (not chronically accessible) words, unconscious priming may be driven by whole word meaning when primes are personally significant (chronically accessible). If this is the case, then primes that refer to a chronically accessible construct should produced unconscious priming effects even if these primes are never made temporarily accessible by presenting them as visible targets. In addition, the extent to which information about significant persons is processed unconsciously may differ depending

on meaningful individual differences, such as social avoidance and distress. The goal of the present experiments is to examine these questions.

Experiment 1

The present experiment used a methodology similar to that described in Abrams and Greenwald (2000) to revisit the question of whether aspects associated with significant persons are processed unconsciously. First, the experiment sought to replicate the few previous findings of a difference in the effect of *practiced* and *unpracticed* primes (Abrams & Greenwald, 2000; Damian, 2001). That is, evaluative priming was expected to occur only for primes that were first classified as visible targets during a practice phase (*practiced* primes), but not for primes that were not classified as targets during the practice phase (*not practiced* primes).

The present experiment then examined the question: Do names of liked and disliked significant persons (i.e., individuals nominated by participants) produce unconscious evaluative priming effects even if these names are not "practiced" (i.e., presented visibly as targets during the practice phase). If significant persons are a highly accessible construct with a heightened activation baseline (Bargh, Bond, Lombardi, & Tota, 1986), then primes that refer to liked and disliked significant persons should produce evaluative priming effects even when not practiced.

Recent research by Zayas and Shoda (2003), however, suggests the possibility that significant persons may be eliciting bivalent responses (i.e., positive as well as negative reactions). If significant persons elicit bivalent reactions at an unconscious level then the valence associated with the prime is ambiguous (classifiable as either positive or negative). Because of the ambiguity associated with the primes, significant persons may not produce the expected evaluative priming effect, even if the names of liked and disliked significant persons are processed unconsciously.

The ambiguity of the valence associated with primes that refer to significant persons is one reason why the present experiments also assessed unconscious *gender* priming. The gender associated with significant persons was assumed to be unambigous. Thus, if significant persons are processed subliminally then the effect may be observed on the gender priming task (i.e., facilitation of the classification of a target as one gender by a prime of the same gender). Most of the research on subliminal priming, however, has assessed evaluative reactions. In particular, no study has examined whether the practiced v. not practiced effects occur on a subliminal gender priming task. This question is also theoretically important because aside from a few studies that have specifically assessed supraliminal gender priming (Akhutina, Kurgansky, Polinsky, & Bates, 1999; Bates, Devescovi, Hernadez, & Pizzamiglio, 1996), most of the research has focused on automatic evaluative priming. The present experiment therefore examined whether the general finding between *practiced* and *not practiced* primes could be extended to subliminal gender priming. Specifically, primes referring to generic male and female names were expected to produce gender priming effects when the primes were also presented visibly as targets (*practiced* primes), but no, or weak, priming effects were expected when the primes were not presented visibly as targets (*not practiced*). In addition, this experiment examined whether primes referring to names of significant others would produce gender priming, even when not practiced.

Method

Overview

The experiment consisted of two sessions scheduled one week apart. Participants were assigned to one of two conditions. One condition was designed to assess evaluative priming, and the other condition was designed to assess gender priming. In the first session, participants in both conditions were asked to reflect on all their relationship experiences and think about all the significant persons in their lives. In the evaluative priming condition, participants were asked to name four liked and four disliked

significant persons. In the gender priming condition, participants were asked to name four men and four women who were personally significant. The names participants generated were subsequently used as stimuli in the priming and perceptibility tasks, which they completed in the second session. At the end of the first session, participants also completed a measure of social avoidance and a demographics questionnaire (described in the procedures and measures section below).

Participants

Eighty-seven University of Washington students enrolled in introductory psychology courses participated in the first experimental session. Seventy-four participants returned for the second experimental session. Of these individuals, 57 participants (41 women and 16 men) completed all aspects of the experiment.[3] The median age of participants was 19 years (*SD* = 1.99 yrs).

Apparatus

Participants completed all aspects of the experiment individually in separate, closed booths on IBM-compatible desktop computers with a Windows 2000XP operating system, a display monitor that measured 36-cm diagonally and operating at a vertical refresh rate of 120 Hz.. The priming and perceptibility tasks were administered using a psychological software program called Inquisit (Draine, S.). For these two tasks, participants indicated responses by pressing the *D* key with a finger of their left hand and the *K* key with a finger of their right hand.

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[3] Although subjects were allowed to name persons who they did not know personally, most participants named people who they did know on a personal level (e.g., friend, parent, teacher). A few subjects named people who they did not know personally. This was particularly the case for the disliked significant person for which a handful of participants named individuals such as Osama bin Laden and Adolf Hitler as disliked significant persons. In order to maintain the level of significance and familiarity relatively the same for all participants as well as within participants (i.e., between liked and disliked significant persons), the data for the individuals who named people who were obviously not close personal acquaintances were excluded. In addition, subjects were excluded if they listed names that include numerical digits (e.g., Grandma1 and Grandma2). Using these criteria, a total of eight subjects were excluded from the analyses. One subject was excluded because his average reaction time on the priming task was greater than expected. Finally, eight subjects were accidentally run through the first session procedures twice.

Procedures and measures

Generating Idiosyncratic Stimuli (First Session)

For the evaluative priming condition, the experimental design required the following three types of primes each with two levels of valence (pleasant and unpleasant): *Significant* primes, *not practiced* primes, and *practiced* primes. *Significant* primes were words that referred to liked and disliked significant persons. These primes were never presented as visible words in the second session. In order to generate liked, positively-valenced *significant* primes, participants were given the following instructions:

> "We are interested in the ways people think and feel towards *significant persons* in their lives. By *significant person*, we mean someone that *you feel very strongly about*, either positively or negatively. Although a *significant person* is someone who is very *important* to you, and has *impacted* you in someway (either directly or indirectly), you do not have to know the individual personally. Please take a moment to reflect on ALL your relationship experiences. Of all the significant people in your life, past and present, please think of TWO male and TWO female individuals that are MOST significant to you and for whom you hold strong POSITIVE FEELINGS toward."

Participants were asked to write the word (limited to 8 characters in length) they used to refer to each significant person (e.g., first name, nickname). Participants completed analogous questionnaires to generate disliked, negatively-valenced *significant* primes. Examples of the types of people participants nominated as significant persons were romantic partner, ex-partners, best-friend, ex-friend and parent.

Not practiced primes were pleasant and unpleasant words. These primes were never presented as visible words in the second session. In order to generate the *not practiced* primes, participants selected four positively valenced words from a list of fifty words that were unambiguously positive (e.g., party, delight, smart, cake) and four negatively valenced words from a list that were unambiguously negative (e.g., harsh, cancer, dead, lousy). The valenced words included in the lists were validated in previous research in terms of valence (Bellezza, Greenwald, & Banaji, 1986). Participants were

instructed to select words that they did not associate with the significant persons named (listed in the previous questionnaire), with themselves, or with other close relatives or friends. The order in which the words were presented was randomized for each subject.

Practiced primes were pleasant and unpleasant words. These primes were also presented as visible target words to be classified during the priming task performed in the second session. *Practiced* primes were randomly selected from the remaining positively valenced and negatively valenced words.[4] Half the participants generated the positively valenced primes first and the negatively valenced primes second. The remaining half generated the primes in the reverse order.

Similar to the evaluative priming task, the gender priming task required the following three types of primes with two levels of gender (male and female): *Significant* primes, *not practiced* primes, and *practiced* primes. The procedures used to generate stimuli for the priming tasks were highly similar to the procedures used in the evaluative condition, except for the following: The *significant* primes referred to significant men and women all of whom were liked. *Not practiced* and *practiced* primes were male names (e.g., Keith, Nick, Douglas, Josh) and female names (e.g., Karen, Beth, Theresa, Jane).

Unconscious Priming Task (Second Session)

In the evaluative priming condition, participants' task was to classify the valence of clearly visible target words that were unambiguously pleasant or unpleasant in meaning. The stimuli used as targets were identical to the stimuli used as *practiced* primes; thus, in the priming task, the *practiced* primes appeared as masked primes *and* as visible targets to be classified.

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[4] In both conditions, the words generated as significant primes were shorter than the not practiced primes and the practiced primes, $F(2, 110) = 18.98$, $p < .001$. The word length was not significantly different between the unpracticed primes and the practiced primes, $F(1, 55) = .07$, ns.

The practice phase for the priming task consisted of three blocks (48 trials each) in which subjects classified visible targets words preceded by a masked row of Xs. Each practice trial consisted of the following sequence: (a) a fixation point ("+") that stayed on the screen for 300 ms, (b) a forward mask with a duration of 300 ms, (c) a row of Xs for 33 ms (intended to acclimate the subject to the masked prime in the subsequent data-collection blocks), (d) a backward mask for 33 ms, and (e) the target word. Prime words were presented in upper-case, and targets in lower-case Arial-font. The forward and backward masks used were similar but not identical letter strings of nine consonants (e.g., XQKXVZWZQ, KXVQWXZQY). Participants were instructed to disregard the sequence of rapidly displayed stimuli that preceded the target word they were to classify. In each of the practice blocks, the *practiced* primes were each presented six times, three times preceding a positive target word and three times preceding a negative target word. The *significant* and *not practiced* primes were not used in the practice blocks in order that participants would not become exposed to these words. In the first practice block, subjects were instructed to take as long as necessary to accurately classify the target word.

In the second and third practice blocks, participants were given the additional instruction to indicate their response within a 133-ms interval, immediately following target offset, during which a black exclamation point ("!") appeared on the screen. The black exclamation mark turned red when a response was made successfully during the 133-ms interval. This interval represented the *Response Window (RW)* (Draine & Greenwald, 1998). The RW obliges participants to classify targets within a specified window of time, thus making them respond more quickly than they normally would be inclined to do. As a result, the RW minimizes problems associated with speed-accuracy tradeoffs by holding response latency relatively constant and allowing priming to emerge mainly in the accuracy dimension. That is, it is assumed that individuals will be more accurate on *congruent* trials than *incongruent* trials.The RW also increases the likelihood that a response will occur before the rapid decay of activation from the masked prime (Abrams & Greenwald, 2003). To give practice in classifying target words during the

RW, the window center–the interval between target onset and the temporal midpoint of the 133-ms interval–was set at 483 ms in the second practice block and at 433 ms in the third practice block. At the start of the first data collection block, the window center was set at 400 ms, and it remained at this setting throughout the remainder of the priming task. In addition, participants were given accuracy feedback after each trial and feedback on the percent of responses made within the window, as well as on mean response accuracy and latency at the end of each practice block.

The data collection phase for the priming task consisted of six blocks (48 trials each). Each trial used for data collection was identical to the sequence presented during the practice blocks. The only difference is that during the data collection, the three types of primes (*significant*, *not practiced*, and *practiced*) each with two levels of valence (positive and negative) were presented as masked primes (in place of the row of Xs). In each of the data collection blocks, each prime was presented twice, once preceding a positive target and once preceding a negative target. Thus, participants completed a total of 288 trials for data collection. Participants were not given accuracy feedback after each trial, but were given feedback at the end of each practice block on the percent of responses made within the window, mean response accuracy and mean latency.

The gender priming task was similar to the evaluative priming task in every respect, except that in the gender task the primes and targets were classifiable as either male or female (in contrast to unpleasant or pleasant). Participants' task was to classify the gender associated with clearly visible target words.

Perceptibility Task

After completing the priming task, participants in both the evaluative and gender conditions performed a perceptibility task that consisted of three 48-trial practice blocks and four 48-trial data collection blocks. Each trial of the perceptibility task was identical to the priming task. The critical difference between the priming task and the perceptibility task was that in the perceptibility task participants were instructed to classify the masked

prime word (instead of the visible target word). Because obliging subjects to respond rapidly severely impairs performance in classifying prime words, participants were instructed to ignore the exclamation point that indicated the RW and take as much time to accurately identify the prime. Finally, in order for participants to obtain practice on the perceptibility task, primes were presented for 133 ms, 100 ms, and 67 ms, in the first, second, and third practice blocks, respectively. For the practice trials (but not the data collection trials), participants received an error message, which appeared in red font, after each trial if they incorrectly classified the prime word. Feedback on accuracy of responding and response latency was provided to participants at the end of each practice and data collection block.

Note that in the evaluative priming condition the *significant* primes were not unambiguously pleasant or unpleasant in meaning. Thus, only the visibility of the *not practiced* primes and the *practiced* primes, both of which were unambiguously pleasant or unpleasant in meaning, were assessed in the perceptibility task. In the gender priming condition, all three types of primes, including the *significant* primes, were unambiguously associated with male or female. Thus, the visibility of all three types of primes was assessed in the perceptibility task.

Results

Reaction times and accuracy were recorded for each trial. Trials with response latencies outside the normal range of time needed to categorize a single trial (i.e., greater than 1000 ms for the priming tasks and greater than 5000 ms for the perceptibility task) were excluded from further analysis. For the evaluative and gender conditions, a d' score was computed as a function of task type (priming and perceptibility) and prime type (*practiced*, *not practiced*, and *significant*). For the priming task, d' reflects the extent to which an aspect of the prime (i.e., valence or gender) influences participants' correct classification of the target word. In contrast, for the perceptibility task, d' reflects the

extent to which an aspect of the prime (i.e., valence or gender) was correctly identified by participants.

In order to assess the extent to which each prime type (*practiced, not practiced,* and *significant*) produced a priming effect when the visibility of the prime word is zero, the d' for the priming task was regressed on the d' for the perceptibility task (see Greenwald and Draine, 1998). Because the intercept is the point on the regression line where the visibility of the prime is zero, a regression line with an intercept significantly above zero is taken as evidence of unconscious priming. This regression analysis was performed for each prime type within the two conditions (evaluative and gender). Recall that visibility of *significant* primes in the evaluative condition was not assessed (see *Methods* section). Thus, the d' reflecting evaluative priming for *significant* primes was regressed on the d' reflecting perceptibility of *practiced* primes. This was considered a conservative strategy: because *practiced* primes had appeared repeatedly as visible targets throughout the experiment, they were expected to be at least as, and possibly more, visible than *not practiced* primes.

In order to examine whether men and women differed in the unconscious evaluative and gender priming effects, a repeated measures ANOVA was performed on the d' for the priming task (controlling for perceptibility). Prime type (*practiced, not practiced,* and *significant*) was entered as the within subjects variable and condition (evaluative v. gender) and sex (male v. female) were the between subjects factors. There was no main effect of sex, $F(1, 53) = .24, p < .005$. There was, however, a significant three-way interaction between prime type, condition, and sex, $F(2, 52) = 6.04, p < .005$. The number of men and women within each condition was small, making it difficult to reliably interpret the meaning of the three-way interaction. Moreover, Experiment 2 did not replicate the three-way interaction, $F(2, 43) = .48$, *ns*. For these reasons, the data are reported for men and women combined. Any statistically significant differences between men and women are noted in the text and figures.

Evaluative priming

Is there evidence of a difference in subliminal evaluative priming effects for *practiced* primes compared to *not practiced* primes? Such findings would replicate previous research. Figure 2.1 shows the scatter plots for the three types of primes used in the evaluative condition. Each data point represents an individual subject. In each panel, the regression line represents the extent to which the valence of the prime influenced the target classification task. The curved lines above and below each regression line represent its 95% confidence interval. A regression intercept significantly above the zero point (i.e., with the lower bound of the 95% confidence interval passes above zero) is taken as evidence that the priming effect is statistically significant. Because the visibility score associated with the intercept is zero, a significant intercept is also taken as evidence of *unconscious* priming. For all three prime types, the slopes (β_1) of the regression lines (reflecting the relationship between prime perceptibility and evaluative priming effects) were small (β_1 ranged from -.13 to +.14) and not statistically significant.

As shown in Figure 2.1a, *practiced* primes produced a significant regression intercept ($\beta_0 = .65$, $t(20) = 7.93$, $p < 10^{-6}$), suggesting that priming occurred when prime visibility was zero. In contrast, as shown in Figure 2.1b, *not practiced* primes did not produce a significant regression intercept ($\beta_0 = .00$, $t(20) = .06$, *ns*), indicating that no priming occurred. In order to test whether the difference between the two intercepts was statistically larger than zero, the effect of prime visibility was statistically removed from each participant's priming effect. A repeated measures ANOVA with these adjusted priming effects as the dependent variable and prime type (*practiced* v. *not practiced*) as the within-subject factor revealed that the difference was statistically significant, $F(1, 21) = 60.80$, $p < .001$.

What happens when primes refer to liked or disliked *significant* persons? Are the evaluative reactions associated with significant persons processed unconsciously even if the primes are not practiced? As shown in Figure 2.1c, *significant* primes produced a

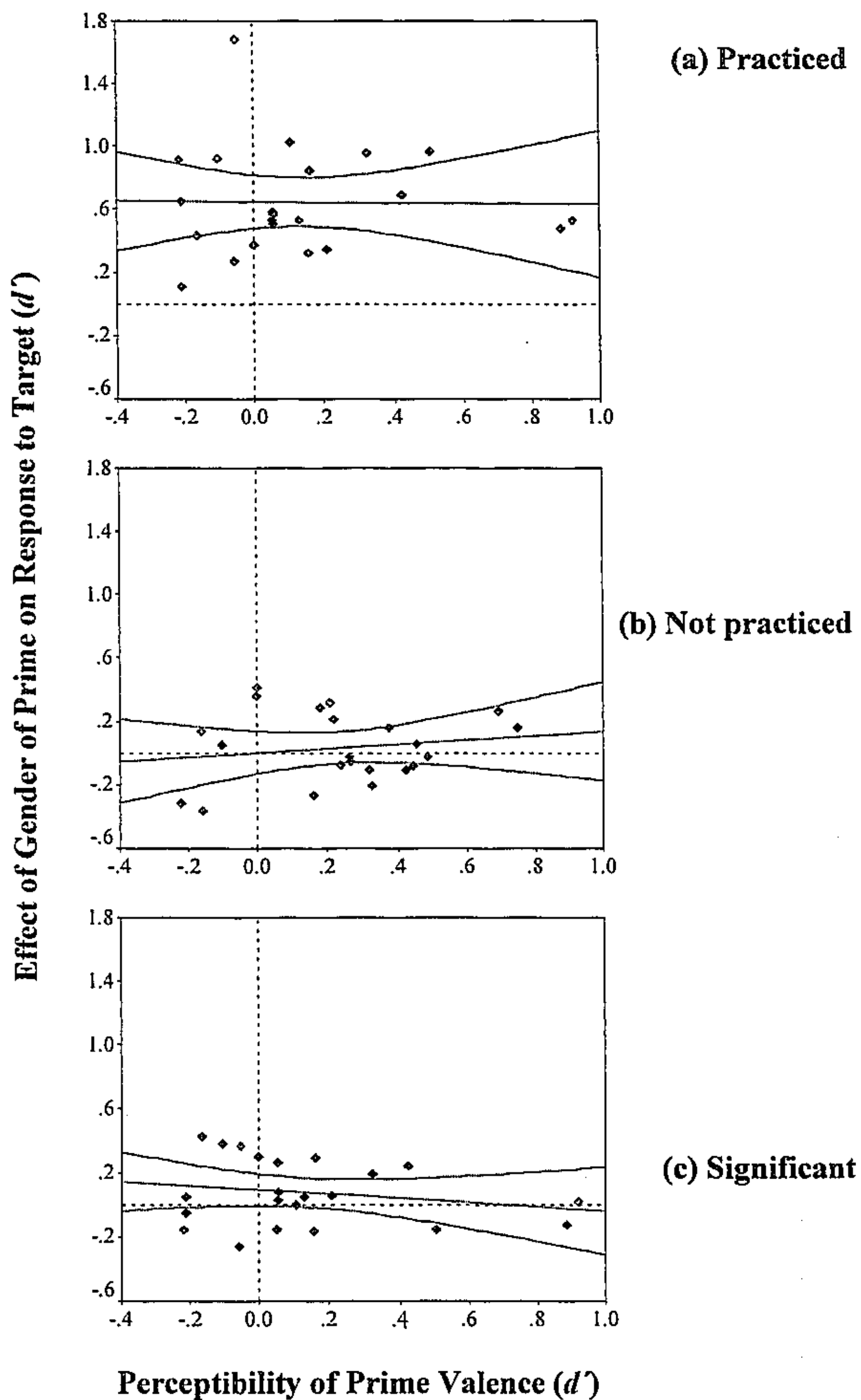

Figure 2.1. Unconscious evaluative priming effects (Ch. 2, Experiment 1). Regression analysis for (a) *practiced*, (b) *not practiced* and (c) *significant* primes on evaluative priming task.

regression intercept that was not significantly greater than zero, although the intercept approached statistical significance ($\beta_0 = .09$, $t(20) = 1.95, p = .07$). This finding indicates that unconscious evaluative priming did not occur for primes that referred to significant persons. A repeated measures ANOVA with adjusted priming effects as the dependent variable and prime type (*significant* v. *practiced*) as the within-subjects variable revealed that the intercept for *significant* primes was significantly smaller than the intercept for the *practiced* primes, $F(1, 21) = 62.32, p < .001$. A similar analysis with prime type (*significant* v. *not practiced*) as the within-subjects variable found that the intercept for *significant* primes was not significantly larger than the intercept for *not practiced* primes, $F(1, 21) = 2.17$, *ns*.

Gender priming

Do the *practiced* v. *not practiced* findings extend to a gender priming task? Figure 2.2 shows the scatter plots for the three types of primes in the gender condition. As shown in Figure 2.2a, *practiced* primes produced a regression intercept that was significantly above zero ($\beta_0 = .63$, $t(33) = 11.81, p < 10^{-12}$), indicating that *practiced* primes produced large priming effects. In contrast, *not practiced* primes produced a regression intercept that was only slightly above zero ($\beta_0 = .11$, $t(33), p < .05$), indicating that the *practiced* primes produced small priming effects. A repeated measures ANOVA performed on the adjusted priming effects and with prime type (*practiced* v. *not practiced*) as the within-subject factor revealed that the intercept for *practiced* primes was significantly larger than the intercept for *not practiced* primes, $F(1, 34) = 59.23, p < .001$.

Is the gender of a prime that refers to a significant person also processed without conscious awareness? As shown in Figure 2.2c, *significant* primes produced regression intercepts that were significantly above zero ($\beta_0 = .16$, $t(33) = 3.39, p < .01$). A repeated measures ANOVA performed on the adjusted priming effects and with prime type

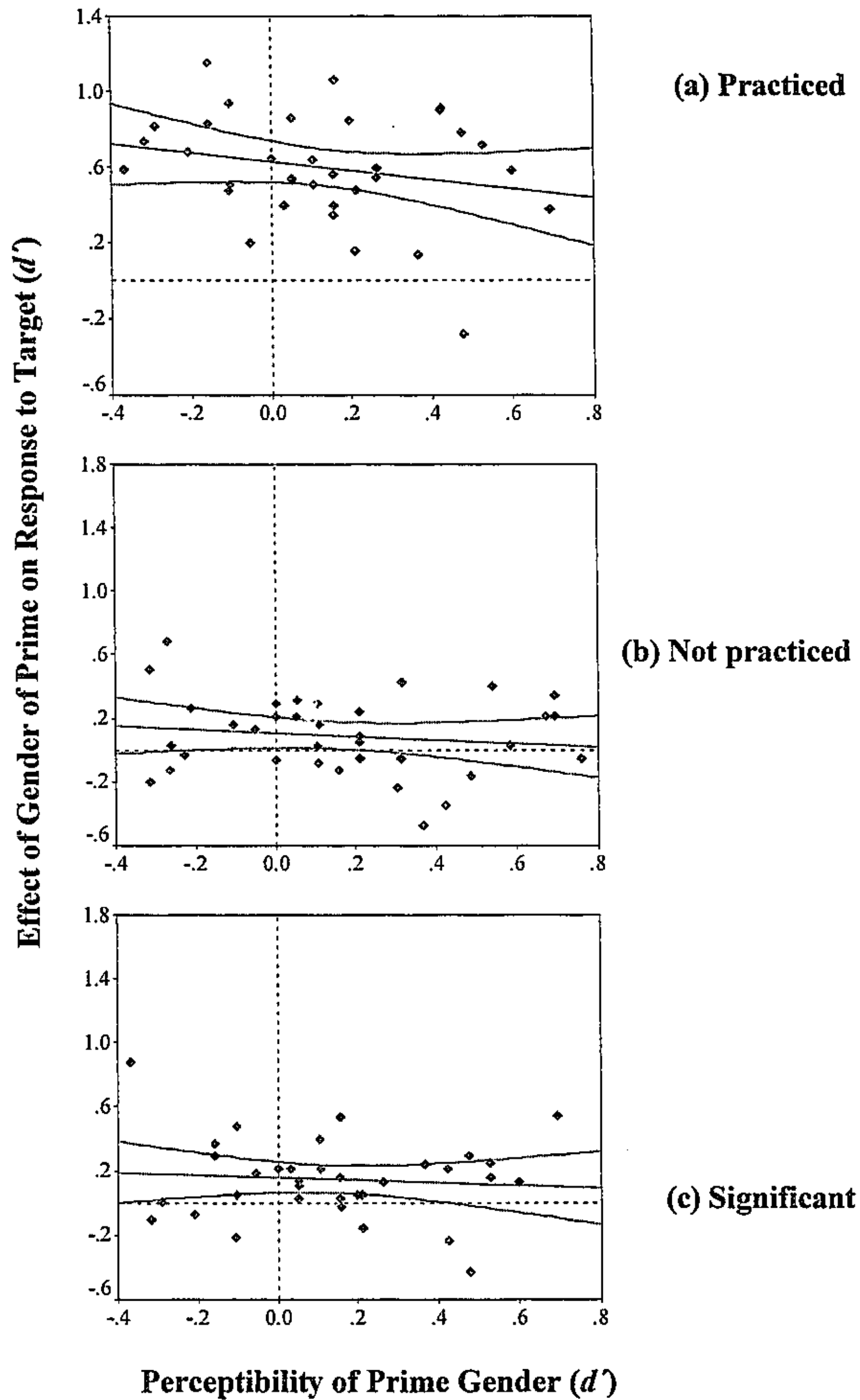

Figure 2.2. Unconscious gender priming effects (Ch. 2, Experiment 1). Regression analysis for (a) *practiced,* (b) *not practiced* and (c) *significant* primes on gender priming task. For all three prime types, the slopes (β_1) of the regression lines were small (β_1 ranged from -.23 to -.01) and not statistically significant.

(*significant* v. *practiced*) as the within-subject factor revealed that the intercept for *significant* primes was significantly less than the intercept for *practiced* primes, $F(1, 34) = 64.54$, $p < .001$. A similarly analysis performed on the adjusted priming effects, but with prime type (*significant* v. *not practiced*) as the within-subject factor revealed that the intercept for *significant* primes was not significantly larger than the intercept for not *practiced* primes, $F(1, 34) = .40$, *ns*.

Discussion

The results of the present experiment found the *practiced v. not practiced* effect occurred on the subliminal evaluative priming task. Insofar as these findings involve generic (not chronically accessible) primes, they replicate results found in previous research. The results also suggest that the *practiced v. not practiced* finding is not limited to evaluative priming tasks but extends to gender priming tasks.

The findings of the present experiment also suggest that primes that refer to liked and disliked significant persons, which were not practiced (i.e., never shown visibly as targets to be classified), did not produce unconscious evaluative priming effects. The gender associated with primes that referred to significant persons did, however, appear to be processed without conscious awareness. Unconscious gender priming effects occurred even though these primes had not been practiced (i.e., visibly presented in the priming task). While the results on the gender task are consistent with the expectation that aspects of mental representations of others are chronically accessible and therefore used in the processing of information, the gender priming effects produced by the *significant* primes were small and did not differ significantly from the gender priming effect for *not practiced* primes.

Experiment 2

Given the relatively small effects obtained in Experiment 1, Experiment 2 sought to replicate these findings and to also include a measure of the perceptibility of the liked

and disliked *significant* person primes used in the evaluative condition. Based on the findings of Experiment 1, the *practiced v. not practiced* effect was expected to occur for both the evaluative priming task as well as the gender priming task. In addition, significant person primes were expected to produce unconscious gender priming effects, but not unconscious evaluative priming effects.

In addition, the present experiment assessed whether there is a relationship between *individual differences* in unconscious priming effects and individual differences in social avoidance and anxiety. That is, are there differences among people in the extent to which aspects of significant persons, such as gender, are processed unconsciously? Several theories of interpersonal behaviors and close relationships hypothesize that individual differences in chronically accessible cognitions and affects underlie differences in interpersonal behaviors and experiences (e.g., Baldwin, 1992). Building on the findings observed in Experiment 1, subliminal gender priming effects for the *significant* primes were expected to relate to the social avoidance and distress (SAD) scale. Because *significant* primes did *not* produce subliminal evaluative priming effects in Experiment 1, individual differences in subliminal evaluative priming were not expected to relate to SAD. Lastly, because *not practiced* primes and *practice* primes were not personally relevant, evaluative and gender priming effects for these primes were not expected to relate to individual differences in SAD.

Method

Participants

Sixty-four University of Washington students enrolled in introductory psychology courses participated in the first session. Fifty-three returned for the second session. Of these individuals, 48 participants (27 women and 21 men) correctly completed all aspects of the Experiment.[5] The median age of participants was 19 years (SD = 4.72 yrs).

[5] Based on the criteria used in Experiment 1, five subjects were excluded because they listed names that include numerical digits and/or names of people who are obviously not close personal acquaintances.

Procedures and Apparatus

The procedures and apparatus were similar to those used in Experiment 1. The only difference was that in the evaluative priming condition the perceptibility of the *significant* primes was assessed. Specifically, after participants performed the perceptibility task that assessed the visibility of the *not practiced* and *practiced* primes, participants performed a perceptibility task in which they were required to identify the gender associated with the significant prime word. Performance on this task was used as the measure of the perceptibility of significant primes in the evaluative condition. In addition, after generating stimulus words in the first session of Experiments 1 and 2, participants completed the 28-item *Social Avoidance and Distress (SAD) Scale* (Watson and Friend, 1969). Past research (Watson & Friend, 1969) has found that people high in SAD tended to avoid social interactions, preferred to work alone, reported that they talked less, were more worried and less confident about social relationships. Participants in the present Experiment indicated true or false the extent to which each of the statements was descriptive of them. For example, individuals scoring high on SAD endorsed statements such as "I try to avoid situations which force me to be very sociable" and "I tend to withdraw from people." In contrast, individuals low on SAD endorsed statements such as "If the chance comes to meet new people, I often take it" and "I usually go to whatever social engagements I have."

Results

In order to examine whether men and women differed in unconscious evaluative and gender priming effects, a repeated measures ANOVA was performed on the d' for the priming task (controlling for perceptibility). Prime type (*practiced*, *not practiced*, and *significant*) was entered as the within subjects variable and condition (evaluative v. gender) and sex (male v. female) were the between subjects factors. There was no main effect of sex, $F(1, 44) = .00$, *ns*, and no significant interactions between sex and any of

the relevant variables. The results for men and women combined are reported in the text and figures.

Evaluative priming

The results of Experiment 2 replicated the pattern of results observed in Experiment 1. As shown in Figure 2.3a, *practiced* primes produced large priming effects as indicated by a nonzero regression intercept ($\beta_0 = .39$, $t(26) = 5.54$, $p < .00001$). In contrast, as shown in Figure 2.3b, *not practiced* primes did not ($\beta_0 = .02$, $t(26) = .34$, *ns*). Similarly, as shown in Figure 2.3c, *significant* primes also did not produce a nonzero regression intercept ($\beta_0 = -.05$, $t(26) = 1.20$, *ns*). A repeated measures ANOVA performed on the adjusted priming effects and with prime type (*practiced* v. *not practiced*) as the within-subject factor revealed that the intercept for the *practiced* primes was significantly larger than the intercept for the *not practiced* primes, $F(1, 27) = 18.25$, $p < .001$. A similar analysis testing the differences in intercept between *practiced* primes and *significant* primes also revealed larger intercepts for the *practiced* primes, $F(1, 27) = 35.28$, $p < .001$. There was no difference between the intercept for *not practiced* primes and *significant* primes, $F(1, 27) = .96$, *ns*.

Gender priming

The results on the gender priming task were also highly consistent with those of Experiment 1. As shown in Figure 2.4a, *practiced* primes produced large priming effects with regression intercepts significantly greater than zero ($\beta_0 = .41$, $t(18) = 6.83$, $p < .00001$). In contrast, *not practiced* primes did not produce statistically significant priming effects ($\beta_0 = .03$, $t(18) = .47$, *ns*). Note that this null finding does *not* replicate the small priming effect observed in Experiment 1, which suggests the possibility that the effect found in Experiment 1 might have been due to chance. A repeated measures ANOVA performed on the adjusted priming effects with prime type (*practiced* v. *not practiced*) as the within-subject factor revealed that the intercept for *practiced* primes was statistically larger than the intercept for the *not practiced* primes, $F(1, 19) = 34.58$, $p < .001$.

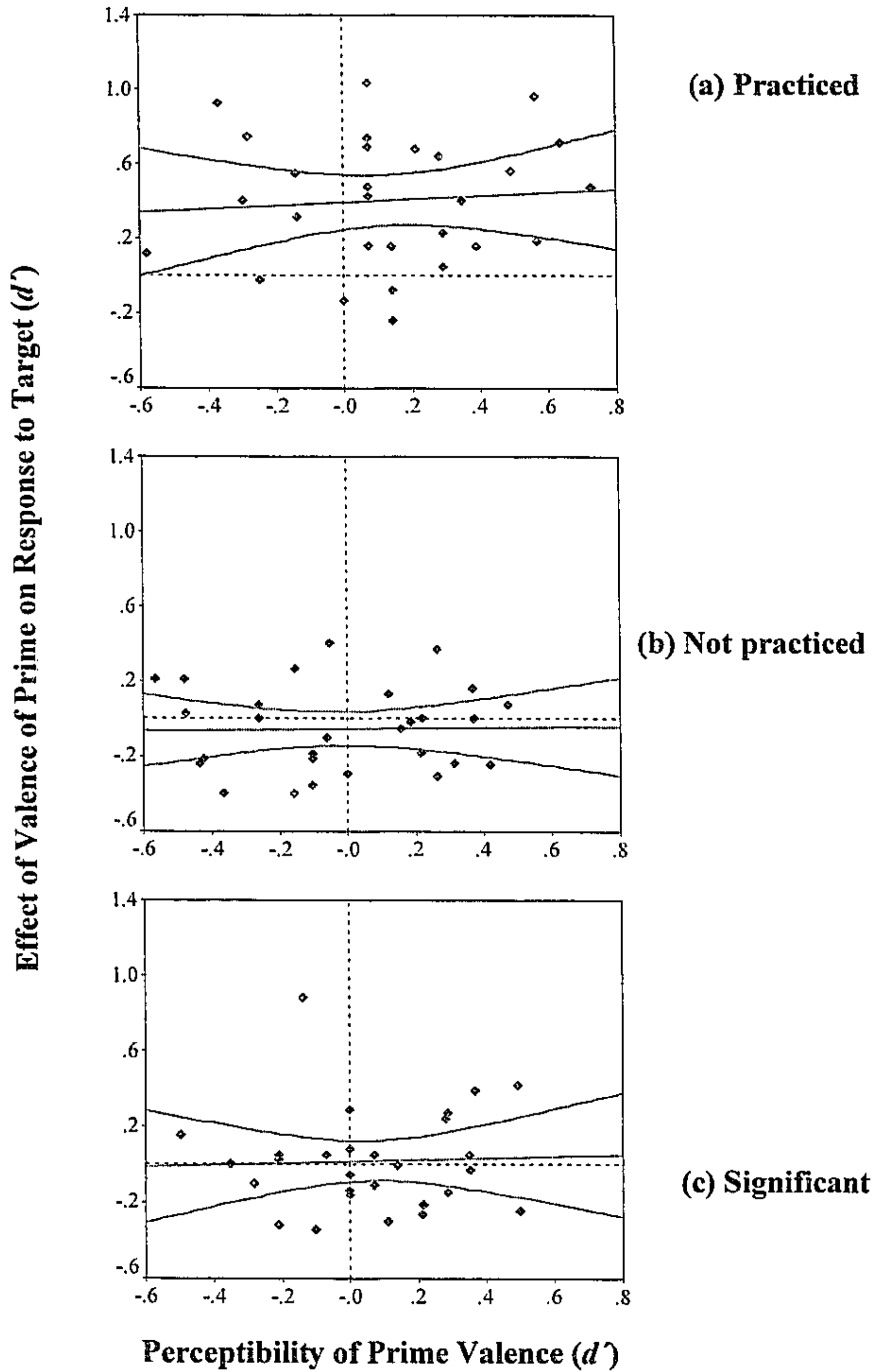

Figure 2.3. Unconscious evaluative priming effects (Ch. 2, Experiment 2). Regression analyses for (a) *practiced,* (b) *not practiced* and (c) *significant* primes on evaluative discrimination task. For all three prime types, the slopes (β_1) of the regression lines were small (β_1 ranged from +.02 to+.09) and not statistically significant.

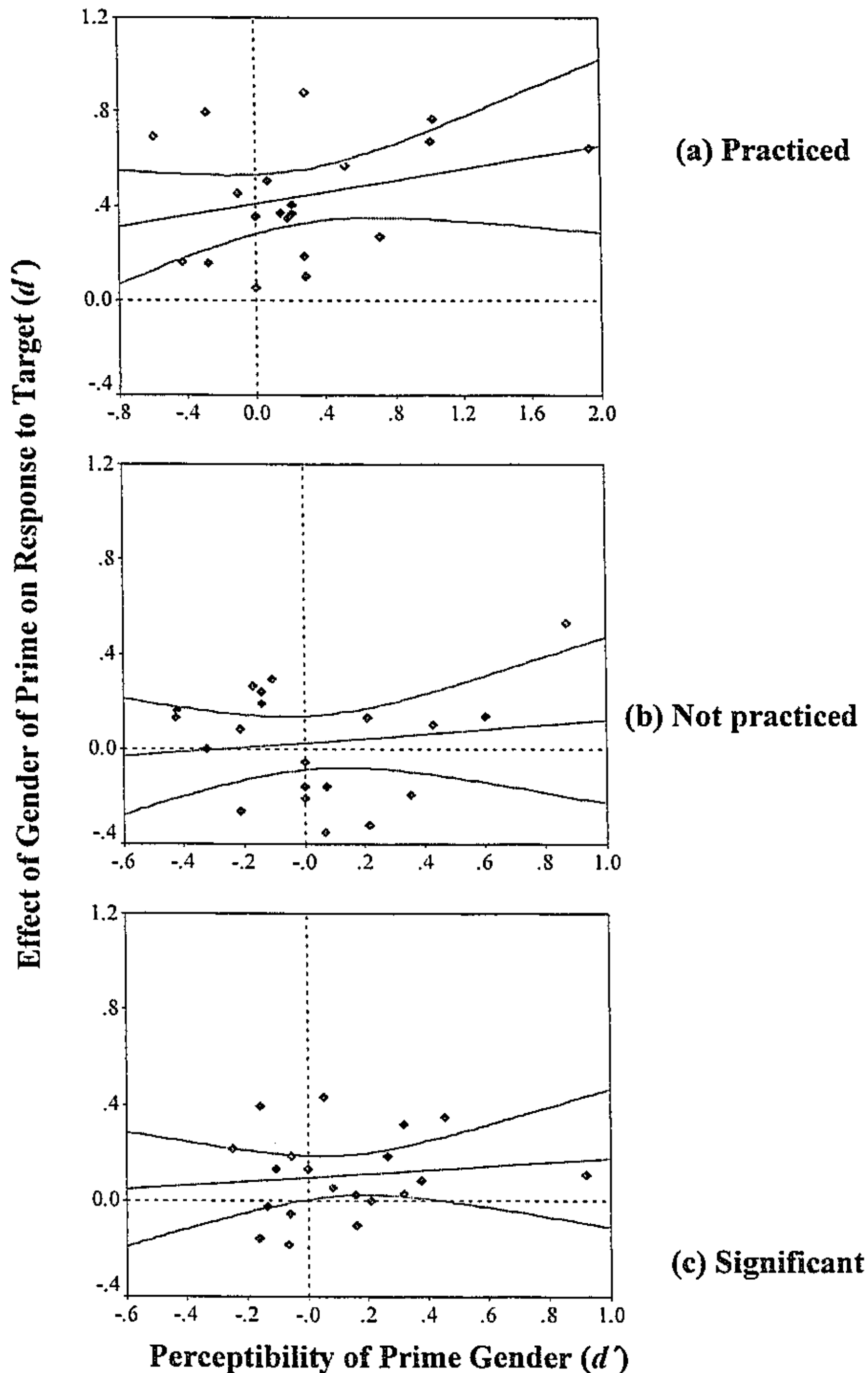

Figure 2.4. Unconscious gender priming effects (Ch. 2, Experiment 2). Regression analysis for (a) *practiced*, (b) *not practiced* and (c) *significant* primes on gender discrimination task. For all three prime types, the slopes (β_1) of the regression lines were small (β_1 ranged from +.08 to +.12) and not statistically significant.

Also replicating the findings of Experiment 1, *significant* primes produced small unconscious gender priming effects. The significant nonzero intercept ($\beta_0 = .10$, $t(18) = 2.19$, $p < .05$) provides evidence that the gender associated with significant persons is processed unconsciously. A repeated measures ANOVA performed on the adjusted priming effects and with prime type (*significant* v. *not practiced*) as the within-subject factor revealed that the intercept for *significant* primes was not significantly greater than the intercept for *not practiced* primes, $F(1, 19) = 1.14$, *ns*. A similar analysis revealed that the intercept for *significant* primes was significantly less than the intercept for *practiced* primes, $F(1, 19) = 31.53$, $p < .001$.

Individual Differences in Subliminal Priming

The next analyses examined whether *individual differences* in subliminal priming effects were related to individual differences in social avoidance as measured by the Social Avoidance and Distress scale (SAD). Table 2.1 reports the correlations between the subliminal evaluative and gender priming effects (controlling for prime perceptibility) and participants' self-reported levels of social avoidance and distress (SAD). Comparing column 1 (Experiment 1) to column 2 (Experiment 2), one sees that the correlations *within* each experiment were highly consistent with one another. Because statistical analyses involving questions of individual differences require more power than questions examining mean differences (e.g., differences between prime types) and the sample sizes in both experiments were relatively small, meta-analysis techniques were used to combine the data from the individual experiments (Field, 2001; Hedges & Olkin, 1985; Hedges & Vevea; 1998). The purpose of the meta-analyses was to obtain more stable estimates of the magnitude of the effects between subliminal priming effects and the SAD scale. The results of the analyses are reported in Table 2.1 column 3.

Table 2.1. Correlations between Social Avoidance and Distress (SAD) scale and priming effects (Ch. 2, Studies 1-2). Column 1 and 2 report the correlations obtained for Experiment 1 and 2, respectively. Column 3 reports the average correlation coefficients from meta-analyses of Experiments 1 and 2. All correlations are reported as a function of condition (evaluative v. gender) and prime type (*practiced, not practiced, significant*).

	Experiment 1	Experiment 2	Experiment 1 & 2 (Average Correlation)
Evaluative Priming			
N	21[a]	28	
Practiced	-.09	-.07	-.08
Not significant	-.16	.10	-.01
Significant	-.48*	-.07	-.26
Gender Priming			
N	34	20	
Practiced	.03	-.01	.02
Not significant	-.17	-.15	-.16
Significant	-.45**	-.37†	-.43***

*** $p < .005$; ** $p < .01$; * $p < .05$; † $p < .10$. Note: [a] One subject did not complete the SAD scale. *Note:* All priming effects statistically control for the perceptibility of the prime.

As shown in Table 2.1 (above), consistent with expectations, unconscious gender priming was inversely related to social avoidance, average $r = -.42, p < .005$. Specifically, individuals who endorsed statements such as "I tend to withdraw from people" were less affected by primes that refer to significant persons on the gender task. In contrast, individuals who endorsed statements such as "I usually go to whatever social engagements I have" were more affected by primes that refer to *significant* persons on the gender task. In contrast, evaluative priming for *significant* person primes was not related to SAD. This finding makes sense given that *significant* primes did not produce evaluative priming effects.

General Discussion

The present experiments found that *practiced* primes produced large subliminal evaluative priming effects and that *not practiced* primes did not. The present experiments not only replicated previous research in this regard, but extended it by finding that the *practiced v. not practiced* effect also occurs on an unconscious gender priming task. Specifically, primes that refer to male or female names served as an effective masked prime only when it was presented visibly as a target to be classified during practice trials. The same names were not effective masked primes when they were not presented visibly as targets to be classified.

A central goal of the present experiments was to examine whether primes referring to names of significant persons would act as *practiced* or *not practiced* primes. If significant persons are chronically accessible then even if they are not practiced (i.e., presented visibly as targets), then they should produce unconscious priming effects? In both experiments, primes that referred to significant people produced small, but reliable, unconscious *gender* priming effects. That is, even when names of significant persons were not made temporarily more accessible through practice, the gender associated with the significant person was still processed unconsciously and affected performance on the target classification task. These results suggest that thoughts of significant persons may be chronically accessible, as if, people may be *naturally* primed to process information about other people, particularly if they are personally significant.

Interestingly, primes that referred to significant persons did *not* produce *evaluative* priming effects. This is particularly surprising given that evaluative reactions are assumed to take precedence over other types of processing (Bargh et al., 1992). Indeed, most of the research that has examined the phenomenon of unconscious priming has focused on the extent to which objects automatically elicit evaluations from memory. What could, therefore, account for the finding that significant person primes produced unconscious gender priming effects, but not unconscious evaluative priming effects? One

possibility is that although automatic evaluative reactions may take primacy over other types of automatic processes much of the time, at least for significant persons, gender identification may have primacy over evaluations. Another possibility is that the automatic evaluative reactions elicited by liked and disliked significant persons may be very similar, especially at the very initial stages of evaluation. Perhaps only at later stages of processing, do differences in evaluative reactions emerge between individuals who are nominated as liked and disliked. Given that many of the people named as a disliked significant person were personally known and close, for example, a parent, ex-partner, it is possible that automatic evaluative reactions towards these types of individuals may not differ that much from the automatic evaluative reactions toward liked individuals.

CHAPTER 3: Supraliminal Priming with Names of Significant Persons

Are there are fundamental differences in how information about people compared to objects is processed? Recent research in cognitive neuroscience, for example, is beginning to identify the areas of the human cortex responsible almost exclusively for the task of perceiving and identifying human faces (e.g., Liu, Harris, & Kanwisher, 2002; Kanwisher, 2000). If there are differences at basic levels of neurological functioning, might there also be differences in how persons and objects are perceived at other levels of psychological functioning? The present research assessed the automatic evaluative reactions elicited by liked and disliked significant persons (i.e., individuals who are personally well known) and compared them to the automatic reactions elicited by liked and disliked objects (i.e., concepts that do not refer to specific individuals). Because relatively little is known about such differences (and similarities), the expectations of the present studies were informed by research on the person positivity bias (e.g., Sears & Whitney, 1973; Sears, 1983), as well as research on the automatic activation of attitudes elicited by objects (e.g., Fazio et al., 1986).

Person Positivity Bias

Research on the *person positivity bias* by Sears and colleagues (e.g., Sears & Whitney, 1973; Sears, 1983) provides some evidence that specific persons may not be processed or evaluated in the same way as inanimate objects. The person positivity bias refers to the tendency for evaluations of specific individual persons (e.g., a college professor) to be much more favorable compared to less personal objects (e.g., a college level course), grouped versions of the individual person (e.g., college professors), or specific attributes of the individual person (e.g., scholarly). In addition, although research has widely supported the existence of a Pollyanna phenomenon (e.g., Boucher & Osgood, 1969; Matlin & Stang, 1978), which is the tendency for people to process pleasant information more efficiently than unpleasant information and to evaluate every*thing* in general more positively than negatively, Sears and colleagues suggest that specific

individual persons are a special class of social stimulus for which the positivity bias is greater than any positivity bias elicited by objects.

Congruency Effect

In addition to a person positivity bias, significant persons are also likely to elicit congruent evaluative reactions. Simply, a liked significant person should elicit stronger positive reactions compared to a disliked significant person. Past research has found support for this expectation (Andersen, Reznik, & Manzella, 1996; Zayas, 2000). For example, Zayas and Shoda (2000) used the Implicit Association Test (IAT) (Greenwald, McGhee, & Schwartz, 1998) to assess strength of automatic positive reactions. They found that even though participants showed positive automatic reactions towards liked *and* disliked significant persons (consistent with research on the person positivity bias), participants had stronger automatic positive reactions for liked significant persons than for disliked significant persons.

Present Studies

The present research assessed automatic evaluations elicited by liked and disliked significant persons using the Sequential Priming Paradigm (SPP) (Fazio et al, 1986). In the SPP, participants are presented with a series of trials in which a prime word is presented briefly on the computer screen and followed immediately by the presentation of a target word. All of the prime words used in the SPP tasks were generated idiosyncratically by each participant. Participants' task is to ignore the prime (i.e., the first word presented) and to classify the target (i.e., the second word presented) on a particular attribute as quickly as possible by pressing one of two response keys.

In their initial work, Fazio and colleagues (1986) found that prime words that referred to valenced objects facilitated classification of subsequently presented target words if the valence of the object was *congruent* with the valence of the target. Prime words inhibited classification of target words if the valence of the object was *incongruent*

with the valence of the target. An *affective priming effect* or a *prime–target congruency effect*, thus, refers to the extent the valence associated with the prime influences the processing and response to the target, such that performance is facilitated when prime–target are congruent (i.e., share a similar attribute) versus incongruent (i.e., differ on a particular attribute). Based on these data, Fazio and colleagues concluded that liked objects automatically elicit positive reactions while disliked objects automatically elicit negative reactions. Research has found that prime–target congruency effects are highly robust, occurring for a variety of different stimuli (e.g., word, picture), at various levels of prime visibility (e.g., subliminal, supraliminal) and across different task requirements (e.g., key press, auditory response) (for a review see Fazio, 2001).

What happens though when primes refer to specific liked and disliked significant persons? The present studies examined whether significant persons, liked and disliked, elicit a *person positivity bias* at an automatic level. Furthermore, the present studies examined whether significant persons elicit *congruent evaluative reactions*, such that the evaluative reaction elicited by significant persons depends on whether the person is liked or disliked. These two expectations were not considered mutually exclusive.

Study 1

The automatic evaluative reactions elicited by liked and disliked significant persons, as well as by liked and disliked objects, were assessed using the SPP. In order to illustrate the expected congruency effect and person positivity bias, Figure 3.1 shows the expected results. Each bar in Figure 3.1 represents a facilitation score, that is, the extent to which a prime facilitates the classification of pleasant and unpleasant target words relative to a letter string prime (e.g., "TTTT"). Facilitation scores are represented as a function of prime type (object v. significant person), prime valence (liked v. disliked), and target valence (pleasant v. unpleasant).

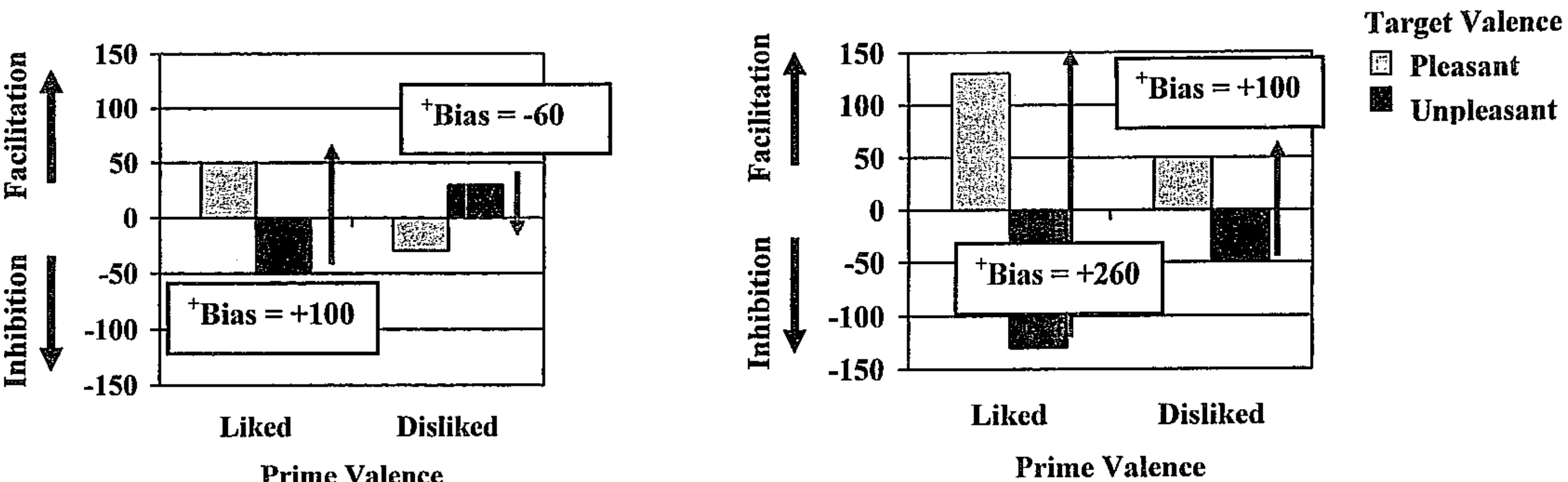

Figure 3.1. Expected facilitation scores based on prime–target congruency and person positivity bias hypotheses (Ch. 3, Study 1). Bars represent the *expected* facilitation scores if the data are consistent with a prime–target congruency hypothesis and a person positivity bias hypothesis. Bars in left panel represent the expected facilitation scores for object primes as a function of prime valence (liked and disliked) and target valence (pleasant and unpleasant). Bars in right panel represent the expected facilitation scores for significant person primes as a function of prime valence and target valence. Facilitation scores for pleasant trials were computed by taking the average reaction time for *letter string→pleasant* minus average reaction time for *prime concept→pleasant*. Facilitation scores for unpleasant trials were computed by taking the average reaction time for *letter string→unpleasant* minus average reaction time for *prime concept→unpleasant* trials. A Positivity Bias was computed by taking the Facilitation score (pleasant) minus Facilitation score (unpleasant). Blue arrows pointing up indicate a positivity bias. Red arrows pointing down indicate a negative bias.

Prime–Target Congruency Effect Hypothesis. First, because data from the trials involving object primes and targets replicate past research (Fazio et al., 1986), it served as a check of the methods used in the present studies. Specifically, a prime–target congruency effect was expected for *object* primes. As shown in the left panel of Figure 3.1, greater facilitation was expected when object primes and targets were congruent with respect to valence and inhibition was expected when object primes and targets were incongruent with respect to valence.

The main question of the present research, however, involved examining the automatic evaluative reactions elicited by primes that refer to liked and disliked *significant persons*. Because significant persons were also expected to produce a person positivity bias (discussed below), the automatic evaluations elicited by disliked significant persons were *not* necessarily expected to be negative. Nevertheless, disliked significant persons were expected to elicit less positive reactions than liked significant persons, thus producing the prime–target congruency effect. That is, similar to object primes, the effect of the valence of the significant person prime (liked v. disliked) was expected to depend on, and interact with, the valence of the target. These expectations are illustrated in Figure 3.1 (right panel). As shown, greater facilitation was expected when the valence of prime and the valence of the target were *more congruent* than when the valence of the prime and the valence of the target were *less congruent* (although not necessarily incongruent).

Person Positivity Bias Hypothesis. In addition to the prime–target congruency effect, based on research finding evidence of a person positivity bias (e.g., Sears, 1983), significant persons were expected to produce stronger positivity biases compared to objects. A *positivity bias* was conceptualized as the extent to which a prime facilitated the classification of pleasant targets relative to the extent to which the prime facilitated the classification of unpleasant targets. To illustrate the *expected* results, compare the left panel of Figure 3.1 (object primes) to the right panel of Figure 3.1 (significant person

primes). As shown, the positivity bias for liked significant person primes ($M = +260$) was expected to be greater than the positivity bias for the liked object primes ($M = +100$). Similarly, the positivity bias for the disliked significant person primes ($M = +100$) was expected to be greater than the positivity bias for the disliked object primes ($M = -60$). Thus, the effect of prime type (object v. significant person) was expected to depend on, interact with, the valence of the target. Specifically, significant person primes were expected to facilitate the classification of pleasant targets more strongly than object primes, and they were expected to facilitate the classification of *un*pleasant targets to a lesser extent.[6]

Method

Participants

The data were collected in two different samples. Participants were University of Washington students taking part in the experiment in exchange for extra credit to be applied toward their introductory psychology courses. Only participants who had learned English before the age of 7 and with average response latencies (across all trials used for data collection) of less than 2000 ms and error rates less than 10% (for all trials used for data collection) were included in the analyses reported below. Sample 1 (7 women and 18 men) had a median age of 19 years ($SD = 5.89$ years). Sample 2 (9 women and 16 men) had a median age of 18 years of age ($SD = 2.01$ years).

Apparatus

The SPP tasks were administered on IBM-compatible desktop computers with a Windows 95 operating system using a psychological software package called *Inquisit*

[6] Note that the expectations based on the person positivity bias are also consistent with research examining the effect of associative strength on automatic activation of attitudes. Fazio and others, for example, have argued that affective priming effects depend on the strength of the object–evaluation association, such that strongly evaluated objects are likely to produce stronger prime–target congruency effects (for competing view see Bargh et al, 1992; Chaiken & Bargh, 1993). Arguably, strength of evaluative associations should be stronger for significant persons than for objects. Consistent with this research, as shown in Figure 1, the priming effects for significant persons are expected to be larger than the priming effects for objects.

(Draine, S.). Participants indicated responses by pressing the *A* key with their left forefinger and the *5* key (on the right-side numeric keypad) with their right forefinger. Participants also wore headsets with an attached microphone during the SPP tasks.

Procedures and Measures

At the beginning of the experiment, participants in both samples generated idiosyncratic prime words. Participants then performed two SPP tasks in succession: one for the liked concept and one for the disliked concept. The order that the tasks were performed was counterbalanced across participants.

Generating idiosyncratic prime words

In sample 1, participants were asked to write the name of a *liked object* and the name of a *disliked object*. Participants were told that they could list any thing, place, or event as an "object," and that the only thing that could not be listed as an object was a specific person. Examples of liked objects that participants named were: family, sunset, music, tennis, and sincerity. Examples of disliked objects that participants named were: rapist, spiders, hate, killing, and liver. In sample 2, participants were asked to write the name of a *liked significant person* and the name of a *disliked significant person.* A significant person was defined as "someone you know very well, you have known for a long time, and who is very important in your life." After naming a liked and disliked significant person, participants were asked to specify the nature of their relationship with each person.

Sequential Priming Paradigm (SPP): Evaluative Classification Task

Participants performed two Sequential Priming Tasks: one assessed evaluations toward the liked concept and a second SPP assessed evaluations toward the disliked concept. The order that the two SPP tasks were performed was counterbalanced across participants. For each SPP task, there were two types of primes: (1) a word referring to the *valenced prime* (e.g., a liked object), and (2) a *letter string prime* (e.g., "BBBB",

"SSSS").[7] Primes appeared in capitalized letters and targets appeared in lower case letters. The target words used in the SPP tasks were pleasant (i.e., honor, lucky, diamond, loyal, freedom, rainbow, love, honest, peace, heaven) or unpleasant (i.e., evil, cancer, sickness, disaster, poverty, vomit, bomb, rotten, abuse, murder) in meaning (pretested by Bellezza, Greenwald and Banaji, 1986).

During the SPP, participants' task was to categorize the valence of the presented target word as quickly and as accurately as possible by pressing one of two computer keys, one corresponding to "pleasant" and the other corresponding to "unpleasant." Immediately after having categorized the target word, participants were asked to recite the prime word (referred to as a "memory word" in the instructions given to participants) into a microphone. If the prime was a letter string, such as "BBBB," participants were instructed to say "four B's." Participants were told that their responses were being tape-recorded for accuracy.[8]

The stimulus presentation for each trial was specified as follows: (a) 350 ms pretrial pause, (b) presentation of the prime word for 200 ms, (c) a 100 ms pause, (d) presentation of the target word that remained on the computer screen until participant pressed a key to indicate a response, and (e) a 350 ms posttrial pause.[9] Participants

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[7] Because we were interested in assessing evaluative reactions elicited by significant persons in isolation (i.e., not relative to another concept also presented within the same task), the present studies compared the extent to which a significant person facilitated pleasant and unpleasant target words, relative not to another person or another concept, but relative to a more neutral concept, such as a letter string. Fazio and colleagues (1986) also used letter strings to assess baseline responding. Even though letter string primes are not likely to provide an absolute neutral point (for a discussion see deGroot, Thomassen, & Hudson, 1982; Jonides & Mack, 1984), they should be associated with weaker evaluative associations than, for example, another significant person.

[8] These instructions were the same as those used in Fazio and colleagues' original studies (1986). Since then, however, automatic attitude activation has been found regardless of whether participants are instructed to recite the prime aloud as a "memory word" at the end of each trial (Bargh et al., 1992).

[9] Fazio et al. (1986) did not specify how much time should elapse between trials. They specify a 4 ms posttrial pause and do not specify length of pretrial pause, suggesting a 4 ms pause between trials. Priming effects have been shown to dissipate at Stimulus Onset Asynchronicities (SOA) over 1000 ms. Thus, a 4 ms pause between trials may not be enough time for the effect of the target word to dissipate before participants are exposed to the prime in the subsequent trial, and consequently this may result in a target word influencing the effect of the prime in the subsequent trial. Because fast reaction times are considered to be within the range of 300 – 400 ms, we concluded that there should be a minimal effect of target on a

categorized six blocks of trials. Blocks 1 and 4 consisted of 18 practice trials each. Blocks 2, 3, 5 and 6 consisted of 30 data collection trials each. The response key assignment for each participant was reversed in block 4, which was the half way point of the SPP task. For example, if "pleasant" was mapped on the left key for blocks 1, 2, and 3, in blocks 4, 5, and 6, the response key assignment was reversed so that "pleasant" was now mapped on the right key. The order that the response keys were assigned was counterbalanced across participants. Each valenced prime and letter string prime appeared with pleasant targets 20 times, and with unpleasant targets 20 times.

Procedural Variables

Participants were randomly assigned across the four conditions corresponding to the two procedural variables (i.e., order of prime valence and order of response key assignment). For all the analyses reported below, there was no main effect for order of prime valence or order of response key.

Data Reduction Procedures

Response latencies (in ms) and accuracy were recorded for each trial. Statistical procedures for dealing with data resulting from timed tests were followed (Greenwald, McGhee, & Schwartz, 1998). Specifically, response latencies for trials in which participants incorrectly categorized the target word were excluded from further analysis. In addition, data from the first two trials of each block were excluded due to their typically longer response latencies, as well as response latencies outside the normal range of time needed to categorize a single trial (i.e., less than 150 ms or higher than 4999 ms). Response latencies less than 300 ms and greater than 3000 ms were recoded to 300 ms and 3000 ms, respectively. There were eight types of trials, one for each possible *prime→target* combination. Response latencies were averaged by trial type and log-transformed. In the results section below, all statistical significance tests and effect sizes

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prime in a subsequent trial with a 350 ms pretrial and 350 ms posttrial pause (a total pause of 700 ms between trials). This should allow approximately 1000 ms between trials.

were computed using the log-transformed latencies. Log-transformed latencies were transformed back to milliseconds and are reported in the text and tables for illustrative purposes.

Results

Based on past research (Fazio et al., 1986), *facilitation scores* were computed to reflect the extent to which a valenced prime (e.g., the word referring to a liked object) facilitates classification of targets compared to letter string primes. Specifically, the extent to which a valenced prime facilitates classification of pleasant targets was computed by taking the average reaction time for *letter string→pleasant* trials minus the average reaction time for *concept→pleasant* trials. Similarly, the extent to which a valenced prime facilitates classification of *un*pleasant target words was computed by taking the average reaction time for *concept→unpleasant* trials minus the average reaction time for the *letter string→unpleasant* trials.[10]

Prime–Target Congruency Hypothesis

A 2 (prime valence: liked v. disliked) x 2 (target valence: pleasant v. unpleasant) x 2 (prime type: object v. significant person) mixed-ANOVA was performed on the facilitation scores. The two-way interaction between prime valence and target valence, which would be expected if there is a prime–target congruency effect, was statistically significant, $F(1, 48) = 11.35, p < .001$.[11] Moreover, the three-way interaction was not significant, $F(1, 48) = .03$, *ns*. Thus, as shown in Figure 3.2, regardless of whether primes referred to objects (left panel) or significant persons (right panel), there was greater facilitation when the valence of the prime and the valence of the target were more congruent compared to when they were less or incongruent.

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[10] For the interested reader, the mean (SD) response latencies (in ms) for the individual critical trials for all of the SPP tasks reported in Studies 1 thru 3 are listed in Appendix A thru d.

[11] Unless otherwise noted in the text, for the data reported in Studies 1 thru 3, there were no main effect of participant's sex or significant interactions between sex and any of the dependent variables

Person-Positivity Bias Hypothesis

The left panel of Table 3.1 reports the facilitation scores *expected* if the person positivity bias occurs at an automatic level. As shown, significant person primes were expected to facilitate classification of pleasant targets to a greater extent than object primes and they were expected to facilitate classification of *un*pleasant targets to a lesser extent than object primes. Within the 2 (prime valence: liked v. disliked) x 2 (target valence: pleasant v. unpleasant) x 2 (prime type: object v. significant person) mixed-ANOVA design with the facilitation scores as the dependent variable, a significant two-way interaction between prime type and target valence would lend support to the person positivity bias hypothesis. Contrary to expectations, the two-way interaction between prime type and target valence was not statistically significant, $F(1, 48) = .01$, *ns*. The right panel of Table 3.1 reports the *observed* facilitation scores as a function of prime type and prime valence collapsing across the two levels of target valence. As shown, significant person primes did facilitate classification of pleasant targets ($M = 83.23$ ms) to a greater extent than object primes ($M = 6.18$ ms). However, interestingly, and unexpectedly, significant person primes also facilitated the classification of *un*pleasant targets ($M = 56.88$ ms) to a greater extent than object primes ($M = -25.51$ ms). Thus, regardless of prime valence and target valence, significant person primes produced facilitated classification of targets. The main effect of prime type was statistically significant, $F(1, 48) = 10.66, p < .002$. There was no significant main effect for target valence, $F(1, 48) = 3.84, p = .056$, and no main effect of prime valence, $F(1, 48) = .77$, *ns*.[12]

Post Hoc Analyses: A Person Effect?

To better understand the main effect of prime type consider that facilitation scores are difference scores between the valenced primes and the letter string primes for each

[12] Study 2 did not replicate the marginally significant main effect of target valence, $F(1, 37) = .61$, ns.

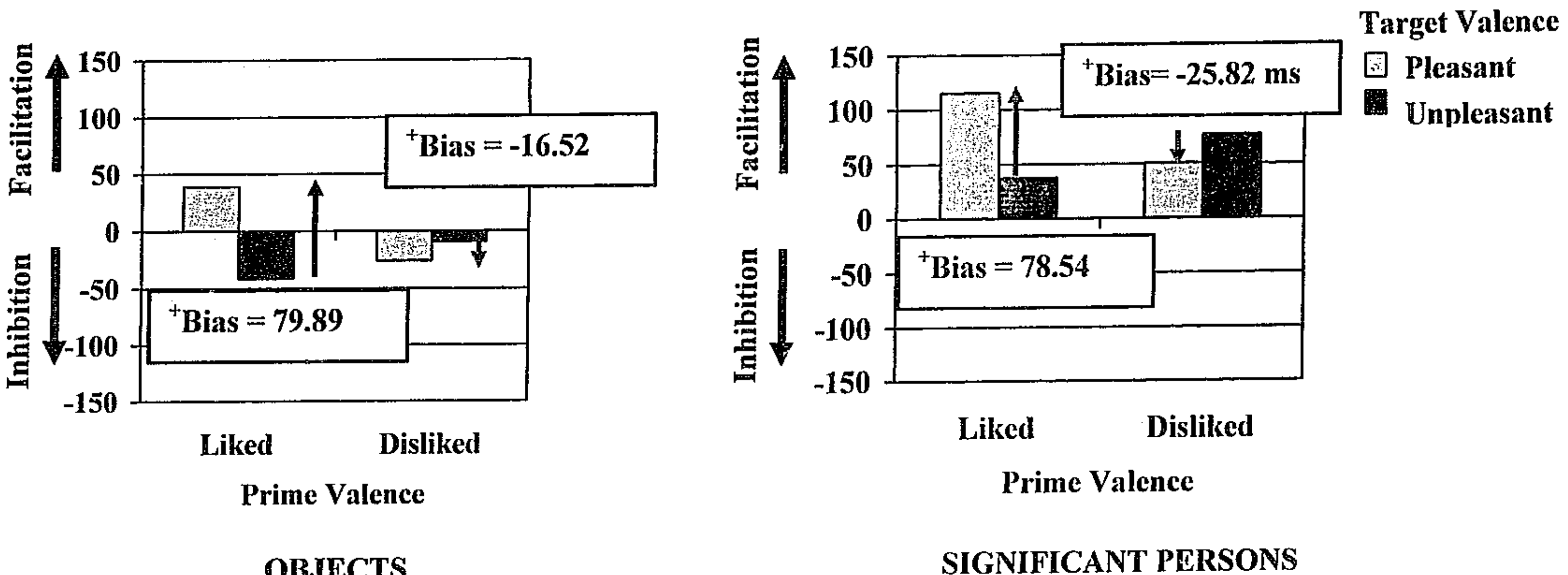

Figure 3.2. Facilitation scores for object and significant person primes as a function of prime and target valence (Ch. 3, Study 1). Bars in left panel represent the facilitation scores for object primes ($n = 25$) as a function of prime valence (liked and disliked) and target valence (pleasant and unpleasant). Bars in right panel represent the facilitation scores for significant person primes ($n = 25$) as a function of prime valence and target valence.

Table 3.1. Expected and observed facilitation scores as a function of prime type and target valence (Ch. 3, Study 1). The left panel reports the *expected* facilitation scores (averaging across the two levels of prime valence) *if* the data are consistent with the person positivity bias hypothesis. The right panel reports the facilitation scores *observed* in Study 1 (averaging across the two levels of prime valence).

Expected Facilitation Scores

	Prime Type		
Target Valence	Object		Person
Pleasant	+20	<	+90
Unpleasant	-20	>	-90
Positivity Bias[a]	+40	<	+180
Mean Facilitation[b]	0	=	0

Observed (Study 1) Facilitation Scores

	Prime Type		
	Object		Person
Pleasant	+6.18	<	+83.23
Unpleasant	-25.51	<	+56.88
Positivity Bias[a]	+31.69	≈	+26.35
Mean Facilitation[b]	-9.67	<	70.06

[a] *Positivity Bias* was computed by taking the facilitation score for pleasant trials minus the facilitation score for unpleasant trials. [b] *Mean Facilitation* is the average of the facilitation score for pleasant trials and facilitation score for unpleasant trials.

level of target valence. Thus, the main effect of prime type on the facilitation scores is equivalent to a two-way interaction between prime type (person v. object) and prime lexicality (valenced prime v. letter string prime) in an ANOVA performed on the reaction times for the individual trials separately (instead of on the facilitation scores) and with prime lexicality as an additional within subject factor.

To illustrate, Figure 3.3 shows the reactions times for individual trials (instead of facilitation scores). Bars represent reaction time (in ms) as a function of prime lexicality (letter string v. valenced prime), prime type (object v. significant person), prime valence (liked v. disliked) and target valence (pleasant v. unpleasant).[13] The top left and right panels show the reaction times for trials involving pleasant targets only. As shown in the top left panel, liked significant person primes facilitated the classification of pleasant targets to a greater extent than liked object primes. Similarly, as shown in the top right panel, disliked significant person primes also facilitated the classification of pleasant targets to a greater extent than disliked object primes. Note that the data for trials involving pleasant targets were highly consistent with theoretical expectations.[14]

The bottom left and right panels show the reaction times for trials involving *un*pleasant targets only. As shown in the bottom left panel of Figure 3.3, surprisingly, liked significant person primes facilitated classification of *un*pleasant targets to a greater extent than liked object primes (which inhibited, slowed down, classification of unpleasant targets relative to letter string primes). Similarly, as shown in the bottom right panel, disliked significant persons facilitated classification of unpleasant targets to a greater extent than disliked object primes.

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[13] The extent to which each prime facilitated the classification of pleasant and unpleasant targets words was assessed in separate SPP tasks. In this way, the valence of one concept was less likely to be affected by the valence of a contrasting concept presented within the same SPP task. Thus, there were four sets of trials assessing baseline responding.

[14] A mixed ANOVA with prime type (person v. object) as the between-subject factor, prime valence (liked v. disliked) as the within-subject factor and the facilitation scores for pleasant targets as the dependent variable revealed a main effect of prime type, $\underline{F}(1, 48) = 7.07$ $\underline{p} = .011$, suggesting that significant person primes facilitated classification of pleasant targets to a greater degree than object primes.

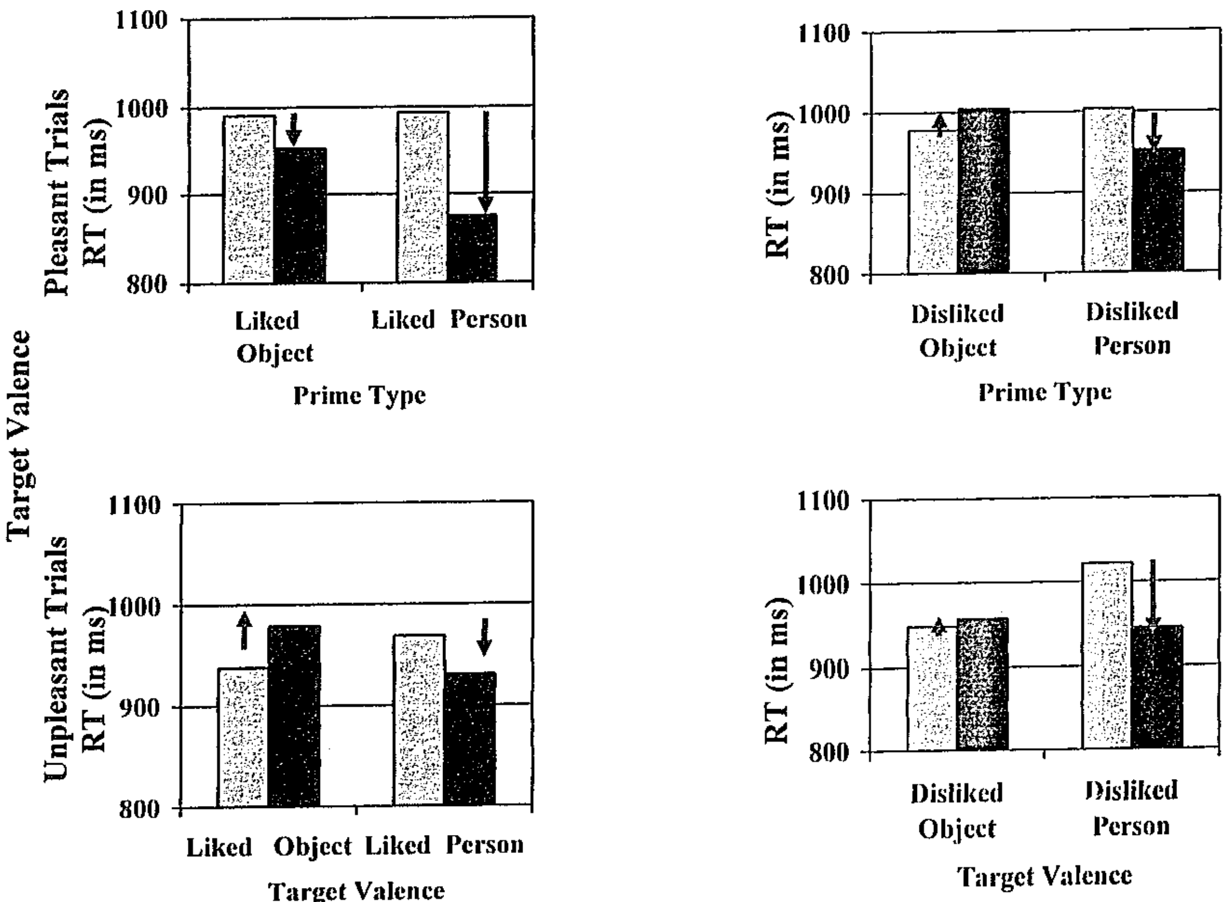

Figure 3.3. Facilitation scores as a function of prime lexicality, prime type, prime valence and target valence (Ch. 3, Study 1). Bars represent the reaction times (in ms) as a function of prime lexicality (letter string v. valenced prime), prime type, prime valence and target valence. Blue arrows pointing down indicate facilitation. Red arrows pointing up indicate inhibition.

To summarize, the data suggest that there is a "Person Effect." On average, participants were faster at classifying target words, regardless of valence, after being presented with a significant person prime than after being presented with a letter string prime. The difference in reaction time ($M = 70.06$ ms), representing the average facilitation effect for significant person primes, was statistically significant, $F(1, 24) = 17.39$, $p < .0003$, and the size of the effect was large (Cohen's $d = .83$). In contrast, because object primes *only* facilitated classification of targets when there was congruency between prime valence and target valence, the difference in reaction time between object primes and letter string primes was not significant ($M = -9.67$ ms, $F(1, 24) = .09$, *ns*).

Discussion

Replicating past research (Fazio et al., 1986) and increasing the confidence of the methods used in the present research, Study 1 found a prime–target congruency effect when primes referred to valenced objects. In addition, Study 1 found that the prime–target congruency effect also occurs when primes referred to liked and disliked significant persons. Thus, for both object and significant person primes alike there was greater facilitation classifying target words when trials involved prime and targets that were more congruent with respect to valence than when trials involved prime and targets that were incongruent or less congruent.

The present study also examined whether the person positivity bias occurs at an automatic level. On the one hand, the data suggest that significant person primes facilitated classification of pleasant targets to a greater extent than object primes. On the other hand, significant person primes also facilitated classification of *un*pleasant targets. Thus, if a positivity bias is conceptualized as the extent to which primes facilitate classification of pleasant targets *relative* to the extent to which primes facilitate classification of unpleasant targets, then the results are *not* consistent with the hypothesis that the person positivity bias occurs at an automatic level.

In addition, the data found a significant difference between object primes and significant person primes on facilitation scores. If one compares Figure 3.1, which represents the theoretical *expectations*, to Figure 3.2, which represents the *observed* data, it is possible to see that while the observed data are relatively consistent with theoretical expectations with regard to the object primes (compare the left panel of Figure 3.1 to the left panel of Figure 3.2), they depart from expectations with regard to the significant person primes (compare right panel of Figure 3.1 to right panel of Figure 3.2). Most intriguing, and unexpected, are the data suggesting that significant person primes facilitated classification of pleasant *and* unpleasant target words. In particular, liked significant person primes facilitated the classification of *un*pleasant targets. This finding is unexpected given that the positive valence of the significant person and the negative valence of the target are incongruent. Similarly, although less surprising, disliked significant person primes also facilitated the classification of pleasant *and* unpleasant targets.

Study 2

The aim of Study 2 was to replicate the overall pattern of results obtained in Study 1. Specifically, Study 2 sought to replicate the finding that significant person primes, liked and disliked, facilitate the classification of pleasant *and* unpleasant targets.

Method

Participants

All participants (22 females and 17 males) were University of Washington students taking part in the experiment in exchange for extra credit to be applied toward their introductory psychology courses. The median age of participants was 19 years old (SD = 1.94 years).

Procedures and Measures

The procedures and measures (including apparatus, procedural variables, and data reduction procedures) were the same as those used in Study 1. In addition, participants in the present study were randomly assigned to perform the SPP tasks using significant person primes ($n = 22$) or the SPP tasks using the object primes ($n = 17$). The procedural variables (order of prime valence and order of response key) did not produce significant main effects, or significant interactions with the key variables.

Results

As shown in Figure 3.4, the results are highly consistent with those obtained in Study 1. First, there was evidence of a prime valence–target valence congruency effect. A 2 (prime valence: liked v. disliked) x 2 (target valence: pleasant v. unpleasant) x 2 (prime type: object v. significant person) mixed-ANOVA on the facilitation scores revealed the expected two-way interaction between prime valence and target valence, $F(1, 37) = 19.14, p < .001$. Because there was no significant three-way interaction, $F(1, 37) = .02$, *ns*, the two-way interaction pattern did not differ between object primes (Figure 3.4, left panel) and significant person primes (Figure 3.4, right panel).

Second, there was no evidence of a person positivity bias. Specifically, as discussed in the results section of Study 1, in the ANOVA design, a significant two-way interaction between prime type and target valence would be consistent with the person positivity bias hypothesis. Contrary to the person positivity hypothesis, the prime type by target valence two-way interaction was not statistically significant, $F(1, 37) = .18$, *ns*.[15]

[15] As was the case in Study 1, there was support for a person positivity bias if the person-positivity bias is conceptualized as the extent to which a significant person prime produces greater facilitation (relative to objects) for pleasant targets only. A mixed ANOVA with prime type (person v. object) as the between-subject factor, prime valence (liked v. disliked) as the within-subject factor and the facilitation scores for pleasant targets as the only dependent variable revealed a main effect of prime type, $F(1, 37) = 15.67$ $p < .001$, suggesting that significant person primes facilitated classification of pleasant targets to a greater degree than object primes.

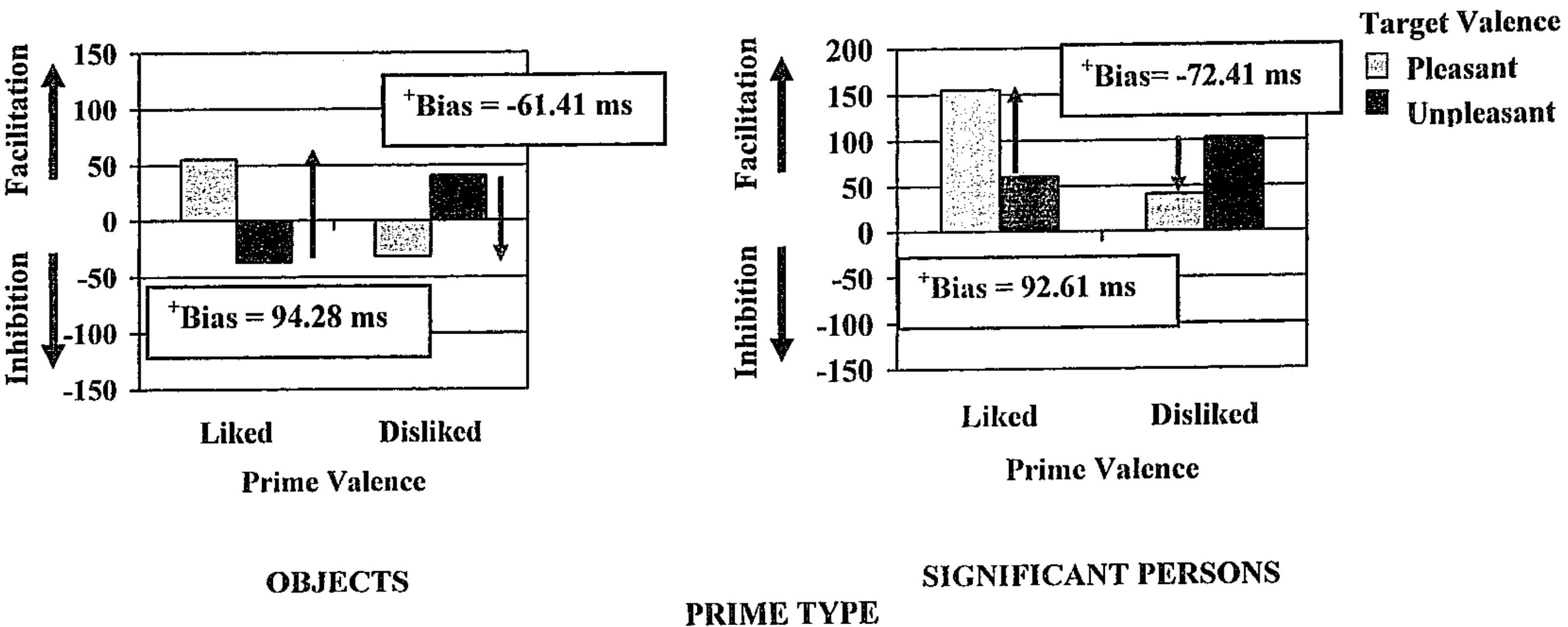

Figure 3.4. Facilitation scores for objects and significant person primes as a function of prime and target valence (Ch. 3, Study 2). Bars in left panel represent the facilitation scores for *object* primes ($n = 17$) as a function of prime valence (liked and disliked) and target valence (pleasant and unpleasant). Bars in right panel represent the facilitation scores for *significant person* ($n = 22$) primes as a function of prime valence and target valence.

Finally, most important, significant person primes facilitated the classification of pleasant *and* unpleasant target words. The results of the mixed-ANOVA analysis revealed the expected significant main effect of prime type on the facilitation scores, $F(1, 37) = 9.44, p < .005$. As shown in Figure 3.4, on average, liked and disliked significant person primes (right panel) facilitated the classification of pleasant *and* unpleasant targets to a greater extent than object primes (left panel). Moreover, consistent with the possibility of a "Person Effect" observed in Study 1, on average, participants were faster at classifying valenced target words after being presented with a significant person prime than after being presented with a letter string prime. The average facilitation effect for significant person primes was 90.05 ms, $F(1, 21) = 19.74, p < .0002, d = .95$.

As was the case in Study 1, there was no main effect for target valence, $F(1, 37) = .61$, *ns*, no main effect of prime valence, $F(1, 37) = 1.69$, *ns*, and no other significant two-way interactions.

Discussion

The results of Study 2 are highly consistent with those obtained in Study 1. First, the prime–target congruency effect occurred for object primes as well as significant person primes. Moreover, there was no support for the hypothesis that a person positivity bias occurs at an automatic level. The lack of support for the person positivity bias appears to be due to the intriguing, and replicable, finding that significant persons facilitated the classification of *un*pleasant targets, as well as pleasant targets. That is, while primes that referred to objects facilitated classification of targets *only* when the valence of the object prime was congruent with the valence of the target, primes that referred to significant persons facilitated classification of pleasant *and* unpleasant targets.

What can account for the finding that significant person primes facilitate the classification of pleasant and unpleasant targets words? According to Fazio (1986; 2001), facilitation effects occur because the presentation of the prime temporarily enhances the

activation level of the associated evaluation. If one were to interpret the data from Study 1 and 2 in this light, then significant person primes temporarily enhanced positive *and* negative evaluations, suggesting that significant persons automatically activate such evaluations from memory.

Although this is one possibility, the mechanisms by which affective priming effects occur, and the factors, that influence it, are still being explored (for a review see Fazio, 2001). For example, Fazio suggests that the *strength* of the object–evaluation association in memory is related to the magnitude of the priming effect, such that strongly evaluated objects are likely to produce stronger prime–target congruency effects (for a competing view see Bargh et al., 1992; Chaiken & Bargh, 1993). Even though the words used as object primes and the words used as significant person primes were both tailored so that they were personally meaningful to each participant, it is likely that significant persons are more salient and more strongly evaluated in general than even the most significant objects. If evaluative associations are stronger for significant persons than for meaningful objects, could a difference in strength of association account for the present results? This possibility is unlikely. That is, if the results were due to differences in strength of evaluative associations between significant persons and objects, then the priming effects for significant persons would be in the *same* direction as those for objects, but more magnified. For example, liked significant person primes would have produced greater facilitation of pleasant target words and greater inhibition of unpleasant target words. Such findings would have produced a significant three-way interaction between prime type (object v. significant person), prime valence (liked v. disliked), and target valence (pleasant v. unpleasant). Neither Study 1 nor Study 2 produced a significant three-way interaction.

Another possible explanation for the results of Studies 1 and 2 is grounded in research on social facilitation. Social facilitation research has found that the mere presence of others increases individuals' general level of arousal, which, in turn, enhances performance on relatively simple tasks (e.g., Blascovich, 1992; Cacioppo et al.,

1990). Thus, one explanation is that significant person primes may be activating a "presence of others" that increases general arousal, which in turn leads to greater facilitation in the relatively easy target word classification task. If this is the case, then significant person primes should facilitate classification of other target words, not just those that are valenced.

Study 3

Study 3 examined the possibility that significant person primes facilitate the classification of pleasant and unpleasant target words, because they are activating social facilitation processes. To examine this possibility, participants performed an evaluative SPP task in which they classified target words as pleasant or unpleasant (similar to the SPP tasks performed in Studies 1 and 2) and a gender SPP task in which they classified unambiguously gendered target words as male or female. In both SPP tasks, names of liked and disliked significant males and females generated idiographically by participants were used as primes. Because the primes used as stimuli in the two tasks were identical, any difference in classifying the target words should not be due to differences in the specific primes used, but should be a function of the specific classification task in which the primes were embedded.

If social facilitation processes account for the large facilitation effects produced by significant person primes observed in Studies 1 and 2, then primes that refer to significant persons should also facilitate classification of gender-based target words. More specifically, above and beyond the expected prime gender–target gender congruency effect, significant person primes, regardless of gender, were expected to facilitate classification of male *and* female gendered target words.

Method

Participants

Sixty students (44 women and 16 men) attending the University of Washington participated in the experiment in exchange for extra credit to be applied toward their introductory psychology courses. Of these, forty participants (30 females and 10 males) completed all the measures relevant to the present study. The median age was 18 years of age (*SD* = 1.82 years).

Procedures and Measures

The procedures and measures were similar to those used in Studies 1 and 2 (see procedures section of Study 1) with the following exceptions: (1) Participants named two liked significant persons (one woman and one man) and two disliked significant persons (one woman and one man). (2) These four names were used as prime words in an evaluative SPP and also in a gender SPP. The gender SPP was similar to the evaluative SPP, except that in the gender task participants categorized target words that were unambiguously female (i.e., woman, girl, sister, daughter, she, her, hers, gal, lady, niece) or male (i.e., man, boy, brother, son, he, him, his, guy, sir, nephew). (3) Six different primes (i.e., liked male, liked female, disliked male, disliked female, and two different letter string primes) were presented in each SPP task (i.e., evaluative and gender). (4) Each SPP consisted of one 16-trial practice block and four 40-trials data collection blocks. The first two data collection blocks presented primes for one category concept and the last two data collection blocks presented primes for the contrasting category concept. For example, in the evaluative SPP, the liked male prime and the liked female prime were presented in Blocks 2 and 3 and the disliked male prime and the disliked female prime was presented in Blocks 4 and 5. Order was counterbalanced across participants. This was done in order to mirror the procedures used in Studies 1 and 2 which assessed automatic reactions toward each concept in separate SPPs. (5) For each SPP, each specific prime was presented 10 times with each of the two target words.

Because there were two primes for each concept, each valenced prime and letter string prime appeared with pleasant targets 20 times and with unpleasant targets 20 times (similar to Studies 1 and 2).

Procedural Variables

The present study was designed so that the classification task (valence v. gender) was a within-subject factor with the order that the two tasks were performed counterbalanced across participants. On the evaluative SPP, the three-way interaction between task order, prime valence, and target valence on the facilitation scores was statistically significant, $F(1, 38) = 4.34, p < .05$. Because the order that participants performed the evaluative and gender SPP tasks appeared to have differentially affected their performance, only the data obtained in the task performed first are reported in the text below.

In addition, because Studies 1 and 2 did not find an effect for order of response key assignment, participants were all assigned the same response key assignments. The order that participants generated the names of the liked and disliked significant persons (i.e., gender was nested within valence) was counterbalanced across participants. Order of valence did not have a main effect on the facilitation scores, nor did it interact with any of the key variables.

Results

Evaluative SPP: Replication

The results were highly consistent with those obtained in Studies 1 and 2 supporting the hypothesis that a prime–target congruency effect occurs when primes refer to significant persons. A 2 (prime valence: liked v. disliked) x 2 (prime gender: male v. female) x 2 (target valence: pleasant v. unpleasant) ANOVA performed on the facilitation scores revealed that the expected two-way interaction between prime valence and target

valence approached statistical significance, $F(1, 21) = 4.11, p = .056$. [16,17] The three-way interaction was not statistically significant, $F(1, 21) = 1.77$, *ns*. Thus, as shown in Figure 3.5, the two-way prime valence–target valence interaction pattern did not differ depending on whether the primes referred to males (left panel) or females (right panel). There was no significant main effect of prime valence, $F(1, 21) = .08$, *ns*, prime gender, $F(1, 21) = .18$, or target valence, $F(1, 21) = 1.27$, *ns*, and no other significant two-way interactions.

Most important, also replicating the results of Study 1 and 2, primes referring to significant persons facilitated classification of pleasant *and* unpleasant target words. The average facilitation effect for significant person primes was 71.15 ms, $F(1, 21) = 22.65, p < .0001$, and the size of the effect was large ($d = 1.01$). As shown in Figure 3.5, even when the valence of the significant person prime and the valence of the target were incongruent (e.g., *liked significant person→unpleasant*), the significant person primes still facilitated classification of unpleasant target words.

Gender classification task

Analogous to the facilitation scores computed in the evaluation task, facilitation scores were computed for the gender classification task. A 2 (prime gender: male v. female) x 2 (prime valence: liked v. disliked) x 2 (target gender: male v. female) ANOVA was performed on the facilitation scores. The expected two-way interaction between the gender of the prime and the gender of the target was significant, $F(1, 17) = 14.10, p < .002$, suggesting that the effect of the prime gender depended on, interacted with, the gender of the target. Because the results of the ANOVA revealed no significant

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[16] There was no main effect of participants' sex on the facilitation scores, $F(1, 20) = 2.69$, ns. Participant's sex, however, did interact with the valence of the prime, $F(1, 20) = 8.79, p < .01$, such that the men showed greater facilitation classifying target words compared to women when the prime was a liked significant person. Because there were only six men in this condition, it is difficult to interpret the reliability of this interaction. Nonetheless, all the analyses reported in the text and tables were performed with men and women separately as well as combined. For brevity, results for the entire sample are reported in the text, unless otherwise noted.

[17] The prime valence x target valence interaction term was significant for female participants, $F(1, 15) = 3.25, p = .09$, but not for male participants, $F(1, 5) = .33$, ns.

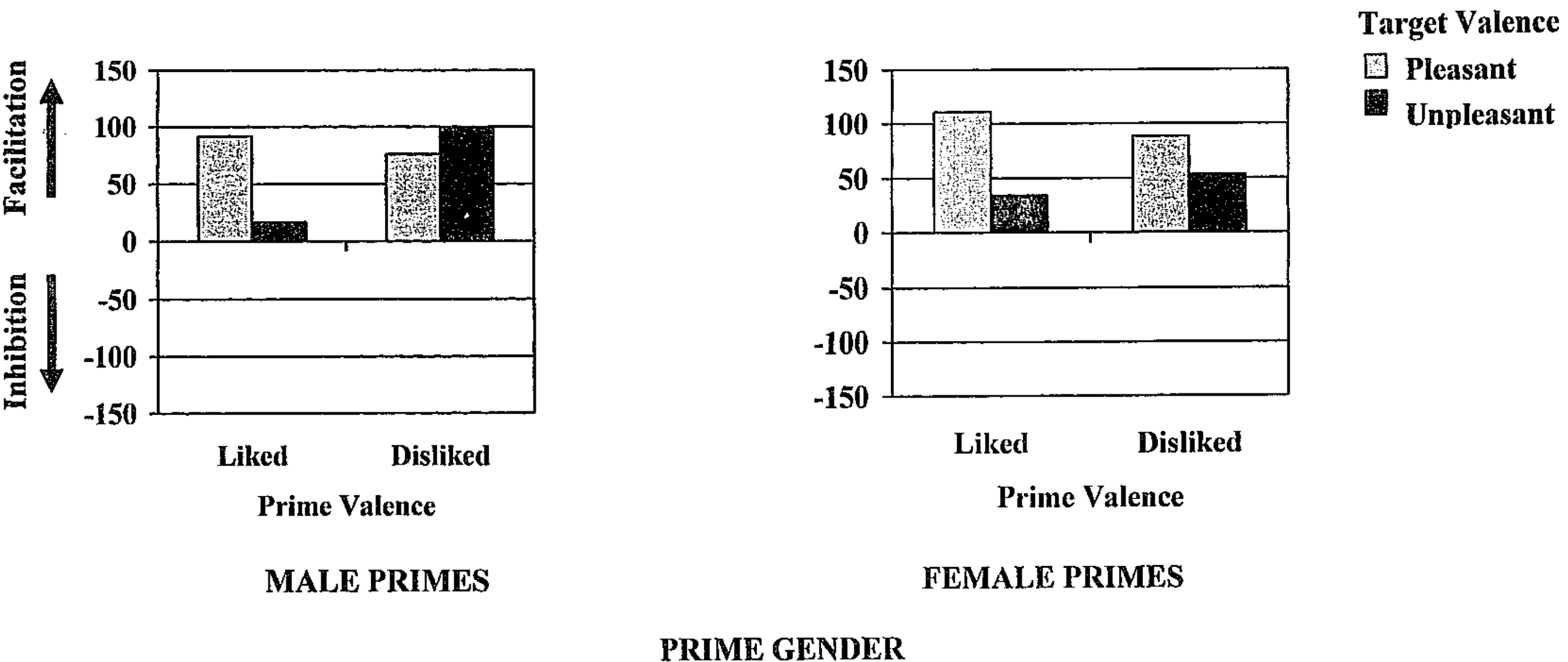

Figure 3.5. Observed facilitation scores for significant person primes on evaluative SPP task (Ch. 3, Study 3). Bars in left panel represent the facilitation scores for significant male primes as a function of prime valence (liked and disliked) and target valence (pleasant and unpleasant). Bars in right panel represent the facilitation scores for significant female primes as a function of prime valence and target valence ($n = 22$).

three-way interaction, $F(1, 17) = 1.22$, *ns*, the two way interaction pattern between prime gender and target gender was the same for liked and disliked significant person. That is, as shown in Figure 3.6, regardless of whether the significant persons were liked (left panel) or disliked (right panel), facilitation was greater when the gender of the significant person prime and the gender of the target were congruent compared to when they were incongruent.

There was no main effect of prime gender, $F(1, 17) = .48$, *ns*, and no main effect of target gender, $F(1, 17) = 2.95$, *ns*. There was a main effect of prime valence, $F(1, 17) = 4.71$, $p < .05$, such that primes that referred to liked significant persons facilitated the classification of target words to a greater extent than disliked significant person primes. *Post hoc* tests within each level of prime gender revealed that this effect was significant for male primes, $F(1, 17) = 5.25$, $p < .05$, but not female primes, $F(1, 17) = .03$, ns.

Social Facilitation Hypothesis

According to the social facilitation hypothesis, significant person primes were expected to facilitate classification of valenced target words, as well as gender-related target words. As one can see by visually comparing Figure 3.5 (evaluative SPP) to Figure 3.6 (gender SPP), the pattern of facilitation scores appeared to differ as a function of the SPP tasks. That is, as shown in Figure 3.5, significant person primes facilitated classification of pleasant *and* unpleasant targets on the evaluative task. But, as shown in Figure 3.6, on the gender SPP, facilitation occurred *only* when the gender of the prime was the congruent with the gender of the target. No facilitation occurred when the gender of the prime was incongruent with the gender of the target. The average facilitation effect for significant person primes on the gender task was not statistically significant ($M = -11.50$ ms, $F(1, 17) = .12$, *ns*).

To statistically test whether this difference in facilitation scores as a function of task type (evaluative v. gender) was significant, facilitation scores were entered into a

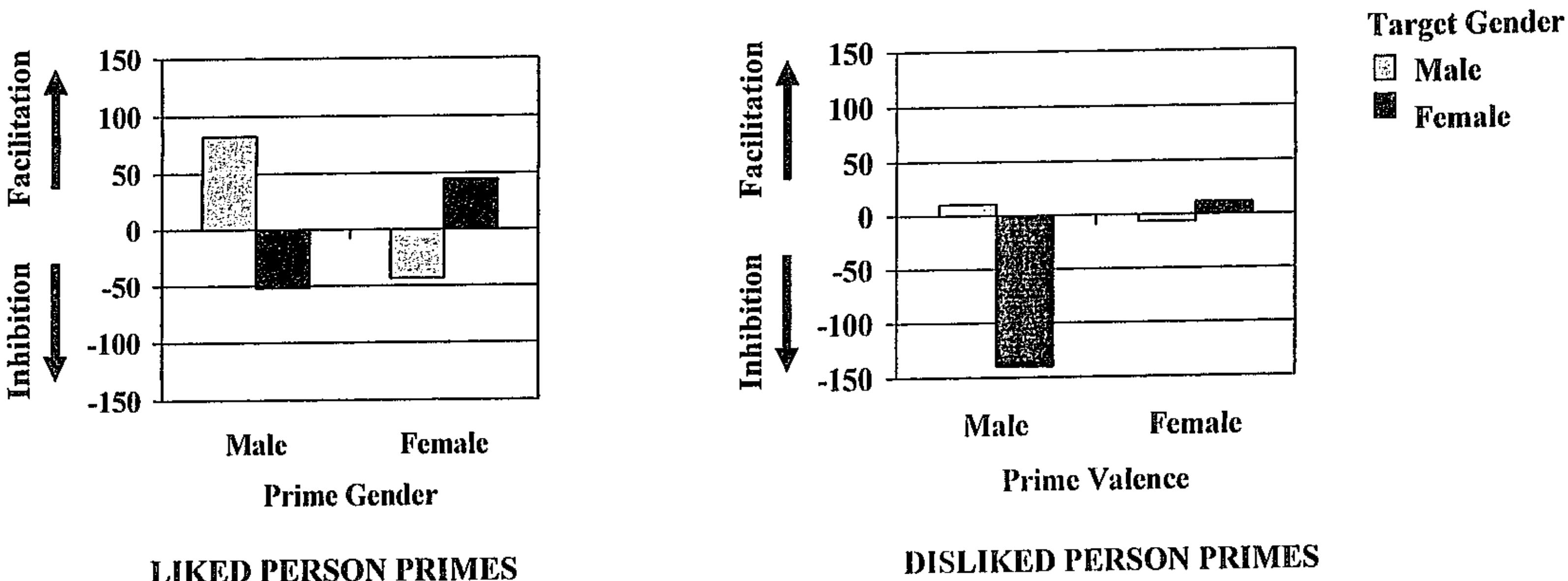

Figure 3.6. Observed facilitation scores for significant person primes on gender SPP task (Ch. 3, Study 3). Bars in left panel represent the facilitation scores for *liked* significant person primes as a function of prime gender (male and female) and target gender (male and female). Bars in right panel represent the facilitation scores for *disliked* significant person primes as function of prime gender and target gender ($n = 18$).

repeated measures ANOVA. Recall, however, that the specific target words were nested within each SPP task. That is, the target words used in the evaluative SPP task were pleasant and unpleasant, whereas the target words used in the gender SPP task were male and female related target words. In order to analyze the facilitation scores for both tasks within a single repeated measures ANOVA, targets were described in terms of their *congruency* with the prime. In this way, there were two levels of target words (congruent v. incongruent) for both the evaluative SPP task and the gender SPP tasks, which then could be entered as a within subjects factor in a repeated measures ANOVA. A 2 (task type: evaluative SPP v. gender SPP) x 2 (prime valence: liked v. disliked) x 2 (prime gender: male v. female) x 2 (target congruency: congruent v. incongruent) repeated measures ANOVA performed on the facilitation scores revealed that the main effect of task type was statistically significant, $F(1, 38) = 10.15, p < .005$. These results suggest that, contrary to the social facilitation hypothesis, significant person primes do not appear to facilitate classification of target words in general, regardless of meaning.

In addition, the results of the ANOVA revealed that facilitation effects on the incongruent trials were greater for the evaluative task compared to the gender task. The two-way interaction between task type (evaluative SPP and gender SPP) and target congruency (congruent v. incongruent) was statistically significant, $F(1, 38) = 4.23, p < .05$. The two-way interaction between prime gender and target congruency was also statistically significant, $F(1, 38) = 4.98, p < .05$, suggesting that primes that referred to male significant persons produced greater congruency effects compared to female significant person primes for both the evaluative and gender classification task. There were no other significant interactions.

Discussion

The results of the present study were highly consistent with those observed in Studies 1 and 2. First, significant person primes produced the expected prime–target congruency effect. More importantly, significant person primes continued to facilitate the

classification of pleasant *and* unpleasant target words. Given that the methods and procedures used in Study 3 differed from those used in Studies 1 and 2, the replication is encouraging and adds confidence to the findings of the present studies.

The main goal of Study 3 was to examine the possibility that significant persons facilitate the classification of valenced targets because significant person primes elicit social facilitation processes. That is, primes that refer to significant persons may increase general arousal level, which in turn leads to enhanced performance on simple tasks. Study 3 did not find support for this expectation. Specifically, while significant person primes facilitated the classification of pleasant and unpleasant targets on the evaluative SPP (replicating the results of Studies 1 and 2), the same significant person primes did not facilitate the classification of male and female related targets on the gender SPP. On the gender classification task, facilitation *only* occurred when the gender of the significant person prime was congruent with the gender of the target. No facilitation occurred when the gender of the person prime and gender of the target was incongruent. Thus, primes that referred to significant persons did not simply facilitate classification of target words in general (i.e., regardless of the words meaning).

Because the words used in the evaluative and gender SPP tasks were identical, the results of Study 3 suggest that the increased facilitation effects observed in the evaluative task do not seem to be due to a form of social facilitation and may be specific to evaluative-based classification tasks. On the other hand, one should keep in mind that the evaluative and gender SPP tasks themselves differed. That is, in the evaluative SPP, because participants were classifying targets as pleasant or unpleasant, they were encouraged to think in terms of valence (Bargh et al., 1996). In contrast, in the gender SPP, participants were encouraged to think in terms of gender evaluations. Thus, the nature of the tasks themselves differed even though the prime words presented within the tasks were the same.

General Discussion

The goal of the present research was to assess the automatic evaluative reactions elicited by liked and disliked significant persons and examine how such automatic reactions differ from those elicited by objects. Study 1 and 2 found that primes that referred to specific liked and disliked significant persons produced prime–target congruency effects similar to those observed for object primes. Furthermore, the results did not find evidence that significant persons elicit stronger positive reactions compared to objects, which would be expected according to research on the person positivity bias (Sears, 1983). Instead, primes referring to significant persons facilitated the classification of pleasant *and* unpleasant targets. This was in contrast to object primes, which facilitated the classification of targets only when the valence of the object prime was congruent with the valence of the target.

Why do significant person primes facilitate the classification of pleasant *and* unpleasant targets? Study 3 examined the hypothesis that significant person primes increase general arousal, which, in turn, facilitates performance on the simple target word classification task. The results did not support a straightforward social facilitation explanation. Specifically, on a gender classification task, significant person primes facilitated classification of targets *only* when the gender of the significant person was congruent with the gender of the target. Inhibition occurred when the gender of the prime was incongruent with the gender of the target. These data suggests that the facilitation effects produced by significant person primes may be specific to evaluative-classification tasks and do not appear to be the result of social facilitation processes.

The unexpected finding that significant person primes facilitate pleasant *and* unpleasant targets is highly intriguing. Although the present studies suggest that the findings are not a result of social facilitation processes, there are other plausible explanations. Recent research, for example, hypothesizes that emotional reactions can be represented within a two-dimensional space consisting of an arousal and a valence

dimension (Lang, Bradley, & Cuthbert, 1990; Bradley, 2000). The data obtained in the present studies are consistent with the possibility that the evaluative reactions elicited by significant persons differ from those elicited by objects in one or both of these dimensions. For example, the difference between persons and objects may reflect differences in the arousal component of emotion evaluation. Note that this possibility differs from the more general social facilitation hypothesis examined in Study 3. That is, the social facilitation hypothesis examined in Study 3 does not require an emotional response – the presence (real or imagined) of a person should increase general arousal even if no emotional response is elicited. The emotional arousal hypothesis, however, would require that an *emotional* response be elicited in order to see differences in arousal. Thus, because the gender SPP task performed in Study 3 was designed to assess gender associations, the task most likely did not activate the emotional reactions associated with significant persons needed in order to observe differences in the arousal component.

Another possible explanation for the data reported in the present studies is that evaluative reactions elicited by significant persons differ from those elicited by objects in the valence component. In particular, the data suggest the possibility that significant persons elicit positive *and* negative evaluative reactions at an automatic level. Although speculative, this idea is consistent with research by Cacioppo and colleagues (1994) who argue that although behaviors may be limited to an approach versus avoidance dimension with indifference or indecision in the middle of this bipolar dimension, the underlying psychological mechanisms that give rise to particular approach or avoid behavior may reflect two processes, an appetitive and an aversive. More specifically, in the initial stages of object perception, Cacioppo and colleagues hypothesize that individuals engage in a series of rapid evaluations with both aversive and appetitive evaluations occurring in parallel. It is only after a person begins to formulate specific behavioral responses toward the stimuli that the distinct aversive and appetitive evaluations are integrated. Thus, interpreting the present findings within this current research, perhaps significant persons are eliciting positive *and* negative reactions at an automatic level. Such a possibility is likely, given that interpersonal interactions with significant persons often involve a wide

range of experiences and emotions, positive as well as negative. Moreover, this explanation is also consistent with Fazio and colleagues' conceptualization of automatic reactions. In a recent review (2001), for example, Fazio described the automatic attitude activation effect as follows: "... presentation of an attitude object has been shown to automatically activate from memory the evaluation that an individual associates with the object". Following this line of thinking, the finding that significant persons facilitate the classification of pleasant and unpleasant words suggests that significant persons may be eliciting positive and negative reactions at an automatic level.

To summarize, the present studies have found that primes that refer to significant persons facilitate the classification of pleasant and unpleasant target words. Moreover, this finding does not occur on a gender task, suggesting that the increase in facilitation is not due to social facilitation processes. Although further research is needed to understand the underlying mechanisms, the phenomenon reported in the present paper are replicable, robust, and likely to have important implications for a number of psychological domains and areas of research.

CHAPTER 4: Individual Differences in Automatic Evaluations

Mental representations of others and self are assumed to underlie adult attachment styles (e.g., Hazan & Shaver, 1987). In particular, the four-category model (Bartholomew & Horowitz, 1991) hypothesizes that evaluative reactions toward others and self represent two dimensions that can be combined to form four styles of relating within adult romantic relationships. While the four-category model makes predictions about the relationship between adult attachment styles and evaluative reactions that operate at an explicit, conscious level, relatively little is known about the relationship between adult attachment styles and evaluative reactions that operate at an implicit, automatic level. How do *automatic* evaluative reactions toward others and self relate to adult attachment styles? Empirically examining this question is important because the thoughts and feelings that are consciously accessible are assumed to reflect, in part, defensive processes. Consequently, the four-category model of adult attachment styles may not necessarily reflect responses that occur at an automatic or implicit level (e.g., Scharfe, Bartholomew, Henderson et al., 1996).

A central aim of the present research was to assess *automatic* evaluative reactions toward one's romantic partner, as well as one's self, and examine how such automatic reactions relate to adult attachment styles. In addition, the present studies also assessed individuals' automatic reactions toward one's mother as supportive (v. rejecting). Such automatic processes are expected to relate to adult attachment styles if, as posited by adult attachment theory, adult attachment styles are shaped by early infant-caregiver interactions. In order to assess aspects of individuals' mental representations that operate automatically, effortlessly, and possibly outside conscious control, the present studies used the Implicit Association Test (IAT) (Greenwald, Schwartz, & McGhee, 1998). Because the IAT has been shown to be relatively immune to self-presentation biases and distortions, it was assumed that automatic reactions assessed by the IAT are less likely to reflect the use of defense mechanisms. Moreover, the IAT, a reaction time-measure, and self-report measures of adult attachment style vary considerably in format. Thus,

correspondence between automatic reactions toward one's partner, self, and mother and adult attachment styles is less likely to be due to a simple response bias (e.g., a tendency to express positive feelings about others) and would provide more convincing empirical support for adult attachment theory's predictions, as well as support for the construct validity of measures of adult attachment style.

Internal working models

The questions being examined in the present paper reflect Bowlby's original conceptualization of attachment theory. Bowlby (1969) hypothesized that infants develop *internal working models*, or *generalized representations*, of others and self that function as schemata or "maps" that help them regulate their emotions and social behaviors in order to maintain proximity to the caregiver and felt security. In particular, Bowlby proposed, "the two working models each individual must have are referred to respectively as his environmental model and his organismic model." (1969, p. 82). In more contemporary social-cognitive parlance, the environmental model is akin to a *mental representation of others*, consisting of information about the availability and responsiveness of the caregiver. The organisimic model is analogous to a *mental representation of self*, consisting of information about one's attributes and capabilities. Bowlby hypothesized that once formed these generalized representations remain relatively stable and unchanged over the lifespan, serving as "templates" or "prototypes" from which individuals develop more specific representations of others and self within subsequent relationships (Ainsworth, 1978; Bowlby, 1969).

Adult Attachment Styles and Evaluative Reactions

Building on Bowlby's concept of internal working models and other core assumptions of attachment theory, Hazan and Shaver (1987) likened the process by which adults form emotional bonds to their romantic partners to the process by which infants form attachment bonds to their primary caregivers. They hypothesized that generalized representations of others and self, which develop from infant-caregiver

interactions, underlie a person's attachment style in adulthood. Specifically, Hazan and Shaver proposed three adult attachment styles (i.e., secure, anxious/ambivalent, and avoidant) and examined the *content* (e.g., beliefs, expectations) of the mental representations associated with the three styles.

In 1991, Bartholomew and Horowitz continued to examine the cognitive-affective processes associated with adult attachment styles, but focused specifically on the *evaluative* aspects of mental representations. In effect, Bartholomew and Horowitz's work redefined adult attachment styles by proposing that explicit evaluations toward others (as positive or negative) and explicit evaluations toward self (as positive or negative) can be combined to derive four adult attachment styles, rather than the three proposed by Hazan and Shaver (1987). They are secure, preoccupied (analogous to Hazan and Shaver's anxious/ambivalent classification), and dismissing and fearful (analogous to the avoidant attachment style). Consistent with their expectations, Bartholomew and Horowitz's four-category model was related to *explicit* evaluations towards others and self. Specifically, based on responses to a sociability scale (Cheek & Buss, 1981), individuals with a secure or preoccupied attachment style evaluated others more positively compared to individuals with a dismissing or fearful attachment style. In addition, based on responses to a self-esteem scale (Rosenberg, 1965), individuals with a secure or dismissing attachment style evaluated themselves more positively compared to individuals with a preoccupied or a fearful attachment style.

The Present Studies: What is the Relationship between the Four-Category Model of Attachment and Automatic Evaluative Reactions?

The goal of the present paper was to examine whether *automatic* evaluative reactions relate to adult attachment styles. This question follows directly from Bowlby's original conceptualization of internal working models. Bowlby hypothesized that key aspects of internal working models are automatic appraisal or evaluative processes. Such processes, he argued, enable individuals to quickly and effortlessly evaluate aspects of

their environments as good or bad, pleasant or unpleasant, likeable or unlikable (Bowlby, 1969, pg. 105). Moreover, Bowlby proposed that automatic evaluative processes are distinct from feelings and other evaluations that a person is consciously aware of. He wrote, "… since these appraising processes may or may not be felt, it is the appraising processes rather than the feeling and emotion that require first attention. The fact that appraising processes are not always felt provides a clue to understanding the ambiguous but clinically useful concept of 'unconscious feelings'."(1969, p. 105).

As previously mentioned, the four-category model conceptualizes adult attachment styles in terms of *explicit* evaluations toward others and self. Bartholomew and colleagues (e.g., Scharfe, Bartholomew, Henderson et al., 1996) have suggested that because such conscious thoughts and feelings are likely to reflect, in part, defensive processes, as well as other self-presentation tendencies, the four-category model of adult attachment styles may not necessarily reflect responses that occur at a more automatic or implicit level. In particular, individuals with an insecure style holding noncomplementary evaluative reactions (i.e., preoccupied or dismissing) may be masking or denying unpleasant and negative thoughts and feelings associated with their representations. Bartholomew and colleagues describe these processes in more detail.

> "At some unconscious level prototypical dismissing individuals do feel negatively about themselves, and their adoption of a detached stance toward others is a way of defending a fragile sense of self from potential hurt by others. Similarly, the positive model of the preoccupied masks a less conscious negative model of others, with the tendency to idealize others acting as a defense against acknowledging that significant others, are, at least at times, uncaring and unavailable." (p. 5)

What is the relationship between the four-category model of adult attachment styles and automatic evaluative reactions toward others and self? To date, empirical studies have found evidence that adult attachment styles are related to implicit, automatic processes, such as the gathering and integration of new information in social judgments (Mikulincer, 1997), as well as interpersonal expectancies (Baldwin et al., 1993). However, relatively little is known about the relationship between adult attachment styles

and automatic evaluative reactions more specifically. One of the more direct assessments of this question is research conducted by Banse (1999). Banse assessed the automatic evaluative reactions elicited by significant persons using the affective priming paradigm. Although the results found the expected main effects such that significant persons elicited automatic positive reactions, individual differences in these priming effects were not related to adult attachment styles or relationship satisfaction. As will be discussed in more detail below, this null finding might have been due to the poor short-term stability of the priming method. The main goal of the present studies was to continue to examine the question of whether individuals' adult attachment style are related to automatic reactions towards romantic partners, self, and mother using the Implicit Association Test, an implicit measure that has been shown to have strong test-retest reliability (described below).

Adult Attachment Styles Conceptualized as a Network of Interconnected Cognitions and Affects

Although written over thirty years ago, Bowlby's theorizing regarding automatic evaluative and appraisal processes is consistent with more recent network approaches to personality and individual differences. In particular, such approaches conceptualize an individual's mind as a stable and distinctive network of *automatic associations* among cognitions and affects (e.g., Mischel & Shoda, 1995; Read & Miller, 1998; Shoda & Mischel, 1998; Mikulincer & Shaver, in press). Extending such an approach to attachment processes, the present paper conceptualizes individual differences in the cognitive-affective dynamics characteristic of each adult attachment style (as well as *intra*individual variability) as differences in individuals' network structure (i.e., differences in the pattern and strengths of automatic associations among cognitions and affects). In the simplest network structure, a secure adult attachment style would be expected to have strong associations between cognitions of one's partner and positive affects, indicating that very little or no effort is required to activate positive affects after the thought of one's partner becomes activated. In contrast, the network structure

corresponding to a dismissing or fearful attachment style would be expected to reflect a weaker association between cognitions of one's partner and positive affects, reflecting the idea that positive affects may not be activated as readily after thinking about one's romantic partner.

Assessing Automatic Associations among Cognitions and Affects within a Person's Network

In order to assess aspects of individuals' mental representations that operate automatically, effortlessly, and possibly outside of conscious control, researchers have suggested the use of implicit and other behavioral methods (Crowell & Treboux, 1995). Implicit measures are designed to reveal attitudes and other automatic associations for even those individuals who desire to suppress their expression. Unfortunately, various studies have found that many of the field's most established implicit measures show low test-retest reliabilities, ranging from $r = .02$ to .26 (see Bosson, Swann, & Pennebaker, 2000). The low test-retest reliability raises a serious concern for researchers who seek to assess *individual differences* in automatic processes (rather than typical responses by people in general).

One implicit measure that has shown strong test-retest reliability, compared to other reaction-timed tasks, is the Implicit Association Test (IAT) (Greenwald, McGhee, & Schwartz, 1998). The IAT's relatively strong test-retest reliability, as well as large effect sizes (Zayas & Shoda, 1999; Bosson, Swann, & Pennebaker, 2000; Greenwald et al., 1998; Banse, 1999), has made it a promising measure of individual differences of automatic cognition.[18] Studies have found, for example, that IAT correlates with known group differences distinguishing smokers from nonsmokers (Swanson, Rudman, &

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[18] Although the IAT is not assessing unconscious processes (i.e., all the stimuli are presented visibly), the IAT is assumed to be assessing automatic processes: That is, individuals may be aware that they have a more difficult time during certain parts of the task (i.e., incongruent trials), which they might suspect reflects their reactions toward the target concept. However, despite this awareness, individuals have difficulty changing their responses.

Greenwald, 2001), heterosexuals from homosexuals (Banse, Seise, & Zerbes, 2001), and depressives from nondepressives (Gemar et al., 2001).

Significant Person IAT: Pilot Studies

Could the Implicit Association Test be used to assess individual differences in the network structure corresponding to different attachment styles? More specifically, could the IAT be used to assess the automatic reactions elicited by specific persons, including the self, in order to examine some of the core expectations of adult attachment theory? Because an IAT designed to assess evaluative reactions toward the *self* is already available (Greenwald & Farnham, 2000), the first step of the present research was to extend the IAT methodology to assess automatic reactions toward specific significant persons that did *not* include the self (e.g., romantic partner, mother). Pilot studies were conducted to examine the construct validation of the IAT as a measure of automatic reactions toward specific significant persons. A complete report of the pilot studies is available upon request from the authors. Participants nominated a liked significant person and a disliked significant person from their lives and then performed one IAT to assess automatic evaluative reactions towards the liked significant person and a second IAT to assess automatic evaluative reactions towards the disliked significant person. It was hypothesized that if the IAT method could assess automatic evaluative reactions toward significant persons, it should be able to discriminate between people who are personally significant and well liked, and people who are also personally significant, but disliked. The results were consistent with this expectation. The average IAT effect (i.e., the score that reflects the extent to which the significant person is associated with automatic positive reactions) for the liked significant person was significantly greater ($t(43) = 5.52$, $d = .83, p < 10^{-5}$) than the average IAT effect for the disliked significant person. Moreover, the difference in IAT effects remained statistically significant ($p < .001$) even after controlling for differences in degree of personal significance between the liked and disliked significant persons. The results of the pilot studies provide initial support for the

construct validity of the IAT as a measure of automatic evaluative reactions toward specific significant persons.

Study 1

Participants performed one Implicit Association Test (IAT) to assess their automatic evaluative reactions towards their romantic partner and a second IAT to assess their automatic evaluative reactions toward the self. Because previous research has found that most individuals do not have a single adult attachment style, but indicate different styles depending on the relationship partner (e.g., Baldwin et al., 1996; Collins & Read, 1994), the present studies assessed individuals' *general* adult attachment style (i.e., across all romantic relationships), as well as *specific* adult attachment style (i.e., with one's current romantic partner).

Based on past research and theory, a secure adult attachment style was expected to correspond to stronger automatic positive reactions toward one's romantic partner compared to the dismissing and fearful adult attachment styles (i.e., avoidant attachment styles). Because individuals with a preoccupied attachment style may be masking or denying negative feelings and thoughts about others (e.g., Scharfe, Bartholomew et al., 1996), they were not expected to hold completely positive evaluative reactions toward their partners. Specifically, a preoccupied attachment style was expected to correspond to less positive reactions toward their romantic partner compared to the secure attachment style, but to stronger positive reactions compared to the avoidant styles.

With regard to the self, a secure adult attachment style was expected to correspond to stronger automatic positive reactions toward the self compared to the fearful and preoccupied attachment styles (i.e., both assumed to hold an explicitly negative view of self). Because individuals with a dismissing adult attachment style may be masking or denying negative feelings and thoughts about themselves (e.g., Scharfe, Bartholomew et al., 1996), they were not expected to hold completely positive automatic evaluations toward themselves. Specifically, a dismissing attachment style was expected

to correspond to less positive reactions toward the self compared to the secure attachment style, but to stronger positive reactions compared to the fearful and preoccupied attachment styles.

Note that all of the above predictions refer to *relative* differences among the four attachment styles in automatic reactions. The rationale for making relative predictions is based on Hazan and Shaver's (1987) theorizing that there is a "core experience of romantic love" with most people expressing more positive (than negative) attitudes on self-report measures of relationship satisfaction. Thus, regardless of individuals' attachment style, most people were expected to hold *positive* reactions toward their romantic partner, as well as *positive* reactions toward themselves. Individuals, however, were expected to differ in the magnitude of the positivity elicited by thoughts of their partner, as well as self, as a function of their adult attachment style.

Methods

Participants

Nine hundred and fifteen students enrolled in introductory psychology courses at the University of Washington received credit for participating in a prescreening session. Based on participants' responses to an adult attachment measure (i.e., Relationship Questionnaire, see below for details), approximately an equal number of individuals from each attachment style and who were involved in a romantic relationship were invited to participate in the experimental sessions. Of the individuals invited to participate, 74 (54 females and 20 males) completed the first experimental session, and 58 (44 females and 14 males) returned for the second experimental session. The results for the 58 participants, who completed all measures, are reported below to insure comparability across analyses. The median age of the 58-person sample was 18 yrs (SD = 1.51 yrs), and the median length of participants' romantic relationship was 44 weeks (M = 65.74 weeks, SD = 62.58 weeks).

Apparatus

The IATs in Studies 1 thru 3 were all administered on IBM-compatible desktop computers with a Windows 95 operating system using the *Farnham Implicit Association Test (FIAT)* software (Farnham, 1997). Participants gave responses by pressing the *A* key with their left forefinger and the *5* key (on the right-side numeric keypad) with their right forefinger.

Procedures and Measures

Study 1 consisted of a prescreening session and two experimental sessions. Participants took part in the experimental sessions individually. At each experimental session, participants first performed one IAT and then completed various self-report questionnaires. Because this study was part of a larger project, only the questionnaires relevant to this study are discussed in the methods and results section below. Further details are available upon request from the authors.

Partner-IAT. The IAT was used to assess strength of automatic evaluative reactions toward participants' romantic partner. Following the standard IAT procedures (Greenwald et al., 1998), the Partner-IAT consisted of seven blocks of trials. Five 20-trial blocks were used for practice and two 40-trial blocks were used for data collection. Participants were presented with words one at a time in the middle of a computer screen. Their task was to classify the presented word as quickly and as accurately as possible by pressing one of two computer keys (left or right).

Prior to performing the actual IAT discrimination tasks, participants were prompted through a series of questions to generate a list of words that were uniquely *descriptive of partner* (e.g., partner's nickname, hair color, city of birth) and a second list that was *non-descriptive of partner* (e.g., a name, hair color not associated with their partner). These words were used as stimuli in the IAT. A critical feature of these stimulus words is that they are relatively unvalenced. Any valence associated with the word is

assumed to be through its association with the romantic partner, rather than inherent in the word itself.

In block 1 (practice trials), participants performed a *target concept discrimination* task during which they classified the words that they had generated earlier as descriptive of partner or non-descriptive of partner. During the target concept discrimination task, the name participants used to refer to the romantic partner appeared on the computer screen as labels to remind participants of the target concept associated with each response key. For example, if the name of the romantic partner is John then the target concept labels that appeared on the screen were "John" and "not John." In block 2 (practice trials), participants performed an *attribute discrimination* task during which they classified words as pleasant or unpleasant. All participants were presented with the same set of *pleasant* (e.g., success, health, peace) and *unpleasant* words (e.g., corpse, failure, death), which have been validated in terms of valence (Bellezza, Greenwald, & Banaji, 1986). "Unpleasant" and "pleasant" were the labels that appeared on the computer screen to remind participants of the attribute associated with each response key. In blocks 3 (practice trials) and 4 (data collection trials), participants performed a *combined discrimination* task, in which the first two discrimination tasks were combined. That is, one of the two target concepts and one of the two attributes were mapped onto the same response key (e.g., "not John" and "Pleasant" were mapped onto the left response key), while the contrasted target concept and attribute were mapped onto the other response key (e.g., "John" and "Unpleasant" were mapped onto the right response key). Participants were then presented with a word from one of the four word lists (i.e., descriptive, non-descriptive, pleasant, and unpleasant), and asked to press the response key corresponding to the presented word. Block 5 (practice trials) consisted of an attribute discrimination task (similar to block 2), but with the key assignments reversed in order to prepare participants for a second combined discrimination task in which the response key mappings were changed. In blocks 6 (practice trials) and 7 (data collection trials), participants were asked to perform a second combined discrimination task, in which one of the two target concepts and one of the two attributes were once again

mapped onto the same response key. This time, however, the new response key assignments were used. For example, "not John" and "unpleasant" were mapped onto the left response key, while "John" and "pleasant" were mapped onto the right response key.

The critical components of the IAT method are the two *combined discrimination* task used for data collection (i.e., Blocks 5 and 7). For brevity, the combined task in which the target person (i.e., romantic partner) is mapped onto the same response key as unpleasant will hereafter be referred to simply as target person+*unpleasant*. Similarly, the combined task in which the target person is mapped onto to the same response key as pleasant will be referred to simply as target person+*pleasant*. The IAT method assesses strength of association between a target concept and an attribute by examining the ease with which individuals perform the two combined discrimination tasks, which is reflected by their response latency in categorizing each stimulus word. It is assumed that when a target concept and an attribute are strongly associated with each other and mapped onto the same response key (e.g., partner+*pleasant*), the categorization task should be relatively easy to perform (reflected by faster response latencies). In contrast, when a target concept and an attribute are not, or only weakly, associated with each other and mapped onto the same response key (e.g., partner+*unpleasant*), the categorization task is performed with more difficulty (reflected by slower response latencies). The *IAT effect* is computed by taking the difference between the average response latency for the two combined discrimination tasks (i.e., partner+*unpleasant* – partner+*pleasant*). Larger Partner-IAT effects reflect stronger positive associations toward one's romantic partner.

Self-IAT (Greenwald & Farnham, 2000) was used to assess the strength of automatic evaluative reactions toward the *self*. The procedures for the Self-IAT were similar to the ones used for the Partner-IAT. For example, participants generated a list of words that were *descriptive of self* (e.g., their nickname, hair color, city of birth) and another list of words that were *not descriptive of self*. These words, along with the pleasant and unpleasant words used in the Partner-IAT, were used as stimuli in the Self-IAT discrimination tasks. Although the Partner-IAT used idiographic labels (i.e., the actual

name of the romantic partner) to remind participants of the target corresponding with each response key, the Self-IAT followed Greenwald and Farnham's original procedures (2000) and used "me" and "not me" as labels for all participants.

Relationship Questionnaire (RQ)–General Adult Attachment Style (Bartholomew & Horowitz, 1991) consists of four attachment style descriptors, each corresponding to the thoughts and feelings typically experienced within romantic relationships by individuals with one of the four adult attachment styles. Participants ranked and rated each paragraph on a scale from 1 (not at all) to 8 (extremely well) based on how well it described their thoughts and feelings across *all* their romantic relationships. The attachment style descriptor ranked as 1 (most descriptive) was used to prescreen participants for Studies 1 thru 3. However, based on the recommendations of Fraley and colleagues (1998), results for only the continuous measures are reported in the text and tables. Participants completed the RQ–*general* at the prescreening and again at one of the experimental sessions. Because the relationship between these two assessments of adult attachment style was strong (*r*s ranged from .50 to .65 in Study 1 and from .46 to .69 in Study 2), four composite scores (i.e., one for each of the four attachment scales) were computed by calculating the arithmetic mean of the two measures. If an individual was missing a response to one of the two measures, the composite score for the scale was based on the available response. The composite variables were strongly correlated with the four scales of each individual measure (*r*s ranged from .85 to .93 in Study 1 and from .85 to .92 in Study 2). For the sake of brevity, only the results for the composite variables are reported in the text and tables.

RQ–Percentage of Different Attachment Experiences (Baldwin et al., 1996). Participants were asked to estimate the percentage of their past and current romantic relationships that could be described by each attachment style descriptor (Bartholomew & Horowitz, 1991). Because this measure required individuals to think about *specific* relationship experiences, as well as romantic relationships in *general*, it was assumed to reflect both specific and general representations of self and others.

RQ–Attachment Style Specific to Partner. Participants ranked the four attachment style descriptors based on how well it described their thoughts and feelings within their *specific* romantic relationship.

Multi-Item Measure–General Adult Attachment Style–of adult romantic attachment (Brennan, Clark, & Shaver, 1998) consists of an 18-item avoidance scale (e.g., "I prefer not to show a partner how I feel deep down") and an 18-item anxiety scale (e.g., "I worry about being abandoned"), two dimensions corresponding with a view of other and view of self, respectively. Participants rated how well each statement characterized their feelings and thoughts across all of their past romantic relationships on a scale from 1 (strongly disagree) to 7 (strongly agree).

Procedural variables

All participants performed the Self-IAT in the first experimental session and the Partner-IAT in the second. In addition, for both the Self-IAT and Partner-IAT, all participants performed the target person+*pleasant* combined discrimination task first and the target person+*unpleasant* combined discrimination task second. Because the goal of the study was to examine *individual differences* in IAT effects, counterbalancing the order in which the IATs and combined discrimination tasks were performed was not a requirement for preserving the internal validity of the study.

Data Reduction

Response latencies (in ms) and accuracy were recorded for each trial. Standard statistical procedures for dealing with data resulting from timed tests were followed (Greenwald et al., 1998). Specifically, data from the first two trials of each combined discrimination block and response latencies outside the normal range of time needed to categorize a single trial (i.e., less than 150 ms or higher than 4999 ms) were excluded from further analysis. Response latencies less than 300 ms and greater than 3000 ms were recoded to 300 ms and 3000 ms, respectively. Latencies were then log-transformed.

Finally, the IAT effect was computed by taking the difference in the average log-transformed latency for the two blocks used for data collection. All statistical significance tests and effect sizes were computed using the log-transformed latencies. The average log-transformed latencies for each block were transformed back to milliseconds and are reported in the text and tables for illustrative purposes. For all the IATs reported in Study 1 thru 3, the error rates were low (ranging from 3% to 11%) in the combined discrimination tasks used to compute the IAT effect. Further, for all IATs, participants had more errors in the target person+*unpleasant* combined discrimination task compared to the target person+*pleasant* combined discrimination task, suggesting that faster response latencies were not due to an increase in error rates.

Results

Main Effects: Automatic Evaluative Reactions toward One's Romantic Partner and Self

As shown in Table 4.1, participants found it more difficult to perform the combined discrimination task when romantic partner and unpleasant were mapped onto the same response key, than when romantic partner and pleasant were mapped onto the same response key. The Partner-IAT effect, the difference between these two combined discrimination tasks, was +322.27 ms and highly significant, $d = 2.36$, $t(57) = 15.11$, $p < 10^{-20}$.[19] Similarly, on the Self-IAT, participants had more difficulty performing the combined discrimination task when "me" and unpleasant were mapped onto the same response key, than when "me" and pleasant were mapped onto the same response key. The difference between these two combined discrimination tasks, the Self-IAT effect, of +383.15 ms was highly significant, $d = 2.64$, $t(57) = 19.98$, $p < 10^{-26}$. There was no significant difference between men and women on the Partner-IAT, $t(56) = .82$, *ns*, or the Self-IAT, $t(56) = .99$, *ns*. These results suggest that most individuals hold automatic

[19] Response latencies are reported in untransformed milliseconds (i.e., mean log-transformed latencies for each block of trials transformed back to milliseconds). All statistical tests and effect sizes, however, are computed using log-transformed latencies.

Table 4.1. Mean (SD) response latencies for combined discrimination tasks and computed IAT Effects for the Partner-IAT and Self-IAT (in milliseconds) (Ch. 4, Study 1).

	Target person	
Key mappings for the combined categorization tasks	Partner	Self
Target person+*Unpleasant*	1023.77	1053.21
	(207.14)	(209.74)
Target person+*Pleasant*	701.50	670.07
	(114.90)	(109.11)
IAT Effect[a]	322.27***	383.15***
	(162.48)	(174.07)

N = 58; **** $p < 10^{-20}$; *Note:* Response latencies are reported in untransformed milliseconds (i.e., mean log-transformed latencies for each block of trials transformed back to milliseconds). All statistical tests and effect sizes, however, are computed using log-transformed latencies. [a] *IAT effect* = Mean response latency for the Target person+unpleasant combined task – Mean response latency for the Target person+pleasant combined task.

positive reactions toward their romantic partner and automatic positive reactions toward the self. Moreover, as suggested by the large effect sizes on the Partner-IAT and Self-IAT, the strength of positivity toward one's romantic partner and self was robust.

The Relationship between IAT Effects and Adult Attachment Style

For all the analysis reported below, there were no significant interactions involving participants' sex. Table 4.2 reports the correlations between each IAT effect and each measure of adult attachment style.[20]

Partner-IAT. The results were consistent with the hypotheses that a secure adult attachment style corresponds to stronger automatic positive reactions toward one's romantic partner compared to the dismissing and fearful (i.e., avoidant) attachment styles. As shown in Table 4.2, for all three RQs, which varied in level of specificity (i.e., general, percentage of different attachment experiences, specific to romantic partner), Partner-IAT was positively correlated ($p < .05$) with a secure adult attachment style. In contrast, Partner-IAT was negatively correlated, although not at $p < .05$, with the dismissing, as well as the fearful, attachment style. For all three RQs, the positive correlation between the secure attachment style and Partner-IAT was significantly larger ($p < .05$) compared to the correlation between the dismissing attachment style and Partner-IAT. It was also larger, but not at $p < .05$, compared to the correlation between the fearful attachment style and Partner-IAT.

The results were also consistent with the hypothesis that a preoccupied adult attachment style corresponds to less positive reactions toward one's romantic partner compared to the secure adult attachment style. Specifically, based on the RQ–*general* and the percentage of different attachment experiences (both assumed to be reflecting individuals' general adult attachment style to some degree), the negative correlation

[20] When the data were analyzed a second time statistically controlling for length of romantic relationship by computing partial correlations, the results were highly consistent with those reported in the text and tables (i.e., not controlling for length of relationship).

Table 4.2. Correlations between Partner-IAT and Self-IAT Effects and Measures of Adult Attachment Style (Ch. 4, Study 1).

	Partner-IAT	Self-IAT
Adult Attachment Measure		
RQ–General Attachment Style		
Dismissing	$-.14_{a}$	$.20_{a, b}$
Fearful	$-.11_{a, b}$	$-.01_{a, b}$
Preoccupied	$-.13_{a}$	$-.23^{\dagger}_{a}$
Secure	$.30^{*}_{b}$	$.21_{b}$
RQ–Percentage of Different Attachment Experiences		
Dismissing	$-.11_{a}$	$-.02_{a}$
Fearful	$.00_{a, b}$	$.12_{a}$
Preoccupied	$-.27^{*}_{a}$	$-.15_{a}$
Secure	$.34^{**}_{b}$	$-.09_{a}$
RQ–Attachment Style Specific to Partner[a]		
Dismissing	$-.21_{a}$	$-.14_{a}$
Fearful	$-.11_{a, b}$	$-.04_{a}$
Preoccupied	$.07_{a, b}$	$.00_{a}$
Secure	$.28^{*}_{b}$	$.19_{a}$
Multi-item–General Attachment Style		
Avoidance	-.33*	-.06
Anxiety	-.19	-.17

$N = 58$; ** $p < .01$; * $p < .05$; † $p < .10$; *Note:* For each RQ, correlations without a common subscript within each column differ significantly at $p < .05$ using McNemar's test of two correlations. [a] Participants *ranked* the four attachment paragraphs from most to least descriptive. These four ordinal attachment scales were recoded (e.g., a ranking of 4 identified the most descriptive paragraph and a ranking of 1 identified the least descriptive paragraph) in order to make the interpretation of the correlation coefficients consistent with those obtained using the other attachment measures.

between a preoccupied adult attachment style and Partner-IAT was smaller ($p < .05$) than the positive correlation between a secure adult attachment style and Partner-IAT. The results, however, were not consistent with the hypothesis that a preoccupied adult attachment style corresponds to stronger automatic positive reactions compared to the two avoidant adult attachment styles (i.e., fearful and dismissing). For all three RQs, the correlation between a preoccupied adult attachment style and Partner-IAT did not differ significantly from the correlations between each of the avoidant adult attachment styles and Partner-IAT.

The present study also examined the relationship between Partner-IAT and the avoidance and anxiety scales of the multi-item–*general* measure (Brennan et al., 1998). These two dimensions are hypothesized to underlie the four adult attachment styles. Consistent with expectations, larger Partner-IAT effects were negatively correlated with the avoidance dimension, which reflects a person's view of other, $r = -.33$, $p = .01$.[21]

Self-IAT Effects. There was little evidence suggesting that adult attachment styles relate to automatic evaluative reactions toward the self. Self-IAT did not correlate at $p < .05$ with any of the attachment scales (see Table 4.2).

Conclusion

Study 1 found that a secure adult attachment style was more strongly related to automatic positive reactions toward one's partner compared to the fearful and dismissing (i.e., avoidant) adult attachment styles. This finding is consistent with Bowlby's original conceptualization of internal working models emphasizing the importance of *automatic evaluative reactions*. Study 1 also found that compared to the secure attachment style, a preoccupied adult attachment style showed less positive automatic reactions toward one's romantic partner, and that a preoccupied attachment style did *not* differ significantly from

[21] When the two scales were combined following the formulas provided by Brennan and colleagues (1998) and used to classify participants into one of the four adult attachment styles, the results were highly consistent with those reported in the text and table using the continuous attachment ratings.

the two avoidant styles. These results are consistent with the speculation in the field that a preoccupied attachment style may hold positive evaluations toward others at a conscious, explicit level, but less positive reactions at an automatic, implicit level. Finally, although automatic evaluative reactions toward the self are believed to be associated with adult attachment styles, the present study did not find support for this relationship. Null findings, however, are difficult to interpret. For this reason, this question was revisited in Study 2.

Study 2

The results of Study 1 suggest that automatic positive reactions toward one's romantic partner, but not toward one's self, were related to adult attachment styles. Study 2 sought to assess the replicability of these findings. In addition, a primary goal of Study 2 was to examine the relationship between adult attachment styles and automatic associations toward one's mother as supportive (v. rejecting). This expectation follows directly from adult attachment theory's central premise that adult attachment styles are shaped by early life experiences with primary caregivers. In particular, Main, Kaplan and Cassidy (1985) found that early experiences with one's mother are powerfully associated with attachment representations and behavior across childhood, more so than early experiences with one's father. Although only a longitudinal study can truly address the causal nature of this hypothesis, several studies have used self-report methods to *concurrently* assess individuals' attachment style with an adult romantic partner as well as their attachment style and childhood experiences with a parent (e.g., Hazan & Shaver, 1987). While the concurrent association between adult attachment styles and recollections of early attachment experiences is consistent with theoretical expectations, such an association could be due to factors, such as a response bias or a self-presentational tendency to express positive feelings about others. For this reason, Study 2 used the IAT to assess automatic associations toward one's mother as supportive versus rejecting. Because the IAT differs considerably from self-report measures in format, correspondence between adult attachment styles and Mother-IAT would add to the

construct validity of adult attachment measures as well as the theory. Based on the literature and the findings of Study 1, a secure adult attachment style was expected to correspond to stronger automatic supportive associations toward one's mother compared to the dismissing and fearful adult attachment styles, as well as the preoccupied adult attachment style.

Method

Participants

One hundred and eighty nine individuals, representing an approximately equal number from each attachment style (based on the RQ–*general* administered at the prescreening session) and who were involved in a romantic relationship, were invited to participate in the three-session study. Of these, 139 completed the first experimental session, 126 returned for the second experimental session, and 85 participants (63 females and 22 males) completed all three experimental sessions. The results below focus on these 85 participants, who completed all measures, to insure comparability across analyses. Results from analyses that included all available participants for each experimental session were highly consistent with those from the 85-person sample reported below. The median age of the sample was 19 yrs ($SD = 3.53$ yrs), and the median length of participants' romantic relationship was 38 weeks ($M = 62.1$ weeks, $SD = 73.3$ weeks).

Procedures and Measures

The procedures and measures were similar to those used in Study 1. In addition, participants took part in a third session in which they first performed the Mother-IAT and then completed additional self-report measures. All measures performed in the third session are described below.

Mother-IAT. The strength of automatic reactions toward one's mother as supportive (v. rejecting) was assessed using procedures similar to those used in the Partner-IAT

(described in the Methods section of Study 1), except for the following differences. First, the target person was participants' mother. Accordingly, the stimulus words that participants generated for the target concept discrimination tasks were words that were uniquely descriptive of their mother (e.g., mother's hair color, birthplace) and words that were non-descriptive of their mother. The name participants used to refer to their mother appeared on the computer screen as labels to remind participants of the concept associated with the response key. For example, if participants referred to their mother as "Mom" then the target concept labels that appeared on the screen were "Mom" and "not Mom." A second difference was that the attribute discrimination task for the Mother-IAT involved classifying stimulus words that were supportive (e.g., caring, giving, loving) and rejecting (e.g., cold, distant, critical) instead of pleasant and unpleasant (used in the Partner-IAT and Self-IAT). The supportive and rejecting words used as stimuli were validated in an independent sample (Zayas & Shoda, 1999). "Supportive" and "Rejecting" were the labels that appeared on the computer screen to remind participants of the attribute associated with each response key. A separate study found that the test-retest reliability of Mother-IAT was $r(26) = +.68, p < .001$ (Zayas & Shoda, 1999).

RQ–Adult Attachment Style Specific to Partner (Bartholomew & Horowitz, 1991). In addition to ranking the four attachment style descriptors, participants *rated* how well each descriptor characterized their thoughts, feelings and behaviors within their *current* romantic relationship on a scale from 1 (not at all) to 8 (extremely well).

Social Desirability Responding (Paulhus, 1991). Participants completed a twenty-item scale designed to assess self-deception (i.e., the tendency to give favorably biased but honestly held self-descriptions) and another twenty-item scale designed to assess impression management (i.e., the tendency to give favorable self-descriptions to others).

Procedural variables

Approximately an equal number of participants from each attachment style (based on RQ administered for prescreening) were randomly assigned to one of four

experimental conditions that controlled for the following two procedural variables: (a) order that the combined discrimination tasks were performed within each IAT, and (b) order in which the partner and self-experimental sessions were performed (All participants performed Mother-IAT in the last session). There was no significant main effect for order of combined discrimination task on any of the IATs and it did not interact with any of the relevant variables. Order of experimental session also had no significant main effect on partner-IAT or mother-IAT and did not interact with other relevant variables. Order of experimental session did have a significant main effect on Self-IAT, $d = .93$, $t(83) = 4.30$, $p < .001$, but it did not interact with any of the relevant variables. Because the results for each of the experimental conditions separately were highly similar to one another, the results for the combined sample are reported below.

Results

Main Effects: Automatic Reactions toward One's Romantic Partner, Self, and Mother

Table 4.3 reports the mean response latencies for the combined discrimination tasks and the computed IAT effects for the Partner-IAT, Self-IAT, and Mother-IAT. Replicating the findings of Study 1, Partner-IAT effects and Self-IAT effects were large ($d = 1.91$ and $d = 2.68$, respectively), suggesting that most individuals hold strong automatic positive reactions toward their romantic partner, as well as strong automatic positive reactions toward self.

With regard to the Mother-IAT, participants had more difficulty performing the combined discrimination task when mother and rejecting were mapped onto the same response key, than when mother and supportive were mapped onto the same response key. The difference between these two combined discrimination tasks, the Mother-IAT effect, was +274.43 ms and highly significant, suggesting that most individuals hold strong automatic reactions toward their mother as supportive, $d = 1.77$, $t(84) = 16.28$, $p < 10^{-26}$.

Table 4.3. Mean (*SD*) response latencies for combined discrimination tasks and computed IAT effects for the Partner, Mother, and Self-IATs (in milliseconds) (Ch. 4, Study 2).

Key mappings for the combined categorization tasks	Target person		
	Partner	Mother[a]	Self
Target person+*unpleasant*[a]	1075.96	953.71	980.79
	(226.01)	(197.05)	(194.90)
Target person+*pleasant*	705.84	679.28	640.84
	(109.17)	(109.11)	(86.95)
IAT Effect	370.12***	274.43***	339.96***
	(194.03)	(176.26)	(155.25)

$N = 85$; *** $p < .00001$; *Note:* [a] The attributes used for the Mother-IAT task were supportive and rejecting words instead of pleasant and unpleasant words used for the Partner-IAT and the Self-IAT.

Except for the Partner-IAT for which men had significantly greater IAT effects than women, $d = .58$, $t(83) = 2.32$, $p < .05$, there was no significant sex difference on the Self-IAT or Mother-IAT. For all the analyses reported below, there were no significant interactions involving participants' sex.

The Relationship between Social Desirability Responding, IAT Effects and Adult Attachment Style

The IAT is assumed to be relatively immune to self-deception and other impression-management tendencies. In contrast, self-report measures are assumed to reflect self-presentation tendencies and other distortions. Consistent with these assumptions, the three IATs were only weakly and insignificantly correlated with the self deception and impression management scales (*r*s ranged from -.08 to +.10). Self-report

measures of adult attachment style, on the other hand, were moderately correlated with the self deception and impression management scales (*r*s ranged from -.36 to +.35).[22]

The Relationship between IAT Effects and Adult Attachment Style

Partner-IAT and Self-IAT: Replication. Table 4.4 reports the correlations between each IAT effect and each measure of adult attachment style. As shown, the results of Study 2 were consistent with those obtained in Study 1. In particular, based on the RQ–*general* and the percentage of different attachment experiences measure, a secure adult attachment style was positively correlated ($p <. 05$) with Partner-IAT effects. The only exception was when adult attachment style was assessed in relation to one's specific romantic partner. But, here too, the correlation was in the expected direction. In contrast, although the zero order correlations were not statistically significant, both the dismissing and fearful (i.e., avoidant) attachment styles were negatively correlated with Partner-IAT. The positive correlation between a secure adult attachment style (based on the RQ–*general*) and Partner-IAT was larger ($p < .05$) compared to the correlations between each of the avoidant attachment styles (i.e., dismissing and fearful) and Partner-IAT effects.

With regard to a preoccupied adult attachment style, the pattern of results was also consistent with those obtained in Study 1. Specifically, based on the RQ–*general*, as well as the RQ assessing the percentage of different attachment experiences, the correlation between the preoccupied adult attachment style and Partner-IAT was smaller (although not at $p < .05$) compared to the positive correlation between the secure adult attachment style and Partner-IAT. In addition, as was the case in Study 1, the correlation between a preoccupied adult attachment style and Partner-IAT did *not* differ compared to the correlation between each of the avoidant attachment styles (i.e., dismissing and fearful) and Partner-IAT effects. It is worth noting, however, that when adult attachment

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[22] When the data were analyzed statistically controlling for social desirability responding (i.e., self deception and impression management) by computing partial correlations, the results were highly consistent with those reported below (i.e., not controlling for social desirability). Similarly, controlling for length of romantic relationship by computing partial correlations also produced results that were highly consistent with those reported in the text and tables.

Table 4.4. Correlations between Partner-IAT, Self-IAT, and Mother-IAT Effects and Measures of Adult Attachment Style (Ch. 4, Study 2).

	Partner-IAT	Self-IAT	Mother-IAT
Adult Attachment Measure			
RQ–General Attachment Style			
Dismissing	$-.20^{\dagger}_{a}$	$.08_{a}$	$-.07_{a}$
Fearful	$-.18_{a}$	$-.17_{a}$	$-.09_{a}$
Preoccupied	$.10_{a,b}$	$-.02_{a}$	$.07_{a}$
Secure	$.27_{b}$*	$-.02_{a}$	$.23_{a}$*
RQ–Percentage of Relationships[a]			
Dismissing	$-.13_{a}$	$.15_{a}$	$-.11_{a}$
Fearful	$-.01_{a,b}$	$-.12_{a}$	$-.09_{a}$
Preoccupied	$.04_{a,b}$	$-.07_{a}$	$.05_{a}$
Secure	$.23_{b}$*	$.14_{a}$	$.11_{a}$
RQ–Attachment Style Specific to Partner[b]			
Dismissing	$-.16_{a}$	$.11_{a}$	$-.05_{a}$
Fearful	$-.28^{*}_{a}$	$-.11_{a}$	$-.12_{a}$
Preoccupied	$.15_{b}$	$.01_{a}$	$-.03_{a}$
Secure	$.13_{a,b}$	$-.10_{a}$	$.08_{a}$
Multi-item–General Attachment Style			
Avoidance	-.31***	-.03	-.21*
Anxiety	.00	-.10	.03

$N = 85$; [a] $N = 83$; [b] $N = 84$; *** $p < .005$; ** $p < .01$; * $p < .05$; † $p < .10$; *Note:* For each RQ, correlations without a common subscript within each column differ significantly at $p < .05$ using McNemar's test of two correlations.

style was assessed in relation to individuals' *specific* romantic partner, the correlation between Partner-IAT effects and a preoccupied attachment style of $r = +.15$, *ns*, was significantly larger ($p < .05$) compared to the correlation between Partner-IAT and a fearful adult attachment style of $r = -.28$, $p < .05$. It was also larger ($p < .05$) compared to the correlation between Partner-IAT and a dismissing adult attachment style of $r = -.16$, *ns*.

As was the case in Study 1, Self-IAT did not correlate in a theoretically meaningful way with any of the attachment scales.

Taken together, the results suggest that a secure adult attachment style is associated with stronger automatic positive reactions toward one's romantic partner compared to each of the two avoidant attachment styles (i.e., fearful and dismissing). Although null findings are difficult to interpret, the results also suggest that a preoccupied adult attachment style is *not* associated with stronger automatic positive reactions toward one's romantic partner compared to the dismissing or fearful (i.e., avoidant) adult attachment style.

Mother-IAT. The results are consistent with the expectation that a secure adult attachment style corresponds to stronger automatic supportive associations toward one's mother. Specifically, based on the RQ-*general*, a secure adult attachment style was positively correlated with Mother-IAT, $r = +.23$, $p < .05$. In contrast, the dismissing, fearful, and preoccupied adult attachment styles were not. In addition, the avoidance dimension of the multi-item–*general* attachment measure, which corresponds to a negative view of others, was associated with Mother-IAT effects in theoretically expected ways, $r(85) = -.21$, $p < .05$.

Interestingly, Mother-IAT was related to the measures assessing adult attachment style at a general level (i.e., across all romantic relationships). When adult attachment style was assessed using the percentage of different attachment experiences measure or in

relation to one's specific romantic partner (both which reflect, in part, more specific relationship experiences), there were no significant relationships between Mother-IAT and adult attachment styles.

Discussion

A central goal of Study 2 was to replicate the findings of Study 1 and to examine the theoretically expected relationship between adult attachment styles and automatic supportive reactions toward one's mother. The results of Study 2 were highly consistent with the results observed in Study 1. Specifically, a secure adult attachment style (assessed at various levels of specificity) was associated with stronger automatic positive reactions toward one's romantic partner compared to the dismissing, fearful, and preoccupied adult attachment styles. In addition, a secure adult attachment style was also associated with stronger automatic supportive associations toward one's mother compared to the three insecure adult attachment styles (i.e., fearful, dismissing, and preoccupied). This relationship, however, was found only when adult attachment style was assessed at a general level (i.e., across all romantic relationships) and not when adult attachment style was assessed in relation to one's specific romantic partner or based on the percentage of different attachment experiences measure. One possible reason for the specificity of Mother-IAT is based on Collin and Read's notion of an attachment network hierarchy (1994). Within this framework, thoughts and affects about one's mother, the basis from which generalized representations of others and self form, are expected to be central in a person's mental network. The central nature of such cognitions and affects makes them highly accessible and readily applied to a majority of a person's relationships. With the increased applicability, however, comes a loss of specificity. That is, while such thoughts and feelings may apply to many relationships, they are less likely to accurately reflect or "fit" specific relationships. Therefore, although speculative, the finding that Mother-IAT is related to a person's general, but not specific, adult attachment style is consistent with this network approach to attachment styles.

In addition, as was the case in Study 1, a preoccupied attachment style was *not* associated with stronger automatic positive reactions toward one's romantic partner compared to the dismissing and fearful adult attachment styles. The only exception was when adult attachment style was assessed in relation to one's specific romantic partner. Moreover, a preoccupied attachment style did *not* differ compared to the dismissing and fearful attachment styles in their automatic associations toward their mother as supportive. Interestingly, as observed in Study 1, no significant relationships were observed between the various measures of adult attachment style and automatic evaluative reactions toward the self. These null findings are discussed in more detail in the General Discussion.

Study 3

Study 2 found that a secure adult attachment style was related to stronger automatic supportive (v. rejecting) associations toward one's mother compared to the dismissing, fearful, and preoccupied attachment styles. The replicability of this finding was examined by administering the Mother-IAT to a group of male participants taking part in a separate study.

Methods

Participants

One hundred and twelve men attending the University of Washington participated in a separate study in exchange for extra credit toward their Introductory Psychology Class. Because five individuals had average response latencies of over 2000 ms (greater that the average response latencies expected on IAT tasks) and/or had more than 25% of the trials classified incorrectly, these individuals were excluded from further analysis. Of the 107 males, 46 were not involved in a romantic relationship and 61 were romantically involved at the time of the first experimental session. There was no main effect for

involvement in a current relationship or significant interactions with the relevant variables. The median age of participants was 19 years ($SD = 1.22$).

Procedures and measures

Participants were taking part in a separate study designed to develop men's descriptions of themselves in the form of personal ads (Zayas & Shoda, 2003). Only the questionnaires and procedures relevant to the present study are reported in results section below. Participants took part in a prescreening session, in which they completed the categorical version of the RQ–*general*, and two experimental sessions, during which they performed the Mother-IAT and the RQ–*general* (see Procedures and measures section of Studies 1 and 2). The experimental sessions were held in rooms equipped with 24-26 IBM-compatible computers.

Procedural variables

Approximately an equal number of participants from each attachment style (based on RQ–*general* at prescreening) were randomly assigned to one of the two conditions that controlled for the order that the combined discrimination tasks were performed within the Mother-IAT. Individuals, on average, showed larger IAT effects when the mother+*supportive* combined discrimination task was performed first and the mother+*rejecting* combined discrimination task was performed second compared to when the combined discrimination tasks were performed in the reverse order, $t(105) = 2.71, p < .01$. However, individual differences in IAT effects for both conditions were highly similar to each other. Thus, the results for participants in both conditions combined are reported below.

Results and Discussion

Mother-IAT: Replication. As expected, participants had more difficulty performing the combined discrimination task when mother and rejecting words were mapped onto the same response key ($M = +1201.03$, $SD = 228.12$ ms), than when mother and supportive

words were mapped onto the same response key (M = +783.80, SD = 134.39). The difference between these two combined discrimination tasks was +417.22 ms (*SD of Diff.* = 193.97 ms), and highly significant, $d = 2.52$, $t(106) = 26.02$, $p < 10^{-18}$, suggesting that most individuals automatically, and strongly, associate their mother with supportive versus rejecting. Table 4.5 reports the correlations between Mother-IAT effects and adult attachment style as assessed by the RQ–*general*.

Table 4.5. Correlations between Mother-IAT effects and measures of adult attachment style (Ch. 4, Study 3).

	Mother-IAT
Adult Attachment Measure	
RQ–General Attachment Style	
Dismissing	$-.10_{a}$
Fearful	$-.08_{a,b}$
Preoccupied	$-.10_{a}$
Secure	$.24^{*}_{b}$

$N = 107$; * $p < .05$; *Note:* Correlations without a common subscript within each column differ significantly at $p < .05$ using McNemar's test of two correlations.

The pattern of results using the all-male sample replicated the findings observed in Study 2: A secure adult attachment style was related to stronger automatic supportive associations toward one's mother compared to each of the three insecure adult attachment styles (i.e., fearful, dismissing, and preoccupied).[23] These results are consistent with adult

[23] Attachment style was also assessed using the categorical version of the RQ–general at a prescreening session and again at the experimental session. The results for the categorical attachment measures assessed at the prescreening session were not consistent with expectation. The results of analyses using categorical attachment measures at the experimental session were, however, highly similar to the results reported in the text. Specifically, Mother-IAT correlated with the dismissing attachment style at $r = -.14$, ns, with the fearful attachment style at $r = +.09$, ns, with the preoccupied attachment style at $r = -.21$, $p < .05$ and the secure attachment style at $r = +.26$, $p < .05$.

attachment theory's central hypothesis that adult attachment styles are related to experiences with a primary caregiver.

Meta-Analyses of Effect Sizes. In order to obtain more stable estimates of the magnitude of the effects between adult attachment styles and Partner-IAT (obtained in Studies 1 and 2), as well as between adult attachment styles and Mother-IAT (obtained in Studies 2 and 3), meta-analysis techniques were used to combine the data from the individual studies (Field, 2001; Hedges & Olkin, 1985; Hedges & Vevea; 1998). Specifically, the zero-order correlations (a measure of effect size) within each study were converted to z scores (using Fisher's r to z transformation). Transformed correlations were then weighted as a function of the accuracy of the effect size (i.e., based on the sample size) and averaged across relevant studies. The significance value for this average effect size was computed by dividing it by the standard error (i.e., the square root of the reciprocal of the sum of the weights) (Hedges & Vevea, 1998). The estimates across studies for the *difference* between two correlations were also computed. Specifically, the t test value obtained from McNemar's test of two correlations and the degrees of freedom ($N - 3$) were used to compute the effect size within each study. Using the above described meta-analytic procedures, the *average* effect sizes across studies, representing the average difference between correlations, were obtained.

As shown in Table 4.6, the results of the meta-analyses confirm, and add confidence, to the interpretation of the data thus far. Specifically, a secure adult attachment styles was positively and highly significantly ($p < .001$) related to Partner-IAT, as well as Mother-IAT ($p < .001$). Furthermore, these correlations were significantly more positive than those observed with each of the three insecure adult attachment styles (i.e., dismissing, fearful, and preoccupied). In addition, with the exception of RQ–*specific*, a preoccupied adult attachment style was *not* positively correlated with Partner-IAT or Mother-IAT. Further, the correlation between a preoccupied adult attachment style and Partner IAT, as well as Mother-IAT, did not differ significantly from the

correlations observed between each of the two avoidant adult attachment styles and Partner-IAT and Mother-IAT.

General Discussion

One of the primary contributions of the present studies is the data that help elucidate the automatic cognitive and affective reactions associated with the four adult attachment styles. In particular, consistent with attachment theory's predictions, a secure adult attachment style was related to stronger automatic positive reactions toward one's romantic partner compared to the three insecure adult attachment styles (i.e., dismissing, fearful, and preoccupied).

Also consistent with basic assumptions of attachment theory, a secure adult attachment style was related to stronger automatic supportive associations toward one's mother compared to the three insecure adult attachment styles. Due to the concurrent assessment of Mother-IAT and adult attachment styles, the present studies are not able to address the developmental and causal nature of the relationship between automatic associations toward one's mother and adult attachment styles. Nonetheless, the data are consistent with the central hypothesis that experiences with one's primary caregiver shape the representations of others and self that develop in early life, which in turn serve as "templates" that influence how individuals feel, think, and behave within subsequent adult relationships. Moreover, because the IAT methodology differs drastically from self-report measures of adult attachment styles and is also less susceptible to self-presentation biases and distortions, the correspondence between the two is less likely to be due to a common method factor, such as a response bias. Thus, these results provide more convincing empirical support for adult attachment theory's hypothesis and add to the construct validity of measures of adult attachment styles.

The findings of the present studies are also highly consistent with Bowlby's original conceptualization of attachment theory. In his work, Bowlby emphasized the importance of *automatic* evaluative processes in internal working models, the critical role

Table 4.6. Average correlation coefficients from meta-analyses (Ch. 4, Studies 1-3). Columns 1 and 2 report the average correlation coefficients between adult attachment styles and Partner-IAT and Self-IAT (Studies 1 and 2). Column 3 reports the average correlation coefficients between adult attachment styles and Mother-IAT (Studies 2 and 3).

	Partner-IAT	Self-IAT	Mother-IAT[a]
Adult Attachment Measure			
RQ–General Attachment Style			
Dismissing	$-.18^{*}_{a}$	$.13_{a}$	$-.09_{a}$
Fearful	$-.15^{\dagger}_{a}$	$-.11_{a}$	$-.09_{a}$
Preoccupied	$.01_{a}$	$-.11_{a}$	$-.03_{a}$
Secure	$.29^{***}_{b}$	$.07_{a}$	$.24^{***}_{b}$
RQ–Percentage of Relationships			
Dismissing	$-.12_{a}$	$.08_{a}$	–
Fearful	$-.01_{a}$	$-.02_{a}$	–
Preoccupied	$-.09_{a}$	$-.10_{a}$	–
Secure	$.28^{***}_{b}$	$.05_{a}$	–
RQ–Attachment Style Specific to Partner			
Dismissing	$-.18^{*}_{a}$	$.01_{a}$	–
Fearful	$-.22^{*}_{a}$	$-.08_{a}$	–
Preoccupied	$.12^{\dagger}_{b}$	$.01_{a}$	–
Secure	$.20^{*}_{b}$	$.02_{a}$	–
Multi-item–General Attachment Style			
Avoidance	-.33***	-.04	–
Anxiety	-.08	-.13	–

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$; *Note:* For each RQ, correlations without a common subscript within each column differ significantly at $p < .05$ or greater. The estimates of the *difference* between two correlations were obtained by converting the t statistic for the difference of correlations (based on McNemar's procedure) into an r and then using meta-analytic procedures to aggregate the data from the relevant studies. [a] Only the adult attachment measures that were administered in *both* Studies 2 and 3 (i.e., RQ–*general*) are reported in the table.

of the infant-caregiver relationship in shaping such processes, and the stability of such processes over the lifespan. Although speculative, the present studies suggests that a basic aspect of the mental representations underlying adult attachment styles are automatic reactions toward significant others. Could it be that such automatic associations are a mechanism by which early attachment experiences continue to influence subsequent relationships? The possibility that the automatic reactions being assessed by the IAT reflect basic neural and physiological responses is consistent with recent research showing relationships between the IAT and amygdala activation as well as startle eye blink response (Phelps, O'Conner, Cunningham et al., 2000). Moreover, this idea that automatic associations are among one of the basic processes of working models also serves to link traditional concepts of attachment theory with recent network models of social information processing and individual differences (e.g., Shoda & Mischel, 1998; Mikulincer & Shaver, in press).

Another equally important contribution of the present paper is the data suggesting that a preoccupied attachment style was *not* related to automatic positive reactions toward one's romantic partner or to supportive associations toward one's mother. These findings are theoretically significant because individuals with a preoccupied attachment style are hypothesized to hold a positive view of others at an *explicit* level (similar to a secure attachment style). The data of the present studies are consistent with the speculation in the field that the explicit positive view of others corresponding to a preoccupied attachment style may reflect defensive processes and that at a more implicit level, individuals with a preoccupied attachment style may hold less positive reactions and feelings toward others. Moreover, these findings suggest that further refinement of the four-category model of attachment styles (e.g., distinguishing explicit and implicit processes) may facilitate research and help clarify the psychological processes underlying behaviors within adult romantic relationships. For example, should a preoccupied attachment style be associated with a "positive view of others" if at an implicit level their evaluations resemble those of individuals with an avoidant attachment style? An

alternative or modified approach might consider the reactions that occur at both the implicit and explicit levels.

Finally, particularly intriguing are the repeated null findings between adult attachment style and automatic evaluative reactions toward self. Why are adult attachment styles related to automatic evaluative reactions toward partners and mothers, but not toward self? One possibility is that mental representations toward others and self are likely to differ in significant ways (Greenwald, 1981). For example, while another person (e.g., romantic partner, mother) may be perceived as significant part of the environment, an entity outside of the self, the self may not. Consequently, automatic evaluations involving one's self may be more malleable than those involving others. Consistent with this possibility is research by Andersen and colleagues (Andersen et al., 1995) examining how different aspects of the self are activated depending on the specific significant other. Future work might examine the nature of automatic reactions toward one's self and how they operate as a function of the specific relationship partner.

CHAPTER 5: Individual Differences in Partner Preference

One of the most significant ways that individuals shape their social and interpersonal worlds is through the choices they make in romantic partners and long-term mates. Moreover, the choices one makes in romantic partners is likely to reflect a person's defining characteristics, tendencies and predilections (e.g., Emmons, Diener, & Larsen, 1986; Snyder & Ickes, 1985; Buss, 1987; Caspi & Herbener, 1990). Identifying the factors that affect partner selection is probably most critical to understanding the formation of abusive relationship dynamics. For example, a belief prevalent among laypersons, as well as academics, is that some people may prefer romantic partners who confirm already held views of self and of past relationship experiences even if those views are negative and the consequences of their choice potentially harmful (e.g., Swann, Stein-Seroussi, & Giesler, 1992). The goal of the present paper is to systematically assess preferences for dating partners and examine the validity of these commonly held beliefs. In particular, do women with a history of receiving abuse prefer male dating partners who are potentially abusive? Conversely, do men with a history of inflicting abuse prefer female dating partners who may be more vulnerable to receipt of abuse? To the extent that preference for dating partners is one factor involved in the process of partner selection, a systematic examination of the individual difference variables influencing partner preference may shed light on the genesis of abusive relationship dynamics.

The Role of Partner Preference in Generating Individual Differences in Situations

A key assumption of the present paper is that salient aspects of an individual's physical, social, and psychological world, particularly within the domain of close relationships, is his or her romantic partner and the partner's behaviors (Zayas, Shoda, & Ayduk, 2002). This assumption seems reasonable given that as an individual develops a close relationship with another, the frequency of interactions and exposure to the partner's behaviors increases, which, in turn, creates many more opportunities for one party's behavior to influence the other person. In addition, as two individuals grow

closer, they become more invested in the relationship, and the psychological significance of the interactions and partner's behaviors is also likely to increase. Consequently, compared to the behavior of a person who is not part of the relationship, the behavior of one's partner is more likely to be noticed, encoded and reacted to.

Thus, one of the most significant ways that individuals shape their lives in the short and long-term is through the choices they make in romantic partners. When one chooses a dating partner or long-term mate, a person is choosing which situations and set of behaviors she is likely to encounter over a relatively long period of time, while at the same time, precluding exposure to other situations and behaviors (e.g., Buss, 1987/1992; Ellis, 1992; Snyder & Ickes, 1985). For example, imagine a college-aged woman who prefers and seeks out dating partners who are extroverted. Assuming that her preference leads to her actually becoming involved with an extroverted partner, she is likely to encounter interpersonal situations that are likely to be very different from those encountered is she had preferred and sought out introverted dating partners.

Moreover, because the behavior of one's partner is likely to reliable and consistent over time, differences in interpersonal situations encountered – consisting primarily of the partner's behavior – are also likely to be reliable and consistent over time. As a result, partner selection is a decision that is likely to promote stability and consistency in people's feelings, thoughts, and behaviors in their everyday life (Zayas, Shoda, & Ayduk, 2002), as well as their experiences within close relationships. That is, stability in personality and relationship experiences throughout the lifespan is not due only to individual differences that reside within the individual, but also reflect individual differences in the situations a person is likely to encounter as a result of the choices they make. Consistent with this assumption, a longitudinal study of couples (assessed in 1970 and 1981) suggests that individuals, who married spouses with personalities similar to their own, were more likely to show consistency in their own personality across adulthood (Caspi & Herbener, 1990).

Factors Influencing Partner Preference

Assuming that a large part of a person's environment is shaped and created by the romantic partner one chooses, the next question is: What factors affect the choices that people make for dating partners? Several different theorists have suggested that the situations individuals choose – whether it be romantic partners, friends, occupation, or hobbies – reflect, in part, personal characteristics and tendencies (e.g., Emmons, Diener, & Larsen, 1986; Snyder & Ickes, 1985; Buss, 1987; Caspi & Herbener, 1990). Swann and colleagues, for example, suggest that one's self-views play a critical role in partner preference such that people seek relationship partners that confirm their views of self. Consistent with this assumption, one study (Swann, Stein-Seroussi, & Giesler, 1992) found that individuals with positive self-concepts preferred to interact with an evaluator, who described them favorably. Similarly, individuals with a negative self-concept preferred to interact with an evaluator, who described them unfavorably.

Other research examining the relationship between adult attachment styles and attraction and preferences for dating partners has found some evidence for a "matching effect" (Byrne, 1997). That is, people appear to be more attracted to dating partners who have similar attachment styles to their own. For example, secure individuals prefer partners who are also securely attached. Although the findings are less straightforward with respect to the insecure adult attachment styles, in general, preoccupied persons have been found to prefer partners who are also characterized with a preoccupied attachment style. Similarly, persons with an avoidant attachment style appear to prefer partners who are also characterized with an avoidant attachment style (e.g., Baldwin et al., 1996; Frazier et al., 1996).

Present Studies: Partner Preference and Psychologically Abusive Relationship Dynamics

Although there are innumerable systematic and random factors that are likely to play a role in partner selection, the present studies sought to examine individual differences in partner preference as it relates to psychologically abusive relationship

dynamics. The present research is motivated by the widely held notion among laypersons, as well as academics, that some individuals may be recreating past abusive relationship patterns, albeit unwittingly, through the choices they make in dating partners. For example, in Jacobsen and Gottman's intensive investigation of batterers and of dynamics within abusive relationship (1998), they provide anecdotal support for the hypothesis that partner preference plays a role in the genesis of abusive relationship dynamics. Although selection of and preference for dating partners was not one of their central aims, they noted that women who had been battered by their husbands showed a preference for romantic relationships described as "on the edge," unpredictable and potentially dangerous.

Despite the prevalence of the belief that individuals may be recreating abusive relationship dynamics through the people they select as dating partners, little is known about the relationship between partner preference and abusive relationship dynamics. The goal of present studies was to examine the relationship between partner preference and receipt and infliction of psychological abuse among college-age women and men. Although psychological abuse can occur without physical abuse (Hoffman, 1984), psychological abuse has been found to almost always accompany physical abuse (Föllingstad et al, 1990; Tolman, 1992), to precede the first act of physical violence (O' Leary & Vivian, 1990), and to persist even after the physical abuse has ended (Murphy & Cascardi, 1993; Pence, 1989; Tolman & Bhosley, 1991). In addition, although some studies have found that women are equally likely as men to inflict abuse (Straus, 1978; Straus, Gelles, & Steinmetz, 1980; Sigelman, Berry, & Wiles, 1984), the present studies focus on relationship dynamics in which women are the recipients of psychologically abusive behaviors and men are the perpetrators.

In order to assess individual differences in preferences in dating partners with as much control as possible, a laboratory procedure (referred to as the *Internet Dating Service* paradigm) was developed. Specifically, preferences for personal ads were assessed by having participants surf the web pages of a fictitious dating service and read

and select the personal ads that interested them the most. The personal ads posted on the dating service web pages were written by college-aged students and differed on various personality dimensions relevant to abusive relationship dynamics. The *Internet Dating Service* paradigm used in the present studies requires participants to select the personal ads that describe individuals that interest them the most, which means that participants are precluded from selecting other personal ads. This feature of the Internet Dating Service methodology, in comparison to Likert scale ratings that do not require participants to choose between partners, is assumed to more accurately simulate the psychological processes involved when individuals choose dating partners in real life situations.

Using the Internet Dating Service paradigm, two studies assessed individual differences in partner preferences. Study 1 examined the relationship between women's personal characteristics, such as past history of receiving psychological abuse, and preference for potentially abusive dating partners. Study 2 examined the relationship between men's personal characteristics, such as past history of inflicting psychological abuse, and preference for female dating partners that may be more susceptible to abusive behaviors. Hierarchical Linear Models (HLM) (Bryk, Raudenbush, & Congdon, 2001) were used to systematically examine whether a past history of abusive behaviors was related to who people select for dating partners.

Study 1

Women's preference for potentially abusive dating partners was assessed using the Internet Dating Service paradigm. Female participants read sixteen personal ads, each describing a male student, and selected the ads that interested them the most. The personal ads differed systematically in the degree to which they described a man who was consensually judged (by a separate group of female raters) as being potentially abusive as well as the extent to which the man was a desirable dating partner. Using these ads as stimuli, it was possible to assess the extent to which women's preferences for dating

partners were influenced by the men's potential for abusiveness separately from the men's overall desirability.

The main goal of study 1 was to investigate the validity of the assumption that women, who have been the recipient of psychological abuse, prefer abusive men as dating partners. Thus, the relationship between women's self-reports of receiving psychological abuse in their most recent romantic relationship and women's preferences for abusive dating partners as assessed by the Internet Dating Service procedure was examined.

In addition, previous research has suggested that one's view of self is a risk factor for receipt of psychological abuse within romantic relationships. For example, Henderson, Bartholomew, and Dutton (1997), sampling from a group of women living in protective homes or shelters or who had a partner receiving treatment for spousal abuse, found that a disproportionate number of the women (88%) showed an attachment style with a negative view of self (i.e., preoccupied or fearful attachment style). In another study, O' Hearn and Davis (1997), using a semi-structured interview to assess attachment style and receipt of emotional abuse, found that a preoccupied attachment style was positively related to receipt of emotional abuse, whereas a secure attachment orientation, which is associated with a positive view of self, was negatively related to receipt of emotional abuse. By assessing women's adult attachment style, as well as global self-esteem, Study 1 also examined the relationship between women's view toward self and preference for abusive ads.

Finally, because women's preference for personal ads that describe potentially abusive men may reflect a bias to generally endorse negative or undesirable responses, the relationship between women's socially desirability responding and preference for abusive dating partners was also assessed.

Methods

Participants

Two hundred and thirty-three University of Washington female students enrolled in an introductory psychology course participated in a prescreening session (approximately 3-6 weeks prior to the experimental session) where they completed a short-version of the Psychological Maltreatment Inventory (PMI) (Kasian & Painter, 1992) (described below).[24] One hundred and five women, who indicated interest in participating in the study, were contacted to participate in the experimental session entitled "dating relationships." Of these 105 females, 74 chose to participate in the experimental session. Four individuals did not fully complete the self-report questionnaires, and were not included in the analyses below.

The mean age of the 70 female participants was 19.11 yrs (*SD* = 1.03 yrs). At the time of the experimental session, 16 of these participants were involved in a romantic relationship, and 54 were not involved in a romantic relationship. Preferences for personal ads were analyzed separately for females involved and not involved in a romantic relationship. Because the overall pattern of results for both groups of females was similar, the results for the entire sample combined are reported in the text and tables.

Procedures and measures

Assessing Preferences for Personal Ads

Development of Personal Ads. In a separate study, 112 college-aged males wrote short descriptions of themselves in the form of personal ads. Three female coders initially

[24] At the prescreening session, participants also completed the Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1990), which is another self-report measure of adult attachment style. However, recent research on assessment of adult attachment styles (Brennan et al, 1998; Fraley & Waller, 1998) suggests that attachment styles be assessed using continuous measures (rather than categorical measures). Because it is now common practice to assess adult attachment style using continuous measures, only the results using the multi-item, continuous measure of adult attachment style are reported in the text and tables unless otherwise noted.

evaluated the 112 ads on two dimensions: potential for abusiveness and desirability as a dating partner.[25] Not surprisingly, based on the coders' evaluations, the few personal ads that were rated highest on potential for abusiveness were also rated lowest on desirability. Moreover, there were no personal ads that received high abusiveness ratings and high desirability ratings. We did not want to add a potential confound by artificially creating some ads to be both abusive and desirable. Therefore, the stimuli used for Study 1 were selected based on personal ads available: (1) four ads rated high on potential for abusiveness and low on desirableness, (2) eight ads rated as low on abusive and low on desirableness, and (3) four ads rated low on abusiveness and high on desirableness. To facilitate description of the results in the text, the three types of ads will be referred to as *abusive*, *undesirable*, and *desirable*, respectively. An example of each is provided in Appendix E, F, and G, respectively. The sixteen personal ads contained approximately the same number of words, $F(2, 13) = .45$, *ns*. Furthermore, they were minimally edited so that they did not mention ethnicity, race, and religious affiliation of either the ad writer, or the characteristics the ad writer was seeking in a partner.

Validating the Perceived Abusiveness and Desirability of the Personal Ads. The sixteen ads were administered to a separate sample of college-aged females in order to validate the extent to which the personal ads differed on potential for abusiveness and desirableness. The female participants were given the following instructions: "... try to get a picture of the person who is writing the personal, try to get a sense of who they are as a person." We first wanted to get women's general impression of the person described in the ad on two dimensions: potential for abusiveness and desirability. In order to not contaminate the participants' ratings of the ads on the desirable dimension with their ratings of the ads on the abusive dimension, participants were assigned to one of two

[25] Coders were instructed to "get a picture of the person, a sense of who they are as a person." We then provided them with six types of behaviors (associated with the five scales from the Psychological Maltreatment Inventory), each with specific examples, and asked the coders to indicate the extent to which they thought the individual writing the personal would engage in the described behaviors (yes, maybe, no). Coders also assessed "how psychologically abusive this person appears to be?" and "how desirable would it be to date this person?" on a scale from 1 (not at all) to 5 (extremely).

conditions. In one condition ($n = 24$), participants were asked: "Do you think this person could be psychologically abusive in a romantic relationship? By psychologically abusive, we mean saying things that might undermine their partner's self-esteem (e.g., calling their partner dumb), being verbally abusive (e.g., swearing at their partner), being controlling or manipulative." Participants rated each ad on the degree to which they thought the ad writer could potentially engage in psychologically abusive behaviors on a scale from 1 to 5. In addition, participants were asked to rate on a scale from 1 to 5 the degree to which they thought the ad writer could be physically abusive within a romantic relationship. In the other condition ($n = 22$), participants were asked: "How desirable would it be to date this person?" and "If you were single and interested in dating someone, would you be interested in dating this person?" Participants then evaluated each ad using a scale from 1 to 5.

Tukey's Honestly Significant Difference (HSD) test with Greenhouse-Geisser's corrected MSWI and MSRES as the error term was used to perform all the pairwise comparisons among the three types of ads (*abusive*, *undesirable*, and *desirable*) while keeping the overall alpha level at .05. As shown in Table 5.1, the ratings were highly consistent with the initial evaluation of the sixteen personal ads selected as stimuli. The *abusive* ads were rated significantly higher on potential for inflicting psychological abuse and potential for engaging in physical abuse than the *undesirable* and *desirable* ads. The *undesirable* and *desirable* ads did not differ significantly from one another. In addition, the *desirable* ads were rated as more desirable and more preferred as dating partners than the *undesirable* and *abusive* ads. There was no significant difference between the *abusive* and *undesirable* ads.

As a second method of validating the personal ads, the female participants in both conditions rated each of the sixteen ads (using a 7 point scale) on the extent to which they thought the man writing the ad possessed personality characteristics that have been linked with an abusive personality in the literature was examined. In particular, past research has found that men who engage in abusive behaviors are also likely to be jealous, impulsive,

Table 5.1. Mean (SD) ratings of potential for abusiveness and desirability as a dating partner for the sixteen personal ads used as stimuli (Ch. 5, Study 1).

	Type of Personal Ad		
	Abusive	Undesirable	Desirable
Potential for Inflicting Psychological Abuse	3.33_a	2.28_b	1.93_b
	(.57)	(.58)	(.57)
Potential for Inflicting Physical abuse	2.75_a	1.83_b	1.65_b
	(.45)	(.57)	(.58)
Desirability as a dating partner	2.51_a	2.66_a	3.46_b
	(.85)	(.47)	(.49)
Would you date this person?	2.15_a	2.34_a	3.21_b
	(.82)	(.42)	(.53)

Note: Within a row, means not sharing a common subscript are significantly different from one another according to Tukey's HSD test at $p < .01$. Greenhouse-Geisser's corrected MSWI and MSRES was used to compute all pairwise contrasts.

dependent (Murphy, Meyer, & O'Leary, 1994), and violent (for a review see Dutton et al., 1996; Sigelman, Berry, & Wiles, 1984; Rosenbaum, 1986; Burke, Stets, & Pirog-Good, 1988; Dutton & Browning, 1988; Dutton, 1994; Walker, 1979). Thus, the *abusive* ads should be rated higher on these dimensions compared to both the *undesirable* and *desirable* ads. As shown in Table 5.2, consistent with these expectations, the *abusive* ads were rated as more impulsive, jealous (and possessive), dependent (and clingy), and aggressive (and hostile, violent, and angry) than the *undesirable* and *desirable* ads. As expected, there were no significant differences between the *undesirable* and *desirable* ads on these characteristics.

Indexing the Abusiveness and Desirability of Each Ad. For the sixteen ads, the relationship between ratings of psychological abuse and ratings of physical abuse was strong (average r for the 16 ads was .74). The average rating for these two questions was

Table 5.2. Mean (SD) ratings of personality traits associated with an abusive personality (listed along left column) for the sixteen personal ads used as stimuli (Ch. 5, Study 1).

		Type of Personal Ad		
	N	Abusive	Undesirable	Desirable
Impulsive	46	4.37_a	3.84_b	3.89_b
		(1.03)	(.98)	(1.18)
Jealous	46	4.67_a	2.90_b	2.56_b
		(.96)	(.99)	(1.11)
Possessive	45	4.82_a	2.96_b	2.46_b
		(.94)	(.96)	(1.05)
Dependent	45	4.10_a	3.62_b	3.42_b
		(.98)	(1.17)	(1.32)
Clingy	45	3.91_a	3.25_b	2.92_b
		(1.22)	(.86)	(1.17)
Aggressive	45	4.47_a	2.92_b	2.61_b
		(.98)	(1.00)	(1.09)
Hostile	45	3.71_a	2.08_b	1.81_b
		(1.09)	(.82)	(.78)
Violent	45	3.33_a	1.79_b	1.51_b
		(1.02)	(.68)	(.68)
Angry	45	3.43_a	2.00_b	1.68_b
		(1.03)	(.72)	(.72)

Note: Within a row, means not sharing a common subscript are significantly different from one another according to Tukey's HSD test at $p < .05$. Greenhouse-Geisser's corrected MSWI and MSRES was used to compute all pairwise contrasts.

computed for each female rater and the mean for the entire sample was used to index the potential for *abusiveness* associated with each ad. Interrater agreement on the perceived potential for abusiveness associated with each ad was $r = .43$ ($\alpha = .93$).

A similar procedure was used to index the desirability associated with each ad. For the sixteen ads, the relationship between the ratings of desirability and the ratings of dateability was strong (average r for the 16 ads was .81). The average rating for these two questions was computed for each female rater and the mean for the entire sample was used to index the overall *desirability* associated with each ad. Interrater agreement on the perceived desirability associated with each ad was $r = .30$ ($\alpha = .89$).

As will be discussed in the results section, these two indices (i.e., abusiveness and desirability) were used to characterize each personal ad and were entered into the HLM analysis as level-1 predictors.

Assessing Preferences using the Internet Dating Service Procedure. Participants (15-25) were run at one time in a computer lab with 30 IBM compatible computers. Participants were instructed to "surf" the web pages of a dating service in which sixteen personal ads describing men seeking female dating partners were posted, and to go through a selection process (discussed below) to indicate which men they would be interested in getting to know better. At the start of the procedure, participants were shown a list of sixteen names. Each name was hyper-linked to a web page containing the corresponding personal ad. Participants read each personal ad by clicking on the person's name and accessing his personal ad. The order that the sixteen ads were listed was automatically randomized for each participant. Participants were not allowed to go onto the selection phase until they had read all sixteen personal ads. Once in the selection process, they could reaccess and reread any of the personal ads.

Participants indicated their preferences for personal ads through a four-round selection process. In each of the four rounds of selection, participants were asked to select

those individuals they would be interested in getting to know better. In the first round, participants selected eight of the sixteen personal ads. In the second round, participants selected four personal ads from the eight they had selected in the first round. This type of selection process continued through the third round and fourth rounds, each time selecting half (and thus eliminating the other half) of the ads selected in the previous round. The selection process ended when participants had selected the one personal ad that described the individual who interested them the most. Each personal ad received one point for each round that it was selected. Ads could receive a minimum of 0 points if it was not selected at all to a maximum of 4 points if it was selected in all four rounds (i.e., It was the most preferred personal ad).

Self-Report Measures Assessing Women's Individual Characteristics

With the exception of the short-version of the PMI (described below), all self-report measures were administered at the experimental session (after participants indicated their selection of personal ads via the Internet Dating Service procedure).

Receipt of Psychological Abuse (RPA). The Psychological Maltreatment Inventory (PMI) (Kasian & Painter, 1992) assesses the extent to which a person has received psychologically abusive behaviors from a current or most recent romantic partner. The PMI consists of five scales, corresponding to five types of negative behaviors associated with psychological abuse: (1) isolation and emotional control (e.g., "My partner tried to keep me from seeing or talking to my family"), (2) undermining self-esteem (e.g., "My partner treated me like I was stupid"), (3) jealousy (e.g., "My partner was jealous of my friends"), (4) verbal abuse (e.g., "My partner swore at me"), and (5) emotional withdrawal (e.g., "My partner sulked and refused to talk about a problem"). Participants indicated how frequently each of the behaviors had occurred during a 12-month period using a 5-point scale (never, 1-2 times, 3-5 times, 6-10 times, or 10 or more times). Participants completed a short (20-item) version of the PMI consisting of the four items with the highest factor loadings for each of the five negative behaviors scales at a

prescreening session and the full (60-item) version at the experimental session (*after* reading and selecting the personal ads). In order to receive a score on one of the five behavioral scales, participants had to answer 3/4^{ths} of the items for a given scale on the short-version of the PMI and at least 4/5^{ths} of the items for a given scale on the full-version of the PMI. Two composite PMI scores, one for the short version and one for the long version, were computed by taking the mean of the five negative behaviors scales. Composite scores were computed for only those individuals who received a score on all five scales. As a result, seven individuals did not receive a composite score for the short-version PMI and six individuals did not receive a composite score for the full-version PMI. The relationship between the composite score for the short-version and full-version of the PMI was strong, $r(65) = .84, p < .001$. The test-retest correlations for the individual behavior scales ranged from .22, $p = .07$, on isolation and emotional control to .84, $p < .001$, on jealousy. Moreover, there was no significant difference between the variances of the two versions, $t(63) = .24$, *ns*.

Because of the relatively strong test-retest reliability between the short-version of the PMI and the full-version of the PMI, a *receipt of psychological abuse (RPA)* index was computed by simply taking the average of the two composite scores. If an individual had only one of the two possible composite scores, the receipt of abuse index was based on the available composite score. For brevity, the text and tables report results based on the receipt of psychological abuse index, as well as the average of the individual negative behavior scales for the short-version and full-version.

In addition, at the prescreening and experimental sessions, participants responded to one item from the Conflict Tactics Scale (CTS) (Straus, 1979) that assesses possibility or threats of physical abuse (i.e., "My partner threw or smashed or hit or kicked something"). The test-retest reliability for the CTS item was strong, $r(65) = .70, p < .001$. Thus, the mean of the two responses was computed. If an individual responded to the CTS item once out of the two possible times, participants' available score was used. Results reported in the text and tables are based on the mean response to the CTS.

Adult Attachment Style (AAS). Participants completed Brennan, Clark, and Shaver's (1998) thirty-six item measure of adult attachment style, which assesses an anxiety and an interpersonal avoidance. These two dimensions are hypothesized to underlie the four known adult attachment styles (i.e., secure, fearful, dismissing, preoccupied) with the anxiety dimension corresponding to a view of self as worthy or unworthy and the avoidance dimension corresponding to a view of other as supportive or rejecting (e.g., Bartholomew & Horowitz, 1991).

Global Self-Esteem (GSE) (Rosenberg, 1965) is a ten-item self-report measure designed to assess global feelings of self-worth.

Social Desirability Responding (SDR) (Paulhus, 1991) consists of a twenty-item scale designed to assess self-deception (i.e., the tendency to give favorably biased but honestly held self-descriptions) and another twenty-item scale designed to assess impression management (i.e., the tendency to give favorable self-descriptions to others). The mean of the two scales was computed in order to index women's social desirability responding (SDR).

Probing for suspicion. At the end of the experimental procedures, participants were asked to write what they thought the experiment was attempting to examine. None of the participants guessed that the purpose of the study was to examine the relationship between past instances of receiving abuse and preferences for dating partners.

Results

The data from the present study are multilevel in that the sixteen personal ads were nested within an individual. In order to deal with the dependence among observations resulting from nested data, a hierarchical linear model (HLM) (HLMwin v 5.04; Bryk, Raudenbush, & Congdon, 2001) approach was used to analyze the data obtained in the present study. HLM simultaneously estimates the relationships among constructs at the level-1 (within persons) and the level-2 (between persons).

The level-1 model of the HLM analysis is a *within*-subjects analysis with the individual *ads* being the unit of analysis. Conceptually, the level-1 HLM analysis computes, for *each* participant, a regression slope predicting women's preference for ads as a function of the characteristics present in the ad (i.e., abusiveness and desirability). Substituting variable labels in place of algebraic symbols, the level-1 model was represented as follows:

Level-1 model

Equation 1.0

$$\textit{Preference for ad}_{ij} = \beta_{0j} + \beta_{1j}\text{ (abusiveness)} + \beta_{2j}\text{ (desirability)} + r_{ij}$$

Thus, the outcome variable, Y_{ij}, is preference for each ad, ranging from 0 (not selected) to 4 (most preferred). Preference for ads was centered around each individual's mean preference for the sixteen ads. Moreover, because of the forced-choice feature of Internet Dating Service procedure, all the female participants obtained the same *average* preference score for the 16 ads. Thus, β_{0j}, the intercept, which reflects each woman's preference across the 16 ads, was zero and did not vary across the female participants. β_{1j} and β_{2j} are the regression coefficients (slopes) in a linear regression predicting preference for each ad from the ad's characteristic (i.e., *abusiveness* and *desirability*, respectively). r_{ij} is the usual residual error term.[26] The subscript i represents each individual ad (i = 1-16) and the subscript j represents each individual woman (j = 1-70).

As suggested earlier, the benefit of using an HLM analysis is that it computes a regression line for *each* female participant. Therefore, the level-2 model, a *between* subjects analysis, attempts to predict the level-1 coefficients (β_{0j}, β_{1j} and β_{2j})

[26] The multiplicative term representing the two-way interaction term between abusiveness and desirability of the ads was entered as a level-1 predictor along with the each individual level-1 predictor (i.e., abusiveness and desirability). The coefficient for the interaction term was not significant, $t(69) = .15$, ns. Moreover, none of the level-2 variables (i.e., reflecting women's characteristics) predicted the level-1 coefficients for the interaction term. Thus, for the sake of simplicity, the level-1 model was specified with the two direct effects only (i.e., abusiveness and desirability) and the two-way interaction term was not included.

corresponding to each woman's regression line. In particular, the level-2 model examined the extent to which the *relationship* between preference for the ad and ad's characteristics (i.e., abusiveness and desirability) is a function of a woman's individual characteristics. The level-2 model was represented as follows:

Level-2 model

Equation 1.1

$$\beta_{0j} = \gamma_{00} + \mu_{0j}$$

Equation 1.2

$$\beta_{1j} = \gamma_{10} + \gamma_{11}\,(\text{RPA}) + \gamma_{12}\,(\text{GSE}) + \gamma_{13}\,(\text{AAS}) + \gamma_{14}\,(\text{SDR}) + \mu_{1j}$$

Equation 1.3

$$\beta_{2j} = \gamma_{20} + \gamma_{21}\,(\text{RPA}) + \gamma_{22}\,(\text{GSE}) + \gamma_{23}\,(\text{AAS}) + \gamma_{24}\,(\text{SDR}) + \mu_{2j}$$

where β_{0j} represents the sample's average preference score and μ_{0j} is the residual variance of the intercept between persons (note that because preference was centered around each woman's mean and because the methodology did not allow women's average score to vary, β_{0j}, and its corresponding variance was zero). β_{1j} is each woman's slope in the level-1 model representing the relationship between the abusiveness of the ad and preference for the ad. γ_{11} to γ_{14} are the slopes in a linear regression predicting β_{1j} for each individual j from each of the woman's four personal characteristics entered at the level 2. Specifically, *RPA* refers to women's history of receiving psychological abuse, *GSE* refers to Global Self-esteem, *AAS* refers to Adult Attachment style, and *SDR* refers to Social Desirability Responding. β_{2j} is analogous to β_{1j} except that the level-1 variable is the desirability of the ad and γ_{21} to γ_{24} are the slopes in a linear regression predicting β_{2j} for each individual j from each of the woman's four personal characteristics. All four level-2

predictor variables were grand-mean centered and entered simultaneously into the HLM model.

Level-1 Analyses: Main Effects of Ad Characteristics (Abusiveness and Desirability) on Preferences

Before examining individual differences in women's preference, the main effects of ad's abusiveness and desirability on women's preferences were examined in order to further confirm the validity of the ad classifications. Specifically, on *average*, women were expected to show a stronger preference for male ads that had been rated as highly desirable. Thus, β_{2j}, which represents the effect of ad's desirability on women's preference (averaging across all participants), was expected to be positive and statistically significant. As a simple construct validation check, the level-1 model (shown in Equation 1.0) was run with no variables entered at the level-2. This model is referred to as the *level-1 predictors only* model.[27] For purpose of comparison, *an intercept-only model* (i.e., no variables entered at either level-1 or level-2) was also run on the data.[28] Table 5.3 reports the coefficients and respective standard error estimates produced from these analyses. As predicted, women preferred the personal ads that had been rated as more desirable, $\beta_{2j} = .81$, $t(69) = 10.50$, $p < .001$. Women did not show a stronger preference for ads that had been rated as abusive, $\beta_{1j} = .11$, $t(69) = 1.45$, *ns*. These results provide further support for the construct validity of the personal ads used as stimuli in the present study.

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[27] For the level-1 predictors-only model, the level 2 models were specified as follows: $\beta_{0j} = \gamma_{00} + \mu_{0j}$; $\beta_{1j} = \gamma_{10} + \mu_{1j}$; $\beta_{2j} = \gamma_{20} + \mu_{2j}$

[28] For the intercept-only model: $Y_{ij} = \beta_{0j} + r_{ij}$; $\beta_{0j} = \gamma_{00} + \mu_{0j}$

Table 5.3. Estimates for intercept-only model and level-1 predictors only model (Ch. 5, Study 1). Level 1 predictor variables are ad characteristics: abusiveness and desirability.

Model:	*M0: intercept-only*		*M1: + level-1 predictors only*	
Fixed Effects	*coefficient*	*se*	*coefficient*	*se*
Intercept, β_0	.00	.00	.00	.03
Abusiveness, β_1			.11	.08
Desirableness, β_2			.81***	.08

df = 69; *** $p < .001$; *Note:* Because the outcome variable, preference for ad, was centered around the mean, the intercept, β_0, was zero. Further, because the average preference for all participants was the same and did not vary across women, the variance and standard error for β_0 was 0. Estimates of coefficients (and standard errors) were obtained by entering the *centered* level-1 predictors into the HLM models. Corresponding *p* values were obtained by entering the *uncentered* level-1 predictors.

Level-2 Analyses: Predicting Preferences from Women's Individual Characteristics

The main goal of the present study was to examine whether women's characteristics, such as past history of receiving psychological abuse, relate to women's preference for abusive dating partners. The coefficients produced in the level-2 model are central to examining this hypothesis. Table 5.4 reports the coefficients and respective standard error estimates produced when both Level-1 and Level-2 predictors were entered into the HLM analyses. This model is referred to as the *full-model.* Of particular interest are the coefficients, γ_{11} to γ_{14}, listed in rows 3-6 that represent the extent to which women's personal characteristics predicted the *relationship* between the abusiveness associated with the ads and preference for personal ads (β_1 in the level-1 model). Similarly, the coefficients, γ_{21} to γ_{24}, listed in rows 8-11 represent the extent to which women's personal characteristics predicted the *relationship* between the desirability associated with the ads and preference for personal ads (β_2 in the level-1 model).

Receipt of Psychological Abuse (RPA). Is there a relationship between women's self-reports of receiving psychological abuse and women's preference for ads that had been

Table 5.4. Estimates for full-model (Ch. 5, Study 1). Level-1 predictor variables are ad characteristics: abusiveness and desirability. Level-2 predictor variables are women's personal characteristics: receipt of psychological abuse (RPA), global self-esteem (GSE), adult attachment style (AAS), and social desirability responding (SDR).

Model:	*M2: Full-model (+ level-1 + level-2 predictors)*	
Fixed Effects	*coefficient*	*se*
Model representing intercept, β_0		
Intercept, γ_{00}	.00	.03
Model representing preference for abusive ads as a function of women's characteristics, β_1		
Intercept, γ_{10}	.11	.08
Receipt of Psychological Abuse (RPA), γ_{11}	.31*	.16
Global Self-Esteem (GSE), γ_{12}	.08	.13
Adult Attachment Style (AAS), γ_{13}	-.10	.08
Social Desirability Responding (SDR), γ_{14}	-.01	.04
Model representing preference for desirable ads as a function of women's characteristics, β_2		
Intercept, γ_{20}	.81***	.08
Receipt of Psychological Abuse (RPA), γ_{21}	.00	.17
Global Self-Esteem (GSE), γ_{22}	.10	.14
Adult Attachment Style (AAS), γ_{23}	.05	.08
Social Desirability Responding (SDR), γ_{24}	.04	.04

$df = 65$; *** $p < .001$; * $p < .05$; *Note:* Estimates of coefficients (and standard errors) were obtained by entering the *centered* level-1 predictors into the HLM models. Corresponding p values were obtained by entering the *uncentered* level-1 predictors.

rated high on potential for abusiveness? A positive γ_{11} would suggest that women who indicate more instances of past psychological abuse prefer personal ads rated as more abusive. As shown in Table 5.4, row 3, γ_{11} was positive and statistically significant (γ_{11} = .31, $p < .05$). Moreover, a regression coefficient of suggests a medium to large effect size (Cohen, 1988). This finding suggests that women's self-reports of receipt of psychological abuse moderates the relationship between the abusiveness of the ad and preference for the ad.

Because the receipt of psychological abuse (RPA) index is composed of five scales that assess specific types of negative behaviors exhibited by one's partner, the next analyses examined the extent to which *each* individual scale predicted the relationship between the abusiveness of the ad and women's preference. Six HLM models (i.e., one for each scale as well as the single-item assessing potential for physical abuse) were constructed. For each of these scales, ad abusiveness was the only level-1 predictor variable entered. Thus, the HLM level-1 and level-2 models were specified as follows:

Level-1 model

Equation 1.4

$$\textit{Preference for ad}_{ij} = \beta_{0j} + \beta_{1j} \text{ (abusiveness)} + r_{ij}$$

Level-2 model

Equation 1.5

$$\beta_{1j} = \gamma_{10} + \gamma_{11} \text{ (RPA negative behavior scale)} + \mu_{1j}$$

The coefficients for each of the five negative behavior scales, as well as the single-item assessing potential for physical abuse, are reported in Table 5.5. In order to control for alpha inflation, p values were adjusted using the Holm correction (1979), a variation of the Bonferroni adjustment procedure that involves multiplying the smallest p-value by the number of tests (k) performed, the next smallest by $k - 1$, and so on. As shown in Table 5.5, after the adjustment, none of the coefficients for the individual RPA scales were significant at $p < .05$. Nonetheless, the pattern was in the expected direction: Women who reported more past experiences in which their partner used isolation and emotional control, undermined their self-esteem, exhibited jealous behaviors, and inflicted verbal abuse showed a stronger preference for abusive ads. In addition, the single-item assessing the possibility or threats of violence was also related (but not at $p < .05$) to preference for abusive ads.

Table 5.5. The relationship between women's preference for abusive ads and self-reports on each negative behavior scale (Ch. 5, Study 1). Estimates for HLM models with Level-1 predictor variables (ad abusiveness) and level-2 predictor variable (i.e., each individual negative behavior scale).

Fixed Effects	*coefficient*	*se*
Receipt of Abuse – Negative Behaviors Scales		
Isolation/Emotional Control	.41	.26
Undermining Self-esteem	.14	.12
Jealousy	.15	.07
Verbal Abuse	.23	.09
Emotional Withdrawal	.05	.10
Physical Violence (CTS)	.20	.10

$df = 68$; *Note:* Each negative behavior scale of the RPA index was entered separately into an HLM model. For all HLM models: the level-2 intercept, $\beta_{10} \approx -.36$, se $\approx .06$, $p < .001$. Estimates of coefficients (and standard errors) were obtained by entering the *centered* level-1 predictors into the HLM models. Corresponding p values were obtained by entering the *uncentered* level-1 predictors. The Holm's correction was used to control for alpha inflation due to the multiple tests ($k = 6$) performed.

For illustrative purposes, the relationship between receipt of abuse and whom women selected as their *most* preferred personal ad (i.e., the *one* individual who interested them the most) was examined. For this analysis, personal ads were classified into one of three categories: *Abusive*, *undesirable*, and *desirable* (see Study 1 methods section). Using a median split to dichotomize the receipt of psychological abuse (RPA) index, female participants were classified as having a *prior history of abuse* or *no history of abuse*. As shown in Table 5.6, women with a *prior history of abuse* were three times more likely than women with *no history of abuse* to select a personal ad describing an abusive male. A chi-square test examining the relationship between the dichotomized receipt of abuse index (prior history of abuse v. no history of abuse) and the type of personal ad most preferred (abusive ads v. undesirable ads) approached statistical significance, $\chi(1, N = 30) = 3.21, p = .07$, and Cramer's ω of .33 suggests a medium effect size.

Table 5.6. Type of personal ad most preferred as a function of women's history of receiving psychological abuse (Ch. 5, Study 1). Cells show number of women who preferred each type of personal ad (percentage within each level of receipt of abuse is reported in parentheses).

	Type of personal ad most preferred		
	Abusive	Undesirable	Desirable
Receipt of abuse[a]			
Prior history of abuse	12	6	17
($n = 35$)	(34.3%)	(17.1%)	(48.6%)
No history of abuse	4	8	23
($n = 35$)	(11.4%)	(22.9%)	(65.7%)
Total	16	14	40
$N = 70$	(22.9%)	(20.0%)	(57.1%)

[a]Using a median split on the receipt of psychological abuse (RPA) index, female participants were classified as having a *prior history of abuse* or having *no history of abuse*.

Social Desirability Responding (SDR). Could the relationship between past history of receiving psychological abuse and preference for abusive ads be due to a tendency to provide socially desirable answers? For example, perhaps women who endorse socially undesirable responses are those who also prefer abusive dating partners. In a similar vein, could the relationship between receipt of psychological abuse and preference for abusive ads be due to a tendency for women who reported more instances of abuse to prefer dating partners that were undesirable in general? As shown in Table 5.4, row 6, social desirability responding was *not* related to preference for abusive dating partners, $\gamma_{14} = -.01$, *ns*. In addition, as shown in row 8, receipt of psychological abuse was *not* related to a preference for desirable ads, $\gamma_{21} = .00$, *ns*. Together, these findings suggest that the relationship between women's past history of receiving psychological abuse and preference for abusive ads does not seem to be attributable to a simple social desirability responding tendency.

Negative view of Self: Adult Attachment Styles (AAS) and Global Self-Esteem (GSE). Past research has found an association between adult attachment style and higher instances of receiving psychological abuse (e.g., Henderson et al., 1997). Before examining whether adult attachment style was related to preference for abusive ads, the present study assessed the relationship between women's attachment style and their self-reports of receiving psychological abuse (RPA). Replicating previous research, the anxiety dimension of the attachment measure, which is assumed to reflect a view of self as unworthy and associated with a preoccupied and fearful attachment style, was related to more instances in which partner undermined self-esteem, $r(70) = .30, p = .01$, partner's use of withdrawal, $r(70) = .34, p < .005$, and the receipt of psychological abuse (RPA) index, $r(70) = .28, p < .05$. In addition, the relationship between the anxiety dimension and partner's jealous behavior approached statistical significance, $r(70) = .20, p < .10$. The anxiety dimension was not correlated with partner's use of isolation and emotional control, $r(70) = .16$, *ns*, verbal abuse, $r(70) = .11$, *ns,* or with the single-item suggesting the use of physical violence, $r(70) = .02$, *ns*. The avoidance dimension, which has not

been associated with receipt of abuse in the literature, was not correlated with the receipt of abuse index, $r(70) = -.11$, *ns*, or any of the individual negative behavior scales.

Having replicated previous findings, the next analysis turned to one of the main question of the present study: Is a woman with an adult attachment style that is characterized by a negative view of self (i.e., preoccupied or fearful) more likely to prefer potentially abusive dating partners? As shown in Table 5.4, row 5, the results from the HLM analysis suggest that the anxiety dimension was not related to preference for abusive ads, $\gamma_{13} = -.10$, *ns*. In addition, as shown in row 4, global self-esteem was also not related to preference for abusive ads, $\gamma_{12} = .08$, *ns*. Collectively, these findings do not provide support for the hypothesis that a negative view of self is related to a stronger preference for potentially abusive dating partners.

Discussion

The present study found that women's self-reports of receiving psychological abuse in their most recent romantic relationship were related to preference for personal ads describing potentially abusive men. Could the relationship between history of receiving psychological abuse and women's tendency to prefer personal ads with abusive features reflect a broader tendency to prefer dating partners who are generally undesirable, irrespective of potential for abusiveness? The data did not suggest a relationship between self-reports of experiencing psychological abuses and preference for personal ads with undesirable features. Moreover, there was no relationship between a tendency to endorse socially undesirable responses and preference for abusive dating partners. Thus, collectively, the relationship between women's history of receiving psychological abuse and preference for abusive dating partners does not appear to be the result of a general tendency to prefer socially undesirable dating partners.

In addition, Study 1 was also interested in examining the relationship between women's view of self and preferences for potentially abusive dating partners. Consistent with previous research, women with an adult attachment style that was characterized by

high anxiety, which is assumed to reflect a negative view of self, reported more instances of receiving psychological abuse within their past romantic relationships. However, the anxiety dimension underlying women's adult attachment style was *not* related to women's preferences for personal ads describing a potentially abusive male. Given that a negative view of self has been linked with a greater likelihood for receipt of abuse for women, this null finding is particularly interesting. What could account for this pattern of results? One possibility is that women with an attachment style characterized by a negative view of self are more likely to be sought out by abusive dating partners. In other words, while women with different attachment styles may not differ in their preference for abusive dating partners, abusive men might be more likely to prefer and select women with a particular attachment style. This possibility is examined in Study 2.

Study 2

Men's preferences for female dating partners were assessed using the Internet Dating Service paradigm. Male participants read sixteen personal ads, each describing a female student, and selected the ads that interested them the most. The women that were described in the personal ads differed systematically in their adult attachment style. Some personal ads described women with an adult attachment style corresponding to a negative view of self (i.e., fearful or preoccupied). Other personal ads described women with an adult attachment style corresponding to a positive view of self (i.e., dismissing or secure). Using this measure of partner preference, Study 2 investigated whether individual differences in men's preference for female dating partners, who differed systematically in their adult attachment style, relate meaningfully to the degree to which they had engaged in psychologically abusive behaviors in their most recent romantic relationship. In addition, Study 2 examined the relationship between men's preference for ads describing women with a negative view of self and men's adult attachment style, global self-esteem, as well as social desirability responding.

Methods

Participants

Ninety-three male students attending the University of Washington participated in the experimental session. The mean age was 18.73 yrs, (*SD* = 1.33 yrs). Fifty-three participants were not involved in a romantic relationship and forty were involved in a romantic relationship at the time of the experimental session (entitled "Understanding dynamics within romantic relationships"). Preferences for personal ads were analyzed separately for males involved and not involved in a romantic relationship. The overall pattern of results for both groups of males was similar. Thus, the results of the analysis for the entire sample are reported below unless otherwise noted.

Procedures and measures

Assessing Preferences for Personal Ads

Development of Personal Ads. In a separate study, 149 college-aged females wrote short descriptions of themselves in the form of personal ads. Of these, sixteen personal ads were selected as *ad templates*.[29] The attachment style of the female ad writer was manipulated by inserting statements reflecting interpersonal avoidance and anxiety, corresponding respectively to a view of other (positive v. negative) and view of self (positive v. negative) dimension. Avoidance and anxiety are two dimensions hypothesized to underlie the four known adult attachment styles (i.e., secure, fearful, dismissing, preoccupied) (e.g., Bartholomew and Horowitz, 1991). The inserted statements were selected verbatim or paraphrased from the widely used self-report measure of adult attachment style (Brennan, Clark, & Shaver, 1998) that assesses interpersonal avoidance as well as anxiety. Specifically, the personal ads describing

[29] The sixteen personal ads contained approximately the same number of words. Similar to the development of ads in Study 1, these sixteen personal ads were edited minimally so that they made no mention of ethnicity, race, and religious affiliation of either the ad writer, or the characteristics the ad writer was seeking in a partner.

females with a preoccupied attachment style consisted of a statement reflecting high anxiety (e.g., "When I'm not involved in a relationship I feel somewhat anxious and insecure"), as well as a statement reflecting low avoidance (e.g., "I tell my partner just about everything. I usually discuss my problems or concerns with my partner"). The personal ads describing females with a fearful attachment style consisted of a statement reflecting high anxiety (e.g., "I sometimes worry about being alone") and a statement reflecting high avoidance (e.g., "I don't feel comfortable opening up to my partner, and revealing my feelings"). The personal ads describing females with a dismissing attachment style consisted of a statement reflecting low anxiety (e.g., "I don't worry much about my relationships, and don't need a lot of reassurance that I am loved by my partner"), as well as a statement reflecting high avoidance (e.g., "I don't feel comfortable opening up to my partner"). Finally, the personal ads describing a female with a secure attachment style consisted of a statement reflecting low anxiety (e.g., "I don't worry a lot about my relationships, about being alone or about losing my partner"), as well as a statement reflecting low avoidance (e.g., "I find it relatively easy to get emotionally close to my partner"). Four pairs of statements (i.e., one statement assessing avoidance and one statement assessing anxiety) were produced for each of the four adult attachment style, resulting in a total of sixteen pairs (listed in Appendix H). The same statements never appeared in more than one ad. In order to control for the effect of template ad, participants were placed in one of four experimental conditions across which the attachment style of the template ad was counterbalanced.

In order to minimize suspicions about the validity of the personal ads, participants were told before they read the personal ads that the female ad writers were specifically instructed to describe "their feelings and thoughts within past romantic relationships" in the personal ads. This additional information was designed to reduce any suspicion that might arise as a result of all the personal ads containing descriptions about the female ad writer's feelings and thoughts within romantic relationships.

Assessing Preferences using the Internet Dating Service Procedure. Study 2 used procedures similar to those used in Study 1. In particular, participants were asked to "surf" the web pages of a dating service where sixteen personal ads describing females seeking male dating partners were posted. Participants then indicated which of the personal ads described a person they would be interested in getting to know better through the four-round selection process (for details see Study 1 methods section).

Self-Report Measures Assessing Men's Individual Characteristics

At the end of the experimental session, participants completed measures to assess their adult attachment style (Brennan et al., 1998), global self-esteem (Rosenberg, 1965) and social desirability responding (Paulhus, 1991) (see Study 1 methods section). In addition, participants in Study 2 completed a questionnaire to assess the frequency in which they had *inflicted* psychologically abusive behaviors in their most recent romantic relationship.

Assessing Infliction of Psychological Abuse (IPA). Items from the Psychological Maltreatment Inventory (PMI) (Kasian & Painter, 1992) were reworded so that they assessed frequency of *inflicting*, rather than receiving, psychological abuse within individuals' most recent romantic relationship (e.g., "You put down your partner's appearance"). Participants completed the full (60 item) version at the experimental session. Using similar procedures as those described in Study 1, a composite score, referred to as the *infliction of psychological abuse (IPA)* index, was computed by taking the mean of the five negative behaviors scales. In addition, participants were asked to respond to one item selected from the Conflict Tactics Scale (CTS) (Straus, 1979), which assesses the possibility or threats of physical abuse (i.e., "You threw or smashed or hit or kicked something").

Probing for suspicion. Similar to the procedures in Study 1, at the end of the experimental session, participants were asked to write down what they thought the experiment was attempting to examine. None of the participants guessed that the purpose

of the study was to examine the relationship between past instances of inflicting abuse and preferences for dating partners.

Results

Similar to Study 1, HLM was used to analyze the data obtained in the present study. The level-1 HLM analysis computed, for *each* participant, a regression slope predicting men's preference for ads as a function of the characteristics present in the ad (i.e., women's attachment style). Dummy coded variables representing the attachment style of the female ad writer were the Level-1 predictors. For example, a dummy coded variable representing the personal ads describing women with a negative view of self attachment style was created by assigning the four personal ads describing a female with a fearful attachment style and the four personal ads describing a female with a preoccupied attachment style a value of 1. The remaining eight personal ads describing a female with a positive view of self attachment style (i.e., dismissing or secure) were assigned a value of 0. Dummy coded variables representing the personal ads describing females with one of the four adult attachment styles (i.e., fearful, preoccupied, dismissing, and secure) were also created in a similar manner. Because of multicollinearity among the level-1 predictor variables, each level-1 variable was entered into separate HLM equations. In order to control for alpha inflation due to the multiple tests ($k = 5$) performed in the Level-1 analyses, p values were adjusted using the Holm correction (1979). The level-1 model was represented as follows:

Level-1 model

Equation 2.0

$$\textit{Preference for ad}_{ij} = \beta_{0j} + \beta_{1j}\,(\text{attachment style}) + r_{ij}$$

Thus, the outcome variable, Y_{ij}, is preference for an ad, ranging from 0 (not selected) to 4 (most preferred). As was the case in Study 1, preference for ads was centered around each individual's mean preference for the sixteen ads and did not vary between subjects due to the forced-choice feature of Internet Dating Service procedure. Thus, β_{0j}, the intercept, which reflects each man's preference across the 16 ads, was zero with a variance of zero. β_{1j} is the regression coefficients (slope) in a linear regression predicting preference for each ad from the ad's attachment style, and r_{ij} is the usual residual error term. The subscript *i* represents each individual ad (*i* = 1-16) and the subscript *j* represents each individual woman (*j* = 1-93).

The level-2 model, *between* subjects analysis, predicted the level-1 coefficients (β_{0j}, β_{1j}) corresponding to each man's regression line from men's personal characteristics. The level-2 model was represented as follows:

Level-2 model

Equation 2.1

$$\beta_{0j} = \gamma_{00} + \mu_{0j}$$

Equation 2.2

$$\beta_{1j} = \gamma_{10} + \gamma_{11}\,(\text{RPA}) + \gamma_{12}\,(\text{GSE}) + \gamma_{13}\,(\text{AAS}) + \gamma_{14}\,(\text{SDR}) + \mu_{1j}$$

where β_{0j} represents the sample's average preference score and μ_{0j} is the residual variance of the intercept between persons. β_{1j} is each man's slopes in the level-1 model representing the relationship between the attachment style of the female ad writer and preference for the ad. γ_{11} to γ_{14} are the slopes in a linear regression predicting β_{1j} for each individual *j* from each of the man's four personal characteristics. *IPA* refers to history of

inflicting psychological abuse, *GSE* refers to global self-esteem, *AAS* refers to Adult Attachment style, and *SDR* refers to Social Desirability Responding. All four level-2 predictor variables were grand-mean centered and entered simultaneously into the HLM model.

Level-1 Analyses: Main Effects of Ad Characteristics (Abusiveness and Desirability) on Preferences

The central questions of Study 2 involved examining individual differences in men's preference for female dating partners with a negative view of self. However, in order to further assess the validity of the ad classifications, the first analyses examined the main effects of the characteristics present in the personal ads (i.e., the attachment style of the female) on men's preference for dating partners. Past research has found that people are more attracted to dating partners with secure attachment styles, and least attracted to partners with avoidant attachment styles (i.e., fearful and dismissing) (e.g., Baldwin et al., 1996: Frazier et al., 1996). Thus, on *average*, men were expected to show a stronger preference for ads describing females with a secure adult attachment style compared to the dismissing, fearful, and preoccupied attachment style. Thus, the effect of a *secure* attachment style on men's preference (averaging across all participants), represented by β_1, was expected to be positive. In contrast, the effect of each of the insecure attachment styles (i.e., dismissing, fearful, and preoccupied) was expected to be zero or negative.

Similar to the construct validation check performed in Study 1, a *level-1 predictor only* model (i.e., with no variables entered at the level-2) and an *intercept-only model* (i.e., no variables entered at either level 1 or level 2) were run on the data. Table 5.7 reports the coefficients and respective standard error estimates produced from these analyses. As predicted, on average, male participants preferred personal ads describing women with a secure attachment style ($\beta_1 = .39$, $t(92) = 4.65$, $p < .001$). In contrast, on average, male participants showed weaker preference for personal ads describing women

with a dismissing (β_1 = -.21, $t(92) = 2.58$, $p < .01$) or fearful attachment style (β_1 = -.18, $t(92) = 2.47$, $p < .05$) and no preference, positively or negatively, for personal ads describing women with a preoccupied attachment style (β_1 = .00, $t(92) = .01$, *ns*). These findings are highly consistent with previous research and provide construct validity to the ad classification as well as the Internet Dating Service paradigm as a measure of partner preference.

Table 5.7. Estimates for intercept-only model and level-1 predictors only model (Ch. 5, Study 2). Level 1 predictor variables are ad characteristics (i.e., adult attachment style).

Model:	*M0: intercept-only*		*M1: + level-1 predictor only*[a]	
Predictor	*coefficient*	*se*	*coefficient*	*se*
Intercept, β_0	.00	.00	.00	.03
Fearful			-.18*	.07
Preoccupied			.00	.08
Dismissing			-.21*	.08
Secure			.39***	.08
View of Self[b]			-.14†	.07

df = 92; *** $p < .001$; ** $p < .01$; * $p < .05$; † $p = .10$; *Note:* Estimates of coefficients were obtained by entering the *centered* level-1 predictors into the HLM models and corresponding p values were obtained by entering the *uncentered* level-1 predictors. In order to control for alpha inflation due to the multiple tests ($k = 5$) performed in the Level-1 analyses, p values were adjusted using the Holm correction (1979). [a] Due to problems of multicollinearity among the fixed predictors, each ad characteristic was entered separately into an HLM model. [b] Negative view of self was a dummy coded variable that compared the fearful and preoccupied attachment styles (assigned a value of 1) to the dismissing and secure attachment styles (assigned a value of 0).

Level-2 Analyses: Predicting Preferences from Men's Individual Characteristics

The goal of Study 2 was to examine whether men's characteristics, such as past history of inflicting psychological abuse, relate to men's preference for dating partners. The coefficients produced in the level-2 model are central to examining this hypothesis. Table 5.8 reports the coefficients and respective standard error estimates produced from the Level-1 and Level-2 HLM analyses. The regression coefficients reported represent the extent to which men's personal characteristics predicted the *relationship* between the attachment style associated with the ads and preference for personal ads. Men's personal characteristics are listed down the left column and the attachment style corresponding to the female personal ad is listed across the top. Specifically, columns 1 through 4 refer to the effect of personal ads that describe a woman with a dismissing, fearful, preoccupied, and secure attachment style, respectively. Column 5 refers to the effect of personal ads describing a woman with a negative view of self (i.e., fearful and preoccupied) attachment style compared to a positive view of self (i.e., dismissing or secure) attachment style. Because the negative view of self variable reflects the difference between preference for ads with a negative view of self (i.e., fearful and preoccupied personal ads) and preference for ads with a positive view of self (i.e., dismissing and secure personal ads), this index is most directly relevant to the hypothesis of the present study.

Infliction of Psychological Abuse (IPA). Is there a relationship between men's self-reports of inflicting psychological abuse (IPA) and the extent to which men preferred ads that described a female with a negative view of self (i.e., fearful or preoccupied)? A positive γ_{11} would lend support to the hypothesis that men who indicate more instances of inflicting psychological abuse in romantic relationships prefer personal ads describing women with a negative view of self. As shown in Table 5.8, row 2, the relationship between personal ads with a negative view of self and preferences for these ads was stronger for men who reported more instances of inflicting psychological abuse.

Table 5.8. Estimates for full model (Ch. 5, Study 2). Estimates of level-2 regression coefficients (standard errors are in parenthesis) are listed below. Level-1 predictor variables are ad characteristics (i.e., attachment style). Level-2 predictor variables are men's personal characteristics: infliction of psychological abuse (IPA), global self-esteem (GSE), adult attachment style (AAS), and social desirability responding (SDR).

	Level 1 Predictors (Ad Characteristics)				
Level 2 Predictors (Men's Personal Characteristics)	Fearful	Preoccupied	Dismissing	Secure	Negative view of self[a]
Intercept	-.18**	.00	-.21**	.39***	-.14*
	(.07)	(.07)	(.07)	(.07)	(.06)
Infliction of Psychological Abuse (IPA), γ_{11}	.26	.46*	-.31	-.40	.53†
	(.21)	(.21)	(.21)	(.21)	(.19)
Global Self-Esteem (GSE), γ_{12}	-.06	-.05	-.03	.13	-.08
	(.11)	(.11)	(.11)	(.11)	(.10)
Adult Attachment Style (AAS), γ_{13}	-.03	.05	-.02	-.01	.02
	(.07)	(.07)	(.07)	(.07)	(.06)
Social Desirability Responding (SDR), γ_{14}	-.02	.02	.00	.01	-.01
	(.03)	(.03)	(.03)	(.03)	(.03)

$N = 88$; *** $p < .001$; ** $p < .01$; * $p = .05$; $^{\dagger}p < .06$; *Note:* Each Level-1 predictor was entered separately into an HLM model. For all HLM models: the Level-1 intercept, $\gamma_{00} = .00$, se = .03, *ns*. Estimates of coefficients (and standard errors) were obtained by entering the *centered* level-1 predictors into the HLM models. Corresponding p values were obtained by entering the *uncentered* level-1 predictors. p values were adjusted to control for alpha inflation as a result of performing multiple tests ($k = 5$) using Holm's correction.

γ_{11} was positive and statistically significant ($\gamma_{11} = .53, p < .05$), suggesting a relatively large effect size. That is, men who reported higher instances of inflicting psychological abuse showed a stronger preference for personal ads with a fearful or preoccupied attachment style. These findings suggest that men's self-reports of inflicting psychological abuse moderate the relationship between the attachment style of the female ad writer and preference for the ad.

The next analyses involved examining the extent to which *each* individual negative behavior scale of the IPA predicted men's preference for ads describing a female with a negative view of self attachment style. Six HLM models, one for each negative behaviors scale as well as the single-item assessing men's threats of physical violence, were constructed. For each of these scales, the dummy coded variable representing the negative view of self dimension was the only level-1 predictor variable entered. Thus, the HLM level-1 and level-2 models were specified as follows:

Level-1 model

Equation 1.4

$$\textit{Preference for ad}_{ij} = \beta_{0j} + \beta_{1j} \text{ (negative view of self)} + r_{ij}$$

Level-2 model

Equation 1.5

$$\beta_{1j} = \gamma_{10} + \gamma_{11} \text{ (IPA negative behavior scale)} + \mu_{1j}$$

The coefficients for each of the five negative behavior scales, as well as the single-item assessing threats of physical abuse, are reported in Table 5.9. In order to control for alpha inflation, p values were adjusted using the Holm correction (1979). As shown in Table 5.9, after the adjustment, three of the six coefficients were statistically significant at $p < .01$: Men who reported more instances in which they used isolation or emotional control, undermined their partner's self-esteem, and were verbally abusive, showed a stronger preference for personal ads describing women with a negative view of self. In addition, although not significant at $p < .05$, men's preference for negative view of self ads was also positively related to their self-reports of jealousy.

Table 5.9. The relationship between men's preference for negative view of self ads and self-reports on each negative behavior scale (Ch. 5, Study 2). Estimates for models with level-1 predictor variables (ad characteristics: negative view of self) and level-2 predictor variable (men's characteristics: each individual negative behavior scale).

Fixed Effect	*coefficient*	*se*
Infliction of Abuse – Negative Behaviors Scales		
Isolation/Emotional Control	1.13***	.28
Undermining Self-esteem	.53***	.14
Jealousy	.28	.13
Verbal Abuse	.30**	.09
Emotional Withdrawal	.19	.11
Physical Violence (CTS)	.07	.09

$df = 91$; $^{***}p < .001$; $^{**}p < .01$; $^{\dagger}p < .10$; *Note:* Each negative behavior scale was entered separately into an HLM model. For all HLM models: the level-2 intercept, $\gamma_{10} \approx -.14$, se $\approx .06$, $p < .05$. Estimates of coefficients (and standard errors) were obtained by entering the *centered* level-1 predictors into the HLM models. Corresponding p values were obtained by entering the *uncentered* level-1 predictors. In order to control for alpha inflation due to the multiple tests ($k = 6$) performed in the Level-2 analyses, p values were adjusted using the Holm correction (1979).

For illustrative purposes, the next analyses examined the relationship between infliction of psychological abuse (IPA) and whom men selected as their most preferred personal ad (i.e., the *one* individual who interested them the most). Using a median split to dichotomize the infliction of psychological abuse (IPA) index, male participants were classified as having a *prior history of abusiveness* or *no history of abusiveness*. As shown in Table 5.10, men with a *history of abusiveness* were twice more likely than men with *no history of abusiveness* to select a personal ad describing a woman with a negative view of self attachment style. Furthermore, men with a *history of abusiveness*

Table 5.10. Type of personal ad most preferred as a function of men's history of inflicting psychological abuse (IPA) (Ch. 5, Study 2). Cells show the number of men who preferred each type of personal ad (percentage within each level of infliction of abuse is reported in parentheses).

	Type of personal ad most preferred					
	Fearful	Preoccupied	Dismissing	Secure	Negative view of self	Positive view of self
Infliction of abuse[a]						
Prior history of abuse ($n = 46$)	13 (28.3%)	15 (32.6%)	4 (8.7%)	14 (30.4%)	28 (60.9%)	18 (39.1%)
No history of abuse ($n = 47$)	5 (10.6%)	8 (17.0%)	11 (23.4%)	23 (48.9%)	13 (27.7%)	34 (72.3%)
Total ($N = 93$)	18 (19.4%)	23 (24.7%)	15 (16.1%)	37 (39.8%)	41 (44.1%)	52 (55.9%)

[a] Using a median split on the infliction of psychological abuse (IPA) index, male participants were classified as *prior history of abusiveness* and *no history of abusiveness*.

were 1.5 times more likely to select a negative view of self ad compared to a positive view of self ad, whereas men with *no history of abusiveness* were more than twice as likely to select a positive view of self ad compared to a negative view of self ad. A chi-square test examining the relationship between the dichotomized infliction of abuse index (prior history of abusiveness v. no history of abusiveness) and the type of personal ad most preferred (negative view of self ads v. positive view of self ads) was statistically significant, $\chi(1, N = 93) = 10.40, p < .001$, and Cramer's $\hat{w}$ of .33 suggests a medium effect size.

Global Self-Esteem (GSE) and Social Desirability Responding (SDR)

Could the relationship between past history of inflicting psychological abuse and preferences for ads with a negative view of self be explained by individual differences in global self esteem or a general tendency to provide socially desirable responses? As shown in Table 5.8, neither global self-esteem nor social desirability responding was related to preference for personal ads describing a female with a negative view of self, $\gamma_{12} = -.08$, *ns*, and $\gamma_{12} = -.01$, *ns*, respectively. These findings suggest that the relationship between past history of inflicting abuse and preference for personal ads describing a woman with a negative view of self can not be explained by men's tendency to endorse socially desirable responses.

Discussion

An attachment style associated with a negative view of self (i.e., preoccupied or fearful) has been identified as a risk factor for receipt of abuse among women (e.g., Henderson, Bartholomew, & Dutton, 1997; O' Hearn and Davis, 1997). According to adult attachment theory, individuals with a preoccupied or fearful adult attachment style are hypothesized to believe that they are unworthy of love and affection (Bartholomew & Horowitz, 1991). The present study found that men who reported more instances of inflicting psychological abuse in their most recent romantic relationship were more likely to prefer personal ads describing a woman with a

preoccupied or fearful attachment style. Furthermore, preference for female dating partners described as having a negative view of self was not related to men's general tendency to provide socially desirable responses, nor was it related to individual differences in global self-esteem, suggesting that the relationship between infliction of abuse and preferences in dating partners cannot be attributed to a general tendency to respond in a socially desirable manner.

General Discussion

Do women with a prior history of receiving abuse prefer male dating partners who are potentially abusive? Although the belief that individuals select dating partners that may contribute to the formation of abusive relationship dynamics is prevalent among laypersons as well as experts in the field, the role of partner preference in the genesis of abusive relationship dynamics has not received systematic empirical analysis. The present studies examined the validity this widely held assumption.

Are these intuitions correct? The results of the present study are partly consistent with the notion that individuals may select dating partners, albeit unwittingly, who reinforce or in some way provide feedback that is consistent with already held beliefs, even if those beliefs are negative. In Study 1, women with a history of receiving abusive behaviors within their most recent romantic relationship preferred dating partners that were rated by other women as potentially abusive. The results of Study 2, however, highlight that intuitions are not always accurate. Although the commonly held belief is that women are the ones who select dating partners that recreate abusive relationship dynamics, it is possible that men's preferences for dating partners may play a role in the genesis of abusive relationship dynamics. That is, whereas one factor influencing the formation of abusive relationship dynamics may be women's preference in dating partners, another factor may be men's preferences in dating partners. Thus, if a woman finds herself repeatedly experiencing particular types of relationship patterns, such as one in which she experiences abusive behaviors, it may

be because particular types of dating partners are attracted to her, rather than her being attracted to and seeking particular types of dating partners.

The results of the present studies provide another example of how intuitions are at times inconsistent with empirical data. Global self-esteem has commonly been associated with abusive relationship dynamics for both men and women. However, in Study 1, women's most recent relationship experiences, rather than global self-esteem, were related to their preference for abusive personal ads. Similarly, in Study 2, men's most recent relationship experiences, rather than global self-esteem, were related to their preference for personal ads describing females with a negative view of self. The results of both studies suggest that for both men and women specific thoughts about interactions within romantic relationships, which implicitly take into account thoughts about self and others and unique interactions between the two, rather than global feelings about self, or simple social desirability responding, influence individuals' preferences for dating partners in regards to abusive relationship dynamics. These results are consistent with Swann and colleagues' research (e.g., Swann et al, 1992), who have suggested that mental representations involve self in relation to others.

The question that naturally follows is why do women with a past history of receiving psychological abuse prefer men that are potentially abusive, and conversely, why do men with a past history of inflicting abuse prefer women with attachment styles corresponding with negative views of self? Theorizing in the field suggests that people select dating partners who reinforce or in some way provide feedback that is consistent with already held beliefs, even if those beliefs are negative (Swann et al., 1992). Indeed, Swann and colleagues suggest that for reasons related to prediction and control (Swann, 1992) people seek to interact with others that will confirm views of self.

The results of the present studies are also consistent with recent models of personality (Shoda & Mischel, 1998/2000; Mischel, & Shoda, 1995) that suggest that behavioral consistency, as well as stability and consistency in how people experience

close relationships, is due in part to individual differences in situations encountered (Zayas, Shoda, & Ayduk, 2002). Although in this paper we have focused on partners and their behaviors as a chronic, long-standing "situation," people may also differ in their selection of other more traditionally defined situations that do not involve one's partner, such as the tendency to approach versus avoid anxiety eliciting situations. Thus, going beyond situations that involve only one's romantic partner, at a broader level, behavioral consistency may emerge from the interactions between individual characteristics and individual differences in situations. That is, a person's behavior is predictable not only because of stable personal characteristics, but also as result of stable individual differences in situational factors influencing her behavior. The entire process that produces individual's behavior – beginning from the presence of situational features to differential activation of thoughts and feelings to subjective experience and behavioral response to selection of situations – may be viewed as the personality system that promotes stability in behavior over time and across different situations. This perspective to personality, which emphasizes the integral role of reliable and stable individual differences in situational effects, is consistent with current research. Research by Bolger and his colleagues (Bolger & Schilling, 1991; Bolger & Zuckerman, 1995), for example, highlights how stable individual differences in situations interact with stable personal characteristic. They hypothesized that neuroticism may affect and reflect individuals' affective lives by not only increasing their reactivity to stressful events, but also by leading them to encounter stressful events more frequently. Using daily diary studies of couples, Bolger and Schilling (1991) found that people who score high in neuroticism were different from those who score low both in the extent to which they encountered anxiety eliciting situations as well as the extent to which they reacted to the situation.

Do the results of the present studies suggest that the victim of abuse is to blame and some how responsible for the abuse? Regardless of whether a woman prefers, or is sought, by a particular type of partner, the perpetrator is ultimately accountable for engaging in the abusive behavior. Instead of using the results of the present studies to

place blame on the victim or exonerate the perpetrator, the results are better used to identify and understand the processes and factors involved in abusive relationship dynamics so that effective intervention and prevention may be possible. The realization that one's relationship experiences are a result in part of the choices one makes for dating partners may be a critical first step in changing destructive and harmful relationship patterns.

CONCLUSION

It makes sense that personality psychologists focused on the role of P while controlling for E in the $B = f(P, E)$ equation. Yet, people do not live in a vacuum, or in meticulously controlled situations of a laboratory, or respond only to items on a standardized questionnaire. A genuine understanding of such individual differences would require understanding the interpersonal systems in which an individual is a part, just as understanding why a particular animal or plant species is thriving or endangered requires not only an understanding of the structure and life cycle of that species, but also an understanding of the eco*system* of which the species is a part. One feature of a species may help it thrive and reproduce effectively in one ecosystem, but the same feature may make survival and reproduction difficult, when embedded in a different ecosystem. That is, the response of the species (e.g., reproduction) is a function of the entire ecosystem of which it is a part. Similarly, to the extent that one wishes to understand the behaviors of people in their lives outside the laboratory, individual differences in the situations encountered must be taken into account.

For clarity, the framework outlined in this article focused only on the interactions between partners in a dyad to model such an ecosystem. That, of course, is a simplification ignoring the fact that most couples do not live in isolation. How, then, might the model be extended to take into account the role of larger contexts within which a dyad is embedded? In the present framework, a significant portion of the observable aspects of E that a member of a dyad encounters is considered to be the behavior of the other member. Thus, a large portion of E_1 is B_2, and similarly, a significant portion of E_2 is B_1. Using this as a basis, the process in which E_1 is generated within a dyadic relationship is modeled. That is, because $B_1 \approx f(P_1, E_1)$ and $B_1 \approx E_2$, as well as $E_1 \approx B_2$, it follows that $E_2 \approx f(P_1, E_1) \approx f(P_1, B_2)$.

But the real world is more complex than the model used throughout the paper. Because dyads are themselves embedded in a larger social context or an ecosystem, the

environment of each person of a dyad does not consist solely of his or her partner's behaviors. It is, therefore, necessary to consider the other systems of which each person is a part, and to examine how these systems also affect the specific and immediate E that an individual encounters. The general approach used in modeling dyadic interactions may be extended to address the effect of larger contexts. Namely, similar to considering one's partner as a dynamic agent providing situations one encounters, situations in people's lives depend on how the social and cultural systems of which they are a part respond. Ultimately, the future situations to be encountered depend not only on one's behavior but also on how the person's environment responds to the behavior. Thus in order to fully account for real-life dyadic interactions, one needs to extend the dyadic analysis by including the social and cultural systems. In other words, in order to achieve a more comprehensive understanding of people's behaviors in their lives, one needs to consider not only

$$B = f(P, E)$$

but also

$$E = f(X, B),$$

where X represents not only the partner but also the social and cultural system in which the dyad is embedded.

The present paper has suggested that a genuine understanding of such individual differences would require understanding the interpersonal systems in which an individual is a part. Most of the paper discussed exclusively a specific type of interpersonal system – those that involve one close, intimate other, such as a romantic partner. Ultimately, however, to the extent that one wishes to understand the behaviors of people in their lives outside the laboratory, individual differences in all types of situations encountered must be taken into account (not just situations that involve one close other). And that demands

that one understands the process that mediates the effect of B on E, that is, the $E = f(X, B)$ function.

The analysis of the equation, $E = f(X, B)$, has often been regarded as falling outside of the domain of psychology – assigned as the target of inquiry to the social sciences, such as sociology, economics, anthropology, and history. It has often been said that interdisciplinary boundaries must be crossed, but in reality, the weight of disciplinary traditions has made such boundary-crossing extremely difficult. The current analysis of the dyadic system, in which $E_1 = f(P_2, B_1)$ may provide a first step in that direction, and provide an additional impetus for blurring disciplinary boundaries.

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APPENDIX A

Mean (*SD*) response latencies for the critical trials of the SPP tasks as a function of prime valence (liked v. disliked), prime type (object v. significant person) and target valence (pleasant v. unpleasant) (Chapter 2, Study 1).

	Prime Type	
	Object	Significant Person
Liked concept		
Letter string→pleasant	990.56	991.76
	(246.01)	(209.24)
Liked concept→pleasant	951.95	876.08
	(260.36)	(177.85)
Letter string→unpleasant	938.19	968.79
	(242.38)	(200.35)
Liked concept→unpleasant	979.47	931.64
	(275.48)	(211.23)
Disliked concept		
Letter string→pleasant	978.50	1003.77
	(233.38)	(176.90)
Disliked concept→pleasant	1004.75	952.99
	(234.58)	(220.93)
Letter string→unpleasant	948.76	1022.80
	(183.23)	(219.10)
Disliked concept→unpleasant	958.50	946.21
	(225.77)	(208.28)

Note: Study 1 was a mixed-design with prime type (object v. person) as a between-subjects variable and prime valence (liked and disliked) and target valence as within-subject variables.

APPENDIX B

Mean (*SD*) response latencies (in ms) for the critical trials of the SPP tasks as a function of prime valence (liked v. disliked), prime type (object v. significant person), and target valence (pleasant v. unpleasant) (Ch. 2, Study 2).

	Prime Type	
	Object	Person
Liked concept		
Letter string→pleasant	965.11	1059.54
	(196.22)	(291.01)
Liked concept→pleasant	909.29	904.24
	(181.25)	(299.87)
Letter string→unpleasant	910.36	1000.49
	(199.26)	(234.95)
Liked concept→unpleasant	947.14	939.46
	(250.78)	(232.36)
Disliked concept		
Letter string→pleasant	961.91	1004.91
	(212.99)	(247.01)
Disliked concept→pleasant	993.49	963.69
	(214.39)	(224.20)
Letter string→unpleasant	986.10	1033.33
	(181.44)	(267.31)
Disliked concept→unpleasant	945.27	930.70
	(197.52)	(199.84)

Note: Study 2 was a mixed-design with prime type (object v. person) as a between-subjects variable and prime valence (liked and disliked) and target valence as within-subject variables.

APPENDIX C

Mean (*SD*) response latencies for the critical trials of the Evaluative SPP task as a function of prime valence (liked v. disliked), prime gender (male v. female), and target valence (pleasant v. unpleasant) (Chapter 2, Study 3).

	Gender of Significant Person Prime	
	Male	Female
Liked Person→pleasant	877.46	858.03
	(304.54)	(254.76)
Liked Person→unpleasant	935.96	918.69
	(412.50)	(346.43)
Disliked Person→pleasant	888.28	875.90
	(267.96)	(272.93)
Disliked Person→unpleasant	845.55	891.39
	(315.72)	(276.31)

Note: Response latencies for each trial above were compared to response latencies for trials with letter string primes that appeared within the same block. Specifically, liked person primes were compared to *letter string→pleasant* trials and *letter string→unpleasant* trials with mean (*SD*) response latencies of 968.98 ms (*SD* = 297.15) and 952.46 ms (*SD* = 345.07), respectively. Disliked person primes were compared to *letter string→pleasant* trials and *letter string→unpleasant* trials with mean (*SD*) response latencies of 964.02 ms (*SD* =295.46) and 944.76 ms (*SD* = 289.05), respectively.

APPENDIX D

Mean (*SD*) response latencies for the critical trials of the Gender SPP task as a function of prime gender (male v. female), prime valence (liked v. disliked) and target gender (male v. female) (Chapter 2, Study 3).

	Valence of Significant Person Prime	
	Liked	Disliked
Male Person→Male	742.53	814.26
	(205.95)	(254.00)
Male Person→Female	817.43	905.68
	(253.89)	(348.98)
Female Person→Male	811.25	774.44
	(212.95)	(232.18)
Female Person→Female	745.7110	778.70
	(203.25)	(233.19)

Note: Response latencies for each trial above were compared to response latencies for trials with letter string primes that appeared within the same block. Specifically, male person primes were compared to *letter string→male* trials and *letter string→female* trials with mean (*SD*) response latencies of 825.15 (SD = 247.58) and 765.51 (SD = 196.95), respectively. Female person primes were compared to *letter string→male* trials and *letter string→female* trials with mean (*SD*) response latencies of 767.85 (SD = 201.37) and 790.51 (SD = 203.23), respectively.

APPENDIX E

Example of a personal ad describing a potentially abusive male

About me. I have short hair. My favorite pastimes are hunting and fishing which I enjoy doing with family and friends. I am a very straight forward guy and I tell it as I see it. I am very confident in myself and do not like to be jerked around. This is all probably due to being brought up in an old fasion type family which established my old fasioned morals and beliefs. I play baseball in college and do well in school. I am the kind of guy you have to get to know and understand before you see the beauty of some of my antics. What I am looking for. A female who likes to be treated like a queen, but can stand alone. Likes one on one dates instead of crowded parties. Must be willing to put up with some sarcasm and male attitudes. Liking the outdoors is a plus, and I play sports so that too is a concern. Must be trustworthy and honest, no game players. Finally, someone who can take a joke as well as give one. It must be known I will treat you like you are god until you break my trust and then you are just another person:)

Note: Typos and misspellings were not corrected in any of the personal ads used as stimuli in Study 1 and Study 2.

APPENDIX F

Example of a personal ad describing an undesirable male

Going to the University of Washington has been really stressful for me and meeting new people especially friends has not been on my schedule lately. I simply have no motivation right now to look for new friends, but that's about to change. I currently am looking for a lady with some of my interests and likes. I'm a typical male but a unique one. I enjoy being around good people and friends that I trust and can have a good time with. I'm looking for someone who's outgoing, insightful, active, healthy and intelligent. I'm really not picky but I can't have women that smoke or have no ambition in life. I'm a pretty interesting guy. People usually say that I'm quiet and shy in first impressions, but after you get to know who I really am then those qualities really overlook my shyness. I enjoy sports especially basketball. Tennis is also one of my favorites and I just started playing golf and falling in love with the game. Those are just some things I like to do during summer-time. Some of my few hobbies are paintballing (but some consider it a sport), racing radio control cars, and painting or drawing. Art is really my passion and that's why I'm in school right now. I'm planning to major in graphic design and go into advertisement.

APPENDIX G

Example of a personal ad describing a desirable male

Hello, I am looking for an attractive female who enjoys long walks, good in depth conversations and of course a romantic evening. I love to travel. I enjoy art and I am an amateur artist myself. I write poetry, but need some inspiration (from you of course), and I always like a good debate. I am not too stubborn though. 'Compromise' is my adopted middle name. I believe that a good relationship consists of two people that care for each other enough to allow for compromise. I also feel that the true meaning of love is when you care about another person so much that you will do whatever it takes to make them happy, even if that means letting them go. I'm not into large crowds of unfamiliar friends, but rather small gatherings of very close friends. I tend to be very into athletics. I also like someone that knows what they are talking about, but will concede their opinions when shown another truth. I am an explorer, want to come along for the next expedition?

APPENDIX H

Pairs of avoidance and anxiety statements inserted into the template ads used in Chapter 4, Study 2

Fearful attachment style

(1) I don't feel comfortable opening up to my partner, and revealing my feelings (*avoidance*). I sometimes worry about being alone (anxiety).

(2) I prefer not to be too emotionally close to my partner (avoidance). I need a lot of reassurance that I am loved and appreciated by my partner (anxiety).

(3) I am not comfortable depending on my partner, or turning to them for support (avoidance). I get frustrated if my partner is not around as much as I would like, or if he is not available when I need him (anxiety).

(4) I don't like getting too close to my romantic partners (avoidance). I worry that my partner won't care about me as much as I care about him (anxiety).

Preoccupied attachment style

(1) I feel comfortable sharing my private thoughts and feelings with my partner (avoidance). I'll get upset or angry if I can't get my partner to show interest in me (anxiety).

(2) I tell my partner just about everything. I usually discuss my problems or concerns with my partner (avoidance). When I'm not involved in a relationship I feel somewhat anxious and insecure (anxiety).

(3) I don't mind asking my partner for comfort, advice, or help (avoidance). I tend to get angry and upset if my partner spends too much time away from me (anxiety).

(4) I enjoy sharing my most intimate feelings with my partner (avoidance). I often worry that my partner will leave me for someone else, and don't enjoy when they spend too much time away from me (anxiety).

Dismissing attachment style

(1) I have a hard time expressing how I feel deep down to my partner (*avoidance*). I don't resent it when my partner spends time away from me, and don't worry about being alone (*anxiety*).

(2) I find it difficult to allow myself to depend on my partner (*avoidance*). I don't worry about being separated from my partner or losing my partner (*anxiety*).

(3) I don't feel comfortable opening up to my partner (*avoidance*). I don't worry much about my relationships, and don't need a lot of reassurance that I am loved by my partner (*anxiety*).

(4) I find it hard to communicate my feelings to my partner (*avoidance*). I don't mind when he spends time away from me to be with his friends or do his own thing (*anxiety*).

Secure attachment style

(1) I like being emotionally close to my partner, and turn to him in times of need (avoidance). I don't get frustrated if my partner is not around as much as I'd like, or if he is spending time away from me (anxiety).

(2) I find it relatively easy to get emotionally close to my partner (avoidance). I don't worry a lot about my relationships, about being alone or about losing my partner (anxiety).

(3) I feel comfortable depending on my partner (avoidance). I don't get angry or upset if my partner spends time away from me (anxiety).

(4) I like to be emotionally close with my partner, and feel I can trust him (avoidance). I respect when my partner's decision to spend time with his good friends or to participate in activities that he enjoys (anxiety).

Note: "Significant other" was also used in place of "my partner" in order to avoid repetition.

Vivian Zayas

Department of Psychology
University of Washington
Box 351525
Seattle, Washington 98195-1525

email: *vaza@u.washington.edu*
voice number: (206) 616-6086
fax number: (206) 685-3157
web site:
http://students.washington.edu/vaza/

Education

University of Washington, Seattle, Doctoral Candidate, 2000 - present
University of Washington, Seattle, Master of Science, 2000
Advisor: Yuichi Shoda, Ph.D.
Supervisory Committee: Anthony Greenwald, Ph.D., Ronald Smith, Ph.D.
Thesis: "Individual differences in automatic associations toward significant persons: Predicting relationship experiences and adult attachment style"
Cornell University, Bachelor of Arts, Psychology, 1994

Honors and Awards

University of Washington, Psychology, Distinguished Teaching Award, Finalist, 2003
National Research Service Award, Fellow, 2000 – 2003
Project Title: "Automatic Information Processing Within Relationships"
American Psychological Society's Student Research Competition Award, 2000
National Science Foundation, Fellow, 1997 – 2000
National Science Foundation Mentoring Assistantship, Summer 1997
Dean's list, Cornell University, 1991
National Hispanic Scholar, 1990
Cornell University Dean's Scholar, 1990
New Jersey Department of Education Garden State Scholars, 1990

Research Experience

Principal Investigator, 1997-present.
Conducted studies examining individual differences in automatic evaluative reactions towards significant persons; unconscious processing of information about personally significant individuals; selection of dating partners and abusive relationship dynamics.

Research Assistant, 1995-1997.
Assisted Dr. O. P. John and Dr. E. Klohnen in a social-cognition experiment. Designed experiment, constructed questionnaire material, programmed MEL (micro-experimental lab), conducted experiments, collected and entered data on SPSS, oversaw administrative paperwork, trained research assistants, analyzed data.

Research Assistant, 1991-1992.

Worked with Dr. S. Bem and Dr. G. Schellenberg in social psychology experiments. Constructed material, recruited subjects, oversaw experiments, and collected and entered data.

Teaching Experience

Teaching Fellow, Spring 2001-Spring 2002.

Provided resources, training, & evaluations of Teaching Assistants; lectured on various topics related to introduction to psychology in classes ranging in size from 300-500 students; developed exams; held office hours & provided one-on-one teaching to students; and maintained the course webpage & grade database.

Teaching Assistantships

Prepared, taught, and led weekly sections of about 25 students each; evaluated and graded students' exams, papers, and assignment; held regular office hours and provided one-on-one teaching to students.

Courses include:

Introduction to Psychology (Autumn 2002)
Introduction to Statistical Inference (Winter 2001, Winter 2003)
Introduction to Social Psychology (Spring 1999; Autumn 2000)
Elementary Psychological Statistics (Autumn 1999)
Introductory course on Research Methods (Winter 2000)

Social/personality Graduate Seminar, Graduate Student Organizer, Spring 1999.

Organized and facilitated the social and personality area's weekly brown bags so that students and faculty could come together to present their current research or speak on topic(s) related to research and/or professional development.

Graduate Seminar on topics on Emotion, Graduate Student Organizer, Spring 1999.

Assisted with the organization (e.g., writing of syllabus and reading list) of an upper level seminar that met weekly to discuss topics relevant to emotion.

Teaching Assistant, Fall 1992.

Assisted Dr. Daryl Bem in teaching Introduction to Personality Psychology. Responsibilities included holding office hours, leading review sessions, offering private tutoring, and grading exams.

Statistics Tutor, Fall 1992.

Provided tutoring and held office hours for an undergraduate course in Introduction to Statistical Methods.

Publications

Zayas, V., Shoda, Y., & Ayduk, O. N. (2002). Personality in context: An interpersonal systems perspective. *Journal of Personality, 70,* 851-898.

Manuscripts (in press, under review, and in preparation)

Zayas, V. & Shoda, Y. (under review). The role of partner preference in the genesis of relationship dynamics: Implications for psychologically abusive relationships.

Zayas, V. & Shoda, Y. (under review). Are automatic evaluative reactions toward romantic partners, mothers, and self related to adult attachment styles?

Zayas, V. & Shoda, Y. (2001). Implicit Association Test (IAT) assessing automatic associations toward mother as supportive versus rejecting: Development of word lists and test-retest validation. *Unpublished manuscript. University of Washington.*

Zayas, V., & Shoda, Y. (in preparation). Bi-valent facilitation = bi-valent activation? Priming with names of significant persons facilitates identification of pleasant and unpleasant target words.

Zayas, V., & Abrams, R. (in preparation). Subliminal priming effects for names of personally significant individuals.

Conference Presentations

Zayas, V. & Shoda, Y. (2001, February). It takes two to tangle: Preferences in dating partners and psychologically abusive relationships. A paper presented at the annual meeting of the Society for Personality and Social Psychology, San Antonio, Texas (Symposium, "Social Cognition within Relationships: Combining Social and Personality Approaches." Chair: Eva Klohnen.).

Zayas, V. & Shoda, Y. Fatal attraction? (2000) Predicting preferences in dating partners from past relationship experiences. Poster session to be presented at the annual meeting of the American Psychological Society, Miami, Florida.

Shoda, Y. & Zayas, V. (1999). Individual differences in automatic evaluative associations toward significant persons. A paper presented at the 1999 Annual Meeting of The Society of Experimental Psychology, Oct 14-16, 1999.

Zayas, V. & Shoda, Y., (1999, May). Implicit Attitudes, Attachment Styles, and Recall of Mother's Supportiveness: Predicting Psychological Abuse. Poster session presented at the annual meeting of the American Psychological Society, Denver, Co.

Zayas, V. & Shoda, Y., (1999, May). How I Think of Thee? The Effects of Thinking about Romantic Partners. Poster session presented at the annual meeting of the American Psychological Society, Denver, Co.

Shoda, Y. & Zayas, V., (1998, November). Implicit attitudes toward significant persons. Paper presented at the annual meeting of the Society for Experimental Social Psychology, Lexington, KY.

Zayas, V. & Shoda, Y., (1998, May). Construct Validation of Implicit Association Test to Measure Attitudes toward Significant Persons. Poster session presented at the annual meeting of the American Psychological Society, Washington, DC.

Professional Activities

MECA (Multi-Ethnic and Cultural Association), Co-chair, Spring 2001 – Present.

Minority Concerns Committee, Student Representative, Autumn 1999 – Spring 2001.

Faculty Search, Student Representative, Autumn 1998-Spring 1999/Autumn 1999-Winter 2000.

Professional Affiliations
American Psychological Society (APS), Graduate Student Affiliate

American Psychological Association (APA), Graduate Student Affiliate

Society for Personality and Social Psychology (SPSP), Graduate Student Affiliate