

Trust Development: Testing a New Model in Undergraduate Roommate Relationships

by

Corrie Baird Whitmore

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Julie Dunsmore, Chair

Danny Axsom

Jungmeen Kim

Robin Panneton

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## Abstract

Interpersonal trust reflects a vital component of all social relationships. Trust has been linked to a wide variety of individual and group outcomes in the literature, including personal satisfaction and motivation, willingness to take risks, and organizational success (Dirks & Ferrin, 2001; Pratt & Dirks, 2007; Simpson, 2007). In this dissertation I tested a new conceptual model evaluating the roles of attachment, propensity to trust, perceived similarity of trustee to self, and social exchange processes in trust development with randomly assigned, same-sex undergraduate roommates. Two hundred and fourteen first-year students (60% female, 85% Caucasian, mean age = 18) at a large south-eastern university completed self-report measures once per week during the first five weeks of the fall semester. Perceived similarity measured the second week of classes and social exchange measured three weeks later combined to provide the best prediction of participants' final trust scores. Attachment and propensity to trust, more distal predictors, did not have a significant relationship with trust. This study demonstrated that trust is strongly related to perceived similarity, as well as social exchange. A prime contribution of this study is the longitudinal, empirical test of a model of trust development in a new and meaningful relationship. Future work may build on this research design and these findings by focusing on early measurement of constructs, measuring dyads rather than individuals, and incorporating behavioral measures of trust.

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## Introduction

Trust is an important component of interpersonal relationships. As infants we are dependent on others for survival. As humans grow older, we can meet more of our own physiological needs, but maintain a high level of interdependence with those in our social world (Kelly & Thibaut, 1978). Trust remains a critical component of interpersonal relationships throughout the lifespan and is essential to the functioning of groups and organizations (Costa, 2003, Dirks, 2000; Kiffin-Peterson & Cordery, 2003). Early theoretical work argued that the efficiency, adjustment, and survival of all social groups are dependent on the presence or absence of trust (Rotter, 1967). More recent work continues to promote trust as a crucial component of social functioning, describing it as the “hallmark of effective relationships” (Dirks, 1999, p. 445). In brief, researchers focus on trust both as a central component of interpersonal relationships and as critical for understanding a variety of individual outcomes such as satisfaction and motivation (Pratt & Dirks, 2007; Simpson, 2007).

Because trust is critical for interpersonal relationships, it is important to understand how it develops. Yet, the process by which trust develops is not widely understood. Past work studying trust has compiled a sizable list of correlates that can be theoretically split into antecedents and outcomes of trust; however, the direction and strength of these theoretically derived causal relationships remain largely untested (Dirks & Ferrin, 2002; Whitener, Brodt, Korsgaard, & Werner, 1998). Despite theoretical efforts, few researchers have explored in any depth the processes by which trust develops (i.e. Dirks & Ferrin, 2002; Dirks & Skarlicki, 2004; McKnight, Cummings, & Chervany, 1998; Whitener et al., 1998). Research in this area has been limited by an emphasis on research designs featuring simultaneous measurement of all constructs. Because trust development is a process which occurs over time as relationships

emerge, a longitudinal design following new relationships offers a useful method for investigating the process of trust development. Thus, in this dissertation I examine the development of trust within the context of first-year college students' establishment of a new relationship with their college roommate. The college transition, which occurs when adolescents leave secondary school to begin higher education, provides a natural opportunity to investigate the development of new relationships (Markey & Kurtz, 2006). Four factors that may influence the development of trust in one's new roommate will be investigated: attachment status, propensity to trust, perceived similarity of the trustee to the self, and social exchange processes.

In the following sections, I first review the literature on trust. I then review the literature on each of the four potential influences on trust. The conceptual model guiding the proposed study may be found in Figure 1, and will be addressed within each section on the potential influences on trust. I conclude the Introduction with an overview of the proposed study.

### *Trust*

*Defining trust.* Trust is a construct which has been addressed by a wide variety of academic disciplines, including several domains within psychology (Bernath & Feshbach, 1995; Kahn & Turiel, 1988). In developmental work, Erikson specifies that trust reflects a belief that the world is a safe and rewarding place which can be confidently explored (Kaplan & O'Connor, 1993; Maier, 1969). Although no specific definition of trust has been agreed upon in the attachment literature, Bowlby argues that "secure attachment" is functionally equivalent to Erikson's sense of trust, thus reiterating the Eriksonian definition (Bowlby, 1969). In the organizational and social psychology literature, it is generally accepted that trust is an interpersonal phenomenon based on relationships between an individual and another person or group of persons (Dirks & Ferrin, 2002; Shamir & Lapidot, 2003). Within the interpersonal trust

realm, scholars have defined trust as an attitude, a belief, a cognitive process, a psychological state, a perception, and a set of behaviors.

Whitener and colleagues (1998) describe trust as an attitude held by an individual “trustor” towards a trusted party, whom they label the “trustee.” Their definition of trust relies on the trustor’s perceptions, attributions, and beliefs about the trustee. Many depictions of trust that do not specifically define it as an attitude discuss it as an affective, belief-based, or cognitive construct. Since, by definition, attitudes are made up of affects, beliefs, and cognitions, it can be argued that these definitions of trust indirectly support its conceptualization as an attitude (Petty, 1995). For example, Cummings and Bromiley (1996) define trust as the belief that another individual or group will make good faith efforts to meet explicit or implicit commitments, be honest in negotiations, and avoid taking excessive advantage. Similarly, Dirks and colleagues (2000; Dirks & Ferrin, 2002; Dirks & Skarlicki, 2004; Pratt & Dirks, 2007) portray trust as a belief that one can rely on another’s actions, words, and good intentions towards oneself, operationalized as the extent to which an individual is willing to make herself vulnerable to others.

McAllister (1995) specifies that trust develops out of the trustor’s beliefs about and attributions of the trustee’s motives, with those who believe that their partners are performing personally chosen behaviors, meeting legitimate needs, and demonstrating care and concern for others more likely to develop affect-based trust. However, McAllister believes trust also possesses cognitive components, with cognitions resulting from exchanges between the trustee and trustor serving as a necessary prerequisite for the development of affect-based trust.

Going beyond the cognitions-as-boundary-condition idea proposed by McAllister (1995), Mayer and Davis (1999) describe trust as a product of the cognitive evaluation of outcomes of

previous vulnerability. Similarly, McKnight and colleagues (1998) emphasize the development of knowledge-based trust over time through experiences with the trustee. Others have described trust as a function of the trustor's observations and learning from trustees' behavior (Serva, Fuller, & Mayer, 2005; Whitener et al., 1998). These cognitive approaches depict trust as encompassing choices made about who can be trusted under what circumstances, based on the trustor's previous experiences with the trustee, perception of the trustee's character, and other "good reasons" (Dirks & Skarlicki, 2004, p. 25).

Although interpersonal trust has been defined in a variety of ways, there are two universal themes within existing definitions. First, trust is considered an interpersonal phenomenon, occurring in a relationship between two parties. Second, trust is relevant in situations where one party is vulnerable to or dependent on another (Dirks, 2000; Kelly & Thibaut, 1978; Mayer, Davis, & Schoorman, 1995; Main, 1996; Pratt & Dirks, 2007; Rusbult, 1980; Whitener et al., 1998). Each of the approaches to defining trust discussed here encompasses these universal components. For the purposes of this paper, trust is recognized as a complex interpersonal phenomenon reflecting the attitude that others are likely to treat one fairly, provide needed help, and avoid taking advantage (Flanagan, 2003; Khodyakov, 2007).

*Structure of trust/mistrust.* Many researchers discuss interpersonal trust as a characteristic which is present or absent in a given relationship. From this perspective, high trust conditions are marked by interactions between people secure in their interdependence. In contrast, a "no trust" condition is characterized by careful negotiations between parties, each concerned with protecting their own interests. As far apart as those two relationship conditions sound, they fail to reflect another reality. What happens when an individual neither trusts nor feels neutral towards another party? Erikson argues that this condition is marked by a sense of mistrust, manifesting as

apprehension and withdrawal from the relationship (Berk, 2008; Kaplan & O'Connor, 1993; Maier, 1969).

Other researchers, including Cho (2006), Lewicki, McAllister, and Bies (1998), and Omodei and McLennan (2002), echo this distinction between extremes by distinguishing between trust and a construct labeled “distrust” or “mistrust.” Their work suggests that trust and distrust/mistrust are conceptually distinct, linked dimensions. In contrast to trust, they define distrust as a confident negative expectation regarding another’s conduct or a general tendency to view interaction partners as unreliable, selfish, and/or malevolent. Their rejection of trust/distrust as a single, bipolar construct is interesting, recognizing the complexity of the contextual and relationships factors which contribute to trust and mistrust. However, as I am unable to reconcile a confident negative expectation regarding someone’s conduct with a simultaneous belief that that person will act fairly, provide help, and avoid taking advantage, these constructs do not appear to be orthogonal. Thus, for the purposes of this dissertation, trust and mistrust will be viewed as the opposite poles of a continuum reflecting a single construct (Flanagan, 2003).

*Functions of trust.* Interpersonal trust is associated with a willingness to accept social risks and with increased levels of the neuropeptide oxytocin, which is in turn linked to feelings of well-being, social engagement, bonding, and maternal care (Kosfeld, Heinrichs, Zak, Fishbacher, & Fehr, 2005). Trust has been associated with children’s friendship quality and type of social interactions, moral behavior, social competence, and academic achievement (Jantzer, Hoover, & Narlock, 2006; Rotenberg, Boulton, & Fox, 2005). Looking beyond childhood, research on trust suggests that it increases the ability of group members to function together, with higher levels of trust resulting in better group performance, higher group satisfaction, and increased commitment to the group’s mission (Costa, 2003; Dirks, 2000).

Although trust is generally conceptualized as a positive facet of relationships, empirical work suggests that high levels of trust may be implicated in dangerous risk-taking behavior. Potential negative outcomes of trust include increased likelihood of being duped (Vohs, Baumeister, & Chin, 2007); sexual risk-taking behavior, possibly resulting in sexually transmitted infections such as HIV (Blais, 2006; Overby & Kegeles, 2004); and safety failures on the job, attributable to reduced monitoring resulting from high levels of trust (Conchie & Donald, 2007). Additionally, work by Rotenberg and colleagues (2005) suggests that very high levels of trust in children are linked to internalized maladjustment, lower self-perceived social acceptance, higher social exclusion, and lower social preference.

Rotenberg and colleagues' study (2005) also emphasizes the danger of very low trust beliefs, with that sample reporting worse levels of internalized maladjustment, self-perceived social acceptance, social exclusion, and social preference than their comparison peers with moderate or very high levels of trust. Other researchers have suggested that low levels of trust are also associated with social withdrawal, loneliness, experiences being bullied, and failures in the workplace (Dirks & Ferrin, 2002; Jantzer et al., 2006; Kaplan & O'Connor, 1993; Rotenberg et al., 2005).

Although it is difficult to find work specifically detailing positive effects linked to the absence of trust, it is postulated that the absence of trust may reduce risk-taking behavior, safety failures due to over-confidence, and the likelihood of being duped (Blais, 2006; Conchie & Donald, 2007; Overby & Kegeles, 2004; Vohs et al., 2007). As Erikson's work in early childhood suggests, the healthiest outcomes may result from moderation, with high trust in some areas balanced by lower trust (or mistrust) in others (Kaplan & O'Connor, 1993; Maier, 1969).

*Sources of trust.* There is widespread agreement that trust formation is a process that takes place over time through social interaction (Dirks & Ferrin, 2002; Jones & George, 1998; Main, 1996; Whitener et al., 1998). Social exchange theories developed around the framework that social interactions, like economic transactions, reflect people's desire to seek rewards and avoid punishments (Simpson, 1976). In this tradition, people are motivated by a desire to obtain profitable outcomes. In the economic world, profits can be easily quantified using dollars. In the social world, it is more difficult to capture the value of interactions. To facilitate the process, theorists have adopted behaviorist definitions of rewards as anything valuable to the recipient and costs as any intrinsically unpleasant experience or foregone alternative reward. Profits are conceptualized as rewards minus costs (Simpson, 1976).

Early social exchange theories defined costs and rewards in a general way. Lawler's affect theory of social exchange builds on prior work by placing affective responses – feelings and emotions – as the central component of social interactions (Lawler, 2001; 2006). From this perspective, social order and all interpersonal exchanges are affected by participant's emotional reactions to the process. Lawler's work builds on previous social exchange traditions by emphasizing that emotional reactions to exchanges are inherently self-reinforcing or punishing. The likelihood of attributing those rewarding or punitive emotional experiences to the exchange partner depends on the jointness of the task, with higher emotional responsibility assigned for activities with high degrees of interdependence (Lawler, 2006). In this framework, affective trust is generated by social exchanges around tasks which require interdependence, and thus provide a reason to attribute an emotional experience to the exchange partner.

Within a general social exchange framework, trust is generated by returning benefits received from others and gradually expanding the scope of exchanges over time (Whitener et al.,

1998). The series of social exchanges initiated in a new relationship enable individuals to develop trust via both cognitive and affective, or emotion-based, mechanisms. As individuals interact with a trustee, they learn from their exchanges. Exchanges that result in a higher profit (i.e. more rewards than costs) lead to increased trust, whereas those that are not rewarding fail to reinforce trusting behavior and cognitions. Cognitive re-evaluations of trust based on experience over time contribute to the more intellectual, cognition-based trust. The development of a rewarding interpersonal relationship, such as a friendship, with the trustee contributes to affective-based trust (McAllister, 1995). Within this framework, trust in interpersonal relationships relies heavily on reciprocity, with rewarding social exchanges increasing trust (Buchan, Crosson, & Dawes, 2002; Dirks & Ferrin, 2002; King-Casas, Tomlin, Anen, Camerer, Quartz, & Montague, 2005). In the conceptual model anchoring this research (see Figure 1), social exchanges are the most proximal factor influencing trust. Propensity to trust and perceived similarity between the self and the trustee are included as other proximal factors that influence trust through social exchange processes, and attachment provides a more distal influence on trust.

#### *Attachment, a Distal Influence on Trust*

*Definition and early development.* In infancy, attachment is the key social relationship associated with trust development (Bowlby, 1969; 1979; 1988). Through a young child's relationship with her caretakers, she develops a sense of trust or a sense of mistrust in the world, which Erikson suggests will influence the way she engages with other people and her environment (Kaplan & O'Connor, 1993; Maier, 1969). The selection of attachment figures by the infant comes out of social interactions, with infant-caregiver relationships growing out of the



total history of exchanges between a child and his caretaker (Ainsworth, 1979; Bowlby, 1988; Main, 1996).

In its simplest definition, “attachment” describes the affective bond of relationship quality between individuals, and “attachment behavior” refers to any behavior dedicated to achieving or maintaining closeness with an attachment figure who improves the individual’s ability to cope with the world (Bowlby, 1969; 1979; 1988; Bridges, 2003). From Bowlby’s perspective, a secure attachment encompasses trust, so the development of secure attachment is tantamount to trust development. Similarly, some literature in the attachment field echoes this perspective by using the word “trust” as a synonym for “attachment security” (i.e. Bridges, 2003; Hetherington, 1999).

By seven months of age, most infants have developed attachment relationships with persons with whom they regularly interact (Ainsworth, 1979; Main, 1996). In addition to being the first attachment relationship developed by an individual, the infant-caretaker bond is theorized to create a template for later attachments. Bowlby suggests that an infant’s relationship with his caregiver constructs “a model on which to build future relationships” (Bowlby, 1982). Building on his work, Ainsworth (1979; 1991) specifies that a baby’s first attachment relationship creates an “internal working relationship model” which defines what constitutes a close relationship and determines the quality of later relationships. This relationship schema developed in infancy then generalizes across situations and attachment partners to affect relationships throughout the lifespan (Main, Kaplan, & Cassidy, 1985).

Attachment relationships between infants and their caretakers come in a variety of qualitatively different forms. Secure attachment is distinguished by an infant’s distress at separation from and delight with the return of his or her attachment figure. Avoidantly attached

infants do not show signs of distress during separation from their caretaker or seek them out upon return; instead they move away from the attachment figure and fail to express an emotional reaction when reunited. Ambivalently attached infants are distinguished by preoccupation with their caretaker, often alternately seeking and resisting the caretaker's attention (Ainsworth, 1979). Infants with a disorganized / disoriented attachment status respond to separation from and being reunited with their caretaker in odd and conflicted ways reflecting the child's dependence on and simultaneous fear of their caretaker (Cicchetti, Rogoth, & Toth, 2006; Main & Hesse, 1990; Main & Solomon, 1990).

These qualitatively different attachment patterns influence a wide variety of outcomes, with securely attached infants showing higher scores on self-esteem, well being, and social success and lower scores on psychological distress than their non-securely attached peers (Faas & Tubman, 2002; Greenberger & McLaughlin, 1998; Levitt, 1991; Moller et al, 2003; Mounts, et al., 2006; Simpson, 2007; Main & Weston, 1981). Securely attached children also demonstrate healthier patterns of exploration than their insecurely attached peers. Having a secure base to retreat to in times of stress promotes confident exploration and encourages engagement beyond the primary attachment relationship (Ainsworth & Bell, 1970; Bowlby, 1982).

There is general agreement in the literature that the attachment categories outlined above remain relevant across the lifespan. When measured in adult samples, the categories are labeled differently, but parallel the infant attachment classifications. For adults, the labels are "secure-autonomous" (similar to "secure" in infancy), "dismissing" (similar to "avoidant" in infancy), "preoccupied" (similar to "resistant-ambivalent" in infancy), and "unresolved-disorganized" (similar to "disorganized / disorienting" in infancy) (Main, 1996). Attachment, particularly in older samples, may also be measured as a single, continuous variable reflecting a score on a

security-insecurity continuum, with insecurity encompassing the avoidant and ambivalent categorizations made in infancy (Armsden & Greenberg, 1987). This alternative conceptualization is based on Bowlby's (1982) assertion that secure attachment relationships contribute to an individual's well-being and the lack of a secure attachment relationship damages well-being throughout the lifespan.

*Attachment in adolescence and the college transition.* Although attachment behavior is most easily observed in childhood, it remains relevant through the lifespan, particularly in times of distress (Bowlby, 1988; Bridges, 2003). Both empirical and theoretical work have supported the relevance of attachment beyond infancy and childhood, with close friendships, romantic relationships, parental relationships with young children, some adult relationships with parents, and some client relationships with therapists meeting criteria for attachment relationships (Bridges, 2003; Nickerson & Nagle, 2005; Mikulincer, 1998; Weiss, 1991). Many theorists have also suggested that the ability to experience trust in adult relationships can be attributed to the presence of a secure attachment relationship in infancy (i.e. Ainsworth, 1979; 1991; Simpson, 2007).

Attachment remains relevant to environmental exploration across the lifespan, with young adults who report a secure attachment demonstrating greater exploration in relationship and career development domains than their non-securely attached peers (Kenny, 1987; Ketterson & Blustein, 1997; Larose & Boivin, 1998). Work by Hannum and Dvorak (2004) suggests that parental attachment is the strongest predictor of students' psychological well being and social adjustment during the college transition.

A child's shift from secondary school to college provides a meaningful transition point in many attachment relationships. The college transition is a psychological turning point, furnishing

teenagers with an opportunity to live away from the parental home for the first time, develop or strengthen their independent identities, and renegotiate relationships with caregivers (Faas & Tubman, 2002; Samuolis, Layburn, & Schiaffino, 2001). Although autonomy striving is a developmentally appropriate task for late adolescence, attachment relationships remain relevant with parental acceptance, empathy, and support proving critical for healthy functioning during the transition to adulthood (Holahan, Valentiner, & Moos, 2004; Moore, 1987; Mounts, Valentiner, & Anderson, 2006; Wintre & Sugar, 2000). Work by Soucy and Larose (2000) suggests that 10% of the variation in student adjustment to college during the first semester can be explained by the adolescent's continuing attachment relationship with his or her parents.

Students' reliance on parental support during transitions reflects both situational and internal demands. Empirical work by Larose and Boivin (1998) suggests that relationships with peers, both friends and romantic partners, decrease in quantity and quality during the college transition, creating a dynamic in which family support remains vital for young adult's well-being. Additionally, retaining a secure base improves young adults' confidence in exploring new domains, such as their university lives.

Research in college student populations has determined that variability in college students' reported parent and peer attachment exists, and that attachment status during the college years is a durable predictor of multiple outcomes. In adolescence and early adulthood, attachment is linked to important psychological variables including self-esteem (Faas & Tubman, 2002; McCormick & Kennedy, 1994; Samuolis et al., 2001), psychological distress (Greenberger & McLaughlin, 1998), well being (Moller, Fouladi, McCarthy, & Hatch, 2003); perceived stress and confidence in their ability to attend to and regulate negative moods (McCarthy, Moller, & Fouladi, 2001) and personal functioning (Lopez, 1997). Attachment is also a useful predictor of

social success, with empirical work implicating it in social and interpersonal functioning (Hannum & Dvorak, 2004; Lopez, 1997); social support (Moller et al, 2003) and friendship quality (Mounts, et al., 2006). In addition to its relation with broad social constructs, attachment has been linked to specific interpersonal relationships, including romantic relationships (Greenberger & McLaughlin, 1998), relationship quality with professors (Lopez, 1997); and healthy separation from parents (Leondari & Kiosseoglou, 2000).

Simpson's (2007) argument that the ability to experience trust in adulthood is tied to the presence of a secure attachment relationship in infancy reflects the importance of attachment in trust development. A child's early relationship with caregivers influences later outcomes through a variety of mechanisms, including personality and development of relationship schemas (Ainsworth, 1979; 1991; Main, et al., 1985). In the conceptual model anchoring this dissertation, attachment status is hypothesized to have a distal effect on trust development, exerting influence through more proximal personality characteristics, such as propensity to trust, and through the social exchange process itself.

*Measurement of attachment.* Common measures of attachment to parents or other caregivers differ across life stages. In infancy and early childhood, there is an emphasis on observational studies of attachment (Main, 1996). De Wolff and van Ijzendoorn's (1997) meta-analysis of parental antecedents of infant attachment inventoried 66 published and unpublished studies of attachment. Their work suggests that Ainsworth and colleagues' Strange Situation observational procedure is used for over 90% of the research (61/66 studies) evaluating attachment in infancy and toddlerhood.

An alternative measure of young children's attachment to parents is the Attachment Q-Sort (AQS) (Vaughn & Waters, 1990). To complete the AQS procedure, trained observers spend

time in the child's home, observing their behavior with an attachment figure, then sort a bundle of cards containing descriptors into a series of piles, based on their relevance for the subject child. This sort is then compared to a normative sort for a prototypical securely attached child, and a score derived based on the differences and similarities present (van Ijzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004; Vaughn & Waters, 1990). Rather than being used to sort children into attachment categories, as in the Strange Situation procedure, the AQS provides a numerical score representing attachment security as a continuous variable. Meta-analytic work by van Ijzendoorn and colleagues suggests that scores on the AQS converge with Strange Situation categorizations,  $r = 0.42$ .

The Strange Situation and AQS measure are most appropriate for use with children under age four, limiting their utility during the school years. However, procedures observing children's separation from and reunion with their parents to assess attachment continue to be used (i.e. Main & Cassidy, 1988). Later, as children become more verbal and self-aware, there is a shift to measuring attachment through interview and self-report measures (Benson, McWey, & Ross, 2006). One self-report measure developed for use in middle childhood (ages eight to 13) is the Child Attachment Interview, a modification of the Adult Attachment Interview. In the Child Attachment Interview, children are asked to describe their own attachment experiences. Based on the pattern of subscale scores derived from the transcript of their answers, participants are then assigned to an attachment category (Target, Fonagy, & Shmueli-Goetz, 2003).

In later adolescence and adulthood, a commonly used method is the Adult Attachment Interview (AAI). In the AAI, participants spend an hour answering 18 semi-structured interview questions that provide opportunities to describe their memories of childhood relationships with parents, discuss separations from and any loss of attachment figures experienced to date, and to

reflect on attachment experiences (Main, 1996). Although the AAI is widely respected as a useful measure of attachment, it is also time-consuming and expensive to administer. Because of this, a great deal of research in adolescent and adult samples instead relies on self-report measures, such as the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1986).

The IPPA has been described in a recent meta-analysis as “the most widely used instrument” for assessing attachment in adolescence (Benson et al., 2006). Participant ratings on items are used to calculate trust, communication, and alienation subscale scores for attachment, with final scores calculated by adding up scores for trust and communication items and subtracting scores for alienation items (Faas & Tubman, 2002). Like the AQS, this measure quantifies attachment as a score on a single dimension, ranging from insecure to secure and has been widely used in adolescent and adult samples (i.e. Faas & Tubman, 2002; Ketterson & Blustein, 1997; Larose & Boivin, 1998; Leondari & Kiosseoglou, 1997; Soucy & Larose, 2000).

Although the five commonly used measures discussed here (Strange Situation, AQS, AAI, IPPA) differ in measurement strategy and scoring, there is consensus in the literature that they are all related to the same important construct (Main, 1996; Benson et al., 2006). Trust is related to secure attachment whether it is measured dimensionally or categorically. The IPPA, a dimensional measure, was selected for use in this study for two main reasons. First the measure has been widely used in college student samples and has demonstrated good reliability and validity. Second, the IPPA is a self-report measure which can be administered online, in keeping with the research design of this study.

*Propensity to trust: A proximal reflection of attachment.*

Propensity to trust may provide a more proximal individual difference measure of an individual's willingness to trust and rely upon others compared with attachment (Colquitt, Scott, & LePine, 2007; Rotter, 1967; Simpson, 2007). Propensity to trust captures an individual's generalized expectancy that others are trustworthy and reflects a stable, dispositional trait. Propensity to trust develops out of early social learning, presumably through the infant-caregiver attachment process which takes place during Erikson's first psychosocial stage, and through later social experience, suggesting that it is informed by attachment status. Individuals are assumed to develop different expectancies based on reinforcement patterns, consistent with the idea of generating an internal working model from early interactions with a caregiver, which are then generalized to all later interaction partners (Ainsworth, 1991; Main et al., 1986; Rotter, 1967).

Propensity to trust has been shown to possess a direct relationship with trust, with those who indicate low propensity showing lower trust (Korsgaard, Whitener, & Brodt, 2002; Whitener et al., 1998). Recent meta-analytic work suggests that propensity to trust and trust itself possess a moderate relationship ( $r = 0.27, p < 0.05$ ) across a wide body of work (Colquitt et al., 2007). Empirical research has also demonstrated that participants with a high "trusting stance" report a higher initial trust for others than comparable individuals with a low trusting stance (Connell, Ferres, & Travaglione, 2003; Spector & Jones, 2004). In the proposed study, propensity to trust is conceptualized as a proximal antecedent to trust, affecting trust development directly and through a social exchange process.

*Perceived Similarity with Trustee*

The process of trust development does not merely reflect back individual differences in attachment or propensity. Relationship characteristics such as perceived self-similarity also



influence the trust development process. Empirical work suggests that perceived similarity of the trustee to the self is key, with individuals reporting higher initial levels of liking and trust for people whom they perceive as being more like them (Horton, 2003; LaPrelle, Insko, & Cooksey, 1991; Laursen & Hartrup, 2002; Simpson, 2007; Spector & Jones, 2004).

A wide body of work in college roommate samples suggests that similarity is relevant in peer relationships. In Martin and Anderson's (1995) research, similarity was related to satisfaction with the roommate relationship. Ansell and colleagues' (2008) work with roommate dyads found that perceived similarity in interpersonal styles predicted relationship cohesion. Other work assessing similarity on the personality traits of conscientiousness and need for autonomy predicted liking in roommate pairs (Heckert, Mueller, Roberts, Hanna, Jones, Masters, et al., 1999); and roommates with similar communication traits report higher satisfaction with and liking for their roommates (Martin & Anderson, 1995).

Interestingly, actual similarity is not required: in work by Kurtz and Sherker (2003), perceived similarity was a better predictor of relationship satisfaction than the researcher's measurement of actual similarity. This empirical work supports the links in the conceptual model between perceived similarity of the trustee to the self and both social exchange processes and trust. In the conceptual model underlying this study (see Figure 1) the relation between perceived self-similarity and trust is thought to be partially mediated by social exchange processes, because perceptions of other people may influence both the ways in which we interact with them and the conclusions we draw from those exchanges.

### *Social Exchange as a Process*

Attachment, individual propensity to trust, and perceived similarity combine to anchor an interpersonal relationship on the trust-mistrust continuum. As the dyad participates in social

exchanges, providing the participants with more information about each other, trust (or a lack of trust) will emerge. These exchanges between participants are implicit in many discussions of relationships and possess a wide variety of labels in the literature, including “social initiatives,” “reciprocal interchanges,” “interactions,” and “responding to a communal partner’s needs” (Ainsworth, 1991; De Wolff & van Ijzendoorn, 1997; Markey & Kurtz; 2006; Mills, Clark, Ford, & Johnson, 2004). These exchanges are meaningful to the development of trust because each exchange between the trustee and trustor has the potential to shift the relationship along the trust-mistrust continuum in either direction.

If the dyad participates in a rewarding exchange, defined as one in which the trustor has a positive affective experience with the trustee and/or receives information that informs their cognitive evaluation of the trustee as someone who behaves fairly, provides help, and avoids taking advantage, the relationship shifts towards the trust pole. If the dyad instead has an unpleasant exchange or one in which the trustor feels cheated, the relationship shifts towards the mistrust pole. It is also possible for an exchange to provide no relevant information and the relationship to stay in precisely the same place on the continuum following an interaction.

Although social exchanges are crucial to relationship development, not all exchanges provide the same information about a trustee. Early relationship exchanges carry more information than later ones, and qualitatively different types of exchanges occur. Building on Mills and Clark’s (1982) parsing of relationships into either an “exchange” (of benefits) or “communal” category, based on whether there is an explicit expectation of repayment for benefits, Clark and colleagues have developed the construct of communality in relationships (Clark & Finkel, 2005; Clark & Jordan, 2002; Mills et al., 2004). In this framework, high strength communal relationships are distinguished by benefits offered without expectation of

repayment to demonstrate care for the relationship partner or to meet their perceived needs. In contrast, relationships that possess low levels of communality result in contingent exchanges of benefits. Clark and colleagues emphasize that greater communal strength is linked to a willingness to provide benefits to a partner, at a cost to the self (Clark & Finkel, 2005; Clark & Jordan, 2002; Mills et al., 2004). To date, work on this topic suggests that relationship type and duration influence communality (Clark & Finkel, 2005).

In prior work with college students, Markey and Kurtz (2006) found that “accumulating interactions” influence perceptions of and behavioral responses to roommates, suggesting that the social exchange process is significant. Congruent with Markey and Kurtz’s (2006) emphasis on the importance of evaluating social exchanges and Clark and colleagues’ focus on the types of exchanges which occur, this study is designed to investigate student’s accumulating interactions with their roommates over time.

#### *Importance of Longitudinally Studying New Relationships*

There is no point at which a relationship fails to include some level of trust. In a newly-formed relationship where the trustor has no information about the trustee, such as when two previously unacquainted students are assigned to share a room, the level of trust in a relationship is hypothesized to reflect the participants’ attachment status, propensity to trust, and perceived self-similarity. Trust – or lack of trust – develops from that point, as the trustor learns more about the trustee through social exchanges (Ainsworth, 1979; 1991; Kerr, Stattin, & Trost, 1999; Levitt, 1991). From this perspective, early relationship exchanges take on the characteristics of what Simpson (2007) calls “trust-diagnostic” situations.

At the beginning of a relationship, dyadic partners have less information about one another, thus every interaction provides a significant increase in their relationship-specific

knowledge. This means that early exchanges are likely to cause the relationship to make larger shifts towards either pole than the same engagement would once the participants had built a shared history and developed confidence in their understanding of one another's behavior. This shared history, made up of all relationship-relevant knowledge derived from their history of prior exchanges, is merely an information bank. Knowing more about someone is not the same as knowing how they will behave. The ability to accurately predict an individual's behavior increases certainty in the relationship, but predictability is not synonymous with trust. After all, one can be certain that an interaction partner will cheat at card games without feeling any inclination to trust them more based on that knowledge (Mayer et al., 1995).

One of the unique aspects of the college transition for many is associated with residence life housing. Thousands of students are assigned to share living space with previously unknown same sex peers at the beginning of each academic year (Markey & Kurtz, 2006). Kurtz and colleagues suggest that roommate pairs are ideal for research into interpersonal relationships because they occur in a natural and unstructured setting, but allow experimental control when students are randomly assigned to rooms and ratings are collected at specific intervals following their acquaintance. These circumstances provide researchers with a unique opportunity to study newly formed same sex peer dyads interacting across situations and over time (Ansell et al., 2008; Kurtz & Sherker, 2003; Markey & Kurtz, 2006). In addition to the work on interpersonal relationships between roommates by Kurtz and Sherker, others have used roommate pairs to evaluate the relationship between trait ambiguity and self-peer agreement in personality judgment (i.e. Hayes & Dunning, 1997) and identity negotiation (i.e. McNulty & Swann, 1994).

Work on peer relationships across the lifespan suggests that they emerge in childhood and remain relevant through the end of life (Laursen & Hatrup, 2002; Maccoby, 2002).

Roommate relationships are a subset of peer relationships that have been associated with important outcomes such as academic success (Nelson & DeBacker, 2008; Veronneau, Vitaro, Pedersen, & Tremblay, 2008). By focusing on trust development in roommate relationships early in the college transition process, I was able to investigate the role of individual difference characteristics (parental attachment, propensity to trust), relationship characteristics (perceived self-similarity), and relationship processes (social exchange) in trust development.

### *The Proposed Study*

The purpose of this study was to evaluate the roles of attachment, propensity to trust, perceived similarity of trustee to self, and social exchange processes in trust development. First-year college students self-reported their attachment and propensity to trust during the first week of classes. At the beginning of the second week of classes, students self-reported their perceived similarity with their roommate and completed baseline measures of social exchange with and trust in their roommate. Once each week throughout the rest of the first month of classes, students self-reported their social exchanges with their roommate. Finally, at the end of the first month of classes, students completed a measure assessing their trust in their roommate. The conceptual model is presented in Figure 1. My hypotheses are below.

- H1. The quality of early social exchanges would be a better predictor of trust development than the quality of later social exchanges.
- H2. Trust measured one week into the relationship would show a stronger relation with propensity to trust than with social exchanges or the trust level one month into the relationship.
- H3. The relationship between attachment and trust would be mediated by propensity to trust.

- H4. The relationship between attachment and trust would be mediated by social exchange.
- H5. The relationship between propensity to trust and trust would be partially mediated by social exchange.
- H6. The relationship between perceived similarity and trust would be partially mediated by social exchange.

## Method

### *Participants*

*Pilot study.* Thirty-two undergraduate students enrolled in summer psychology courses participated in this pilot study evaluating the reliability and validity of the measures in exchange for one point of extra credit. This convenience sample was 72% female and ranged in age from 19 to 24 years, with a mean age of 21.8 years. Unlike the longitudinal sample (described below), 100% of these participants indicated that they were living with a roommate of their choice, and reported they had lived with these chosen roommates for periods ranging from 12 to 72 months. Participants reported an average roommate tenure of 31 months.

*Longitudinal sample.* A critical time for the development of trust is the beginning of a relationship, so this study focused on first year college students' transitions to college (Spector & Jones, 2004). Recruitment emails were sent from a Student Programs / Residence Life electronic mailing address to all enrolled first year Virginia Tech students (class of 2012), with invitations to participate in later waves of data collection going only to those who participated in round one and met inclusion requirements. Admissions records for the class of 2012 indicate that 5,600 first year students enrolled during the Fall 2008 semester. Of the approximately 5,600 potential participants, 579 responded to complete the Time 1 (T1) online questionnaire.

Four hundred and ten of the 579 first round participants (71%) met the inclusion criteria for participation in this research project. Inclusion criteria required participants to be first year college students, to live in the University Residence Halls, and to share a room with a peer they reported not meeting before they arrived on campus. Virginia Tech Residence Life staff report that 30-35% of incoming students request specific roommates each year, so the 29% who made that choice in the T1 sample is similar to the rates for the population as a whole (personal phone

conversation, K. Belcher, February 2, 2008). This suggests a response rate of approximately 10% of eligible first-year students. Eligible participants were asked to complete online questionnaires a total of four additional time points. At the end of the end of the study, complete data was available for 214 participants. This number is very close to the sampling goal of 220 participants derived using G\*Power 3.0.8 Software to conduct a power analysis specifying small effect sizes (0.3), a  $X^2$  analysis, and a power level of 0.95 (Faul, Erdfelder, Lang, & Buchner, 2007).

Admissions records indicate that the class of 2012 as a whole is 55% male, 78% white, 4% Black, 4% Hispanic, 9% Asian, and 5% Unknown/Other (Virginia Tech Admissions, 2008). No age data is available for the class of 2012 as a whole. T1 participants had a mean age of 18.0 years, and were 60% female, 85% white, 2% Black, 2 % Hispanic, 6% Asian, 0.5% Native American, and 4% Unknown/Other. The T1 participants who continued on through the project to T5 retained a mean age of 18.0 years, and were 60% female, 89% white, 0.5% Black, 2 % Hispanic, 5% Asian, 1.5% Native American, and 2% Unknown/Other.

### *Measures*

*Attachment.* Participants' parental attachment was evaluated using the parent subscale of Armsden and Greenberg's (1987) Inventory of Parent and Peer Attachment (IPPA). Peer attachment was not measured. The IPPA is a well accepted and widely used measure of attachment developed for use with college age samples (i.e. Faas & Tubman, 2002; Ketterson & Blustein, 1997; Larose & Boivin, 1998; Leondari & Kiosseoglou, 1997; Soucy & Larose, 2000). The IPPA contains twenty eight items evaluating attachment to parents. The parental attachment measure is made up of trust, communication, and alienation subscales, with final scores calculated by adding up scores for trust and communication items and subtracting scores for



alienation items. After reverse coding negatively worded items, higher scores indicate higher levels of attachment (Faas & Tubman, 2002). For this measure, respondents are asked to indicate agreement with each item on a five-point Likert scale (1 = *almost always or always true*, 5 = *almost never or never true*). Sample items include: “I like to get my parents’ point of view on things I am concerned about” and “My parents don’t understand what I am going through these days.” The published reliabilities of the three subscales of the parent measure are all acceptable, with alphas > 0.85. In the pilot study sample, each parental attachment subscale’s internal consistency reliability was good, all alphas > 0.8, with a final measure reliability (across all subscales) of alpha = 0.93. In the longitudinal sample, each subscale’s internal consistency reliability was good, all alphas > 0.8, with a final measure reliability (across all subscales) of alpha = 0.9. All IPPA items are available in Appendix A.

*Propensity to trust.* Propensity to trust was measured using Rotter’s (1967) Interpersonal Trust Scale (ITS). The ITS is the most widely used measure of this construct (Shamir & Lapidot, 2003). Respondents were asked to indicate agreement with items on a five-point Likert scale (1 = *almost always or always true*, 5 = *almost never or never true*). ITS items include, “In dealing with strangers, one is better off to be cautious until they have provided evidence that they are trustworthy” and “Parents can usually be relied on to keep their promises,” (Wheless, 1978). This 15 item measure has a reported internal consistency reliability of 0.69 (Korsgaard et al., 2002). In the pilot study sample, reliability was somewhat low but similar to that reported in past research, at alpha = 0.69. In the longitudinal sample reliability was consistent with both published and pilot study reliability, with alpha = 0.68. The complete ITS measure is appended as Appendix B.

*Perceived similarity.* Perceived similarity was evaluated using a 15-item measure created for this study and modeled after Berg's (1984) measure of similarity as a component of friendship development in college roommates. As in Berg's work, dissimilarity scores were computed by summing the absolute differences between the importance participants ascribe to fifteen aspects of university life for herself and for her roommate (e.g. having time alone, spending time with family, participating in extracurricular activities). Higher scores on this measure represent higher dissimilarity. Like the Berg (1984) measure, ratings of own importance and predictions for roommates are made on a seven-point Likert scale (1 = *very important*, 7 = *not at all important*). This measure showed adequate internal consistency reliabilities of  $\alpha = 0.73$  in the pilot study sample and  $\alpha = 0.72$  in the longitudinal sample. The complete perceived similarity measure is available as Appendix C.

*Social exchange.* Two established measures related to social exchange were used. The first was the Roommate Rapport Scale – Short Form (Cary, Stanley, Werring, & Yarbrough, 1988), focusing on participants' affective reactions to exchanges. This 10-item scale asks subjects to indicate how often a series of statements about a relationship is true on five point Likert scale (ranging from 1 = *Never; this is never true* to 5 = *Always; this is always true*). Sample items include: "I feel a sense of satisfaction from talking with my roommate" and "I feel blocked and frustrated in my attempt to relate to my roommate." This measure demonstrated an excellent internal consistency reliability of  $\alpha = 0.9$  in the pilot sample. The complete Roommate Rapport Scale is available in Appendix D.

The second established measure was Clark and colleagues' Measurement of Communal Strength (MCS) (Mills et al., 2004). The Measure of Communal Strength asks participants to answer a series of questions about their relationship with a specific other on an eleven point

Likert scale (ranging from 0 = *not at all* to 10 = *extremely*). Sample items include: “How far would you be willing to go to visit your roommate?” and “How happy do you feel when doing something that helps your roommate?” In the pilot sample, the MCS had an internal consistency reliability of  $\alpha = 0.9$ . The complete MCS measure is appended as Appendix E.

Third, a report of social interaction with one’s roommate was created for this study. This new measure focused on measuring perceived interaction and emotional engagement. Sample items from this report include “How much time have you spent *actively interacting* with your roommate in the last week?” and “How many times have you had fun with your roommate in the last week?” Respondents were asked to answer these questions on a four point Likert scale with choices: *None / A little or A few / Some / A lot*. This six item measure had a satisfactory internal consistency reliability of  $\alpha = 0.81$  in the pilot study sample. Convergent validity of this measure was demonstrated in the pilot study through significant intercorrelations with the Roommate Rapport Scale,  $r = .66, p < .01$ , and the MCS,  $r = .52, p < .01$ . All three measures of social exchange were also significantly correlated with the criterion variable of interest (trust), all  $r_s > 0.6$ , all  $p_s < .01$ . Therefore, only this measure of social exchange was included in the longitudinal sample. In the longitudinal sample, this measure had an internal consistency reliability greater than  $\alpha = 0.82$  each of the four times it was administered. All items for the social interaction measure are appended in Appendix F.

*Trust.* Trust in the participant’s roommates was assessed using McAllister’s (1995) 11 item measure of trust. This measure was developed to measure trust in a specific coworker, but has since been applied to measure trust in a variety of significant others. The measure asks respondents to answer items on a seven-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Sample items include “My roommate and I have a sharing relationship. We can both

freely share our ideas, feelings, and hopes and “I can rely on my roommate not to make my life more difficult by careless behavior.” The reliability for this scale in McAllister’s (1995) scale development work was 0.9. In the pilot study sample the internal consistency reliability was good,  $\alpha = 0.89$ . The internal consistency reliability remained good, with  $\alpha = 0.94$ , for the longitudinal sample. All items of this scale are available in Appendix G.

*Demographic information.* Demographic data collected for the pilot sample included participant’s age, sex, marital status, and the length of time they had lived with their roommate. Demographic data collected for the longitudinal sample included participant’s age, sex, marital status, ethnicity, year in college, high school / GED graduation year, and information on the inclusion criteria (being a first year college student, living in the University Residence Halls, and sharing a room with a previously unknown peer). These demographic characteristics were selected based on previous work conducted by Hannum and Dvorak (2004), Leondari and Kiosseoglou (2000), Lopez (1997), and Soucy and Larose (2000). The complete demographic measure created for this research is appended as Appendix H.

### *Procedure*

*Pilot study.* The pilot test was listed on the Psychology Department's SONA Experiment Management System page. Participants signed up to participate in exchange for one point of extra credit. Those who signed up to participate via the SONA system then completed all measures in one online session (hosted via SurveyVT).

*Longitudinal sample.* Participants received an invitation to participate in this research via their university email accounts. The message included information about the research with a link to the online informed consent documents and measures (hosted via SurveyVT). Instructors and student organizations use these email accounts to contact students, so it is reasonable to assume

that the accounts are checked regularly. To encourage participation, those who completed each wave of data collection were eligible to win small prizes (i.e. \$5 Starbucks gift cards) randomly distributed after each wave of data collection and have their name entered in a drawing for larger prizes (a \$100 Amazon.com gift certification, two Ipod shuffles) held at the end of the study.

At the first data collection point (T1), during the first 72 hours of classes, students completed attachment and propensity to trust measures. Demographic data was also collected at this time. Participants who met the inclusion criteria in the first round of data collection were invited via email to participate in later waves of data collection.

At time two (T2), one week after classes commenced, continuing participants completed a measure of perceived similarity, the measure of social exchanges with their roommate, and an initial measure of trust in their roommate. At time three (T3), two weeks after classes began, participants completed a second online measure describing their social exchanges with their roommates. At time four (T4), three weeks after classes commenced, participants completed a third measure of social exchanges with their roommates. At time five (T5), four weeks after classes began, participants completed a fourth and final measure of social exchange and completed a measure of trust in their roommate. Table 1 contains a summary of the measurement procedure, listing which measures were administered at each data collection point.

Each participant received the original T1, T2, T3, T4, and T5 emails, providing links to the online measures, on a Monday. Eligible participants who did not complete the survey within two days received a follow-up, reminder email reiterating the link on Wednesday. At time points two and five, a final reminder was sent four days after the first email to participants who had not responded by that time.

## Results

### *Preliminary Analyses*

Please see Table 2 for descriptive data for all variables at all time points. Independent samples t-tests were conducted to test for gender differences on each variable. No significant gender differences were found for any of the variables measured in this study (all  $ps > .20$ ).

The development of a longitudinal model is dependent on the assumption that change is occurring over time. For the model proposed in this study to be worth exploring, we must assume that trust develops over time. To confirm this assumption, a paired-samples t-test was performed comparing baseline trust levels, measured one week into the relationship, with the final trust level, assessed five weeks into the relationship. Final trust scores were significantly different from baseline trust,  $t = -2.27$ ,  $p < .05$ . Thus, trust did change over time, with final trust scores lower, on average, than initial trust scores.

A complete correlations matrix describing the relations between variables is shown in Table 2. As Table 2 shows, the criterion variable (trust) correlated significantly with perceived similarity and each of the social exchange measurements taken during weeks two through five. Interestingly, neither attachment nor propensity to trust was significantly related to trust at either T2 or T5.

Potential concerns about common method bias and multicollinearity were assuaged by the pattern of findings in the correlation matrix, because non-significant relationships were present and no predictors correlated with the criterion variable at absolute values above 0.85, Kline's (1998) cut-off for multicollinearity. The only correlations greater than 0.85 were between repeated administrations of the social exchange measure, which merely demonstrates high test-retest reliability for that instrument.

### *Hypothesis Testing*

*H1: The quality of early social exchanges would be a better predictor of trust development than the quality of later social exchanges.* To evaluate the first hypothesis, stepwise linear regression analysis was used. Stepwise regression compares multiple predictors of a single variable and, in the first step, creates a regression equation using the variable that most significantly predicts the criterion variable. In the next step, the remaining predictors are compared and, if it adds unique prediction to the current regression equation, the strongest remaining predictor is added to the equation. This process repeats, with the variable that explains the most remaining variance added in each step, until the remaining predictors fail to explain significantly more variance.

When all four predictors of social exchange were entered in this process, the T5 measurement provided the best prediction of the criterion variable, explaining 62% of variance in trust scores. A second step added the T4 measurement of social exchange to the equation, accounting for an additional 3% of the variance (see Table 3). Adding earlier social exchange scores to the regression equation did not improve prediction beyond that provided by the T4 and T5 model, thus hypothesis one was not confirmed. Although each measurement of social exchange correlated significantly with the criterion variable when viewed as a single predictor, regression analyses suggested that later measurements provided better prediction of final trust. Based on this finding and the high proportion of variance accounted for by a single social exchange measurement, the T5 social exchange score was used for all later analyses that specify social exchange.

*H2. Trust measured one week into the relationship would show a stronger relation with propensity to trust than with social exchanges or the trust level one month into the relationship.*

The hypothesis that trust measured one week into the relationship would show a stronger relation with propensity to trust than with social exchanges or the trust level one month into the relationship was not confirmed. The pattern of results was precisely opposite what was predicted, with trust as measured at T2 failing to correlate significantly with propensity to trust ( $r = 0.12, p = ns$ ) but correlating significantly with trust as measured at T5 ( $r = 0.8; p < .01$ ) and all measurements of social exchange (T2:  $r = 0.72$ ; T3  $r = 0.71$ ; T4:  $r = 0.70$ ; T5  $r = 0.67$ , all  $ps < 0.01$ ). Please see Table 2 for the complete correlation matrix.

*H3. The relationship between attachment and trust would be mediated by propensity to trust. H4. The relationship between attachment and trust would be mediated by social exchange.* Hypothesis three declared that the relationship between attachment and trust would be mediated by propensity to trust. Hypothesis four proposed that the relationship between attachment and trust would be partially mediated by social exchange. This pair of hypotheses was not supported, because the correlations matrix showed that attachment was not associated with trust or social exchange and therefore failed to meet the criteria for mediation (Baron & Kenny, 1986).

*H5. The relationship between propensity to trust and trust would be partially mediated by social exchange.* The hypothesis that the relationship between propensity to trust and trust would be partially mediated by social exchange was not supported, because the correlations matrix showed that propensity to trust was not related to trust or social exchange (Baron & Kenny, 1986).



*H6. The relationship between perceived similarity and trust would be partially mediated by social exchange.* An initial review of the correlations matrix in Table 2 indicated that the critical assumptions to justify testing mediation between perceived similarity and trust by social exchange were met: perceived similarity was significantly correlated with both social exchange and trust and social exchange were significantly correlated with trust (Baron & Kenny, 1986). Because these assumptions were met, mediation was evaluated via a Sobel test. The Sobel test assesses whether the relation between a predictor and a criterion variable is mediated by a third variable. A critical ratio is calculated by comparing the regression coefficient for the relation between the predictor variable and the potential mediating variable against the regression coefficient for the relation between the mediating and criterion variables, accounting for standard errors. The regression coefficients and standard errors used in this Sobel test are shown in Table 4. In this sample, the critical ratio calculated by the Sobel test was not statistically significant ( $p > 0.5$ ), indicating that hypothesis six is not supported and the relationship between perceived similarity and trust is not mediated by social exchange in this sample (MacKinnon & Dwyer, 1994; Preacher, 2003). Although social exchange and perceived similarity are significantly intercorrelated ( $r = -0.43, p < 0.01$ ) and adding perceived similarity to the regression model based on social exchange improved the prediction of trust incrementally (accounting for 67% of the variance rather than 62%), they appear to predict trust distinct from one another.

#### *Structural Equation Modeling*

The a priori analyses planned for this project included Structural Equation Modeling (SEM). The intent was to use SEM to evaluate a series of nested models and specify the model which best fit the data, then compare the final model fit across male and female samples. This plan was reluctantly replaced with the regression analyses and Sobel test outlined above, after it

was determined that the available data was not appropriate for use with SEM. This conclusion was reached when it became clear that the pattern of intercorrelations and predictors which reached significance in multiple regression analyses did not support the mediation relationships outlined in the original model (Baron & Kenny, 1986). Incorporating these findings into the model pruned out two predictors (attachment and propensity to trust) and removed their paths. This left a fully saturated model, with the relations between perceived similarity and trust partially mediated by social exchange. Fully saturated models, in which a path connects each construct to every other construct, cannot be adequately tested via SEM (Chou & Bentler, 1995; Schumaker & Lomax, 2004). Instead, the partial mediation was tested via Sobel test, as outlined above.

#### *Exploratory Analyses*

*Predicting the difference in trust scores.* Unexpectedly, the *t* test comparing trust at T2 with trust at T5 showed a significant *decrease* in trust levels over the duration of the study. To explore the difference in trust trajectories between times two and five, regression equations were developed to predict the trust difference score for participants. Entering all the available early predictors (attachment, propensity to trust, perceived similarity, and T2 social exchange) simultaneously produced a regression equation that explained 2% of the variance in trust difference scores. None of the scores for attachment, propensity to trust, perceived similarity, and T2 social exchange emerged as significant predictors in this model (see Table 5). Entering the same four predictors in a step-wise regression produced a more parsimonious equation with perceived dissimilarity emerging as the only significant predictor (see Table 6). This single predictor regression equation explained the same 2% of the variance in trust difference scores. Building on this equation by adding the later social exchange scores as predictors, along with T2

social exchange, attachment, propensity to trust, and perceived similarity, increased the variance in trust difference scores accounted for to 31%. The T5, T2, and T4 social exchange scores were significant predictors of the change in trust scores in this model (see Tables 7 and 8).

*Exploratory factor analysis.* Two exploratory factor analyses were conducted to address concerns about construct or measurement overlap between the trust items and social interaction items used in this study. The 11 trust items and six social exchange items administered at time two went into the first factor analysis, and the same seventeen items from the trust and social exchange measures at time five went into the second. These two principal components factor analyses showed similar findings: both suggested the presence of three factors with eigenvalues greater than one, with the same items loading on each factor across administrations.

The first and largest factor encompassed all eleven trust items and four of the six social interaction items, including those associated with the amount of interaction, happiness with, and fun attributed to the roommate. Two other factors accounted for one social interaction item each, with “how many times have you been annoyed or angry with your roommate in the last week?” loading on factor two and “how many times have you been sad due to your roommate in the last week?” loading on factor three (see Tables 9 and 10). For the T2 sample, the first factor explained 46% of variance in scores; the second factor accounted for an additional 13% of variance; and the third factor explained an additional 6% of variance, accounting together for a cumulative 66% of variance observed (see Table 9). In the T5 sample, the first factor accounted for 55% of variance in scores; the second factor accounted for an additional 12% of variance; and the third factor explained an additional 6% of variance, accounting together for a cumulative 73% of variance observed (see Table 10).

This pattern of findings suggests that trust and social interaction, as measured here, are not orthogonal constructs. While described discretely in the literature, in this sample trust and social interaction load largely (15 of 17 items) on a single factor.

## Discussion

Trust is an important component of interpersonal relationships throughout the lifespan, affecting a broad variety of interpersonal, psychological, and performance outcomes (Dirks & Ferrin, 2002, Pratt & Dirks, 2007; Rotter, 1967; Simpson, 2007). Although most research in this area has been limited by an emphasis on concurrent measurement of all constructs, in this study I used a longitudinal design to study trust development in the context of first-year college students' new relationships with their residence hall roommates. I investigated four factors hypothesized to influence trust development: attachment status, propensity to trust, perceived similarity of the trustee to the self, and social exchange processes. In this section of the paper I will first discuss each of my hypotheses, reflecting on possible explanations for the relations found in this study. Next, I will describe the post hoc analyses I conducted and some possible implications of their findings. Then I will discuss the strong intercorrelation between trust and social exchange in this sample. Following that, I will link the trust development process to the peer rejection/acceptance process described by Coie (1990). Finally, I will reflect on the strengths and limitations of this project and provide some suggestions for future research.

### *Assessment of Hypotheses*

*H1: The quality of early social exchanges would be a better predictor of trust development than the quality of later social exchanges.* The first hypothesis, that the quality of early social exchanges would be a better predictor of trust development than the quality of later social exchanges, was not supported in this sample. Although each measurement of social exchange correlated significantly with trust as a single predictor, regression analyses suggested that later measurements provided better prediction of trust. This hypothesis that earlier exchanges would have greater impact on relationship trust was based on Simpson's (2007)

assertion that early encounters are “trust-diagnostic” and provide important information about the trustee.

It is possible that Simpson and colleagues’ idea that early encounters are diagnostic may be incorrect, with trust at any given time influenced only by proximal encounters, rather than incorporating information acquired earlier. However, I find it more likely that early trust-diagnostic encounters remain critical to trust development but the first measure of social exchange, at the beginning of the second week of classes (12 days after “move-in” began), occurred too late to capture roommates’ very early trust-diagnostic exchanges. Participants in this research were living with the trustee on whom they reported, so it is possible that they spent large quantities of time with that person between move-in day and Monday of the second week of school, enabling them to acquire large amounts of information before the first social exchange measure took place. If the first social exchange measure was taken after the pair’s exchanges plateaued, it missed the window for measuring impressions in the absence of information. Another alternative explanation for this unexpected finding is that earlier measurements of social exchange provided better prediction of trust, but this effect was masked by measurement error. Although I do not consider this explanation most likely, if measurement error was high enough to obscure the hypothesized relationship, it is possible that T5 social exchange was most diagnostic because it was measured at the same time point as the criterion variable.

*H2. Trust measured one week into the relationship would show a stronger relation with propensity to trust than with social exchanges or the trust level one month into the relationship.*

Hypothesis two, that trust measured one week into the relationship would show a stronger relation with propensity to trust than with social exchanges or the trust level one month into the relationship, was not supported. Instead, trust measured at T2 did not correlate significantly with

propensity to trust, but had significant correlations with trust measured at T5 and with all four measurements of social exchange. This hypothesis was developed based on the idea that when trustors lack information about a relationship partner, their reported trust level reflects their own propensity rather than any relationship variable (Rotter, 1967).

It is possible that propensity to trust is not used in information-deficient situations to determine trust, as suggested by the findings in this study. It is also possible that by the beginning of the second week of school, participants were no longer lacking information about their roommate trustee. This finding was a surprise initially; however, it makes sense in light of the failure to find support for the first hypothesis. Together the pattern of findings around hypotheses one and two suggest that the design of this project missed the temporal window for assessing early, diagnostic interactions and perceptions in the absence of relationship information.

*H3. The relationship between attachment and trust would be mediated by propensity to trust. H4. The relationship between attachment and trust would be mediated by social exchange.*

The third hypothesis declared that the relationship between attachment and trust would be mediated by propensity to trust. This was not fully supported, because attachment was not significantly correlated with trust; however, there was a significant correlation between attachment and propensity to trust. The attachment literature supports the idea that attachment is related to propensity to trust, with attachment status in early childhood affecting later individual differences in one's tendency to trust others (Bridges, 2003; Nickerson & Nagle, 2005; Mikulincer, 1998). The startling finding here was that hypothesis four was not confirmed because attachment failed to predict both trust and social exchange in this sample, despite broad

agreement in the literature that attachment relationships influence later social relationships (Bridges, 2003; Nickerson & Nagle, 2005; Mikulincer, 1998; Simpson, 2007; Weiss, 1991).

This novel finding suggests that the relationship between attachment and trust described in the literature may be limited by boundary conditions which are not yet fully understood. One possible boundary condition is relationship category, which may serve as boundary conditions for schema activation, with attachment status predicting friendships and romantic relationships, but not roommate relationships. Alternatively, it is possible that trust and attachment are related only if the trustee behaves in a normative fashion: if the trustee fails to meet this expectation by behaving in either egregious or overwhelmingly generous ways, perhaps the classification of those behaviors then replaces attachment as a predictor of trust (Coie, 1990).

Another possible explanation for the failure of attachment to predict trust or social exchange in the larger sample is that parental attachment may not actually influence the peer relationships that were measured in this sample. That conclusion seems unlikely, as a wide body of literature supports the linkage between parental and peer attachment (Armsden & Greensberg, 1987; Faas & Tubman, 2002). Another possibility is that there was a flaw in the measurement of one or more variables; however, both Armsden and Greenberg's IPPA Attachment scale and McAllister's (1995) trust measure are widely used and accepted in the field. I believe the most likely explanation for attachment's lack of association with trust and social exchange is that some characteristic of this developmental transition obscured the effects of attachment.

The college transition is very meaningful for emerging adults, providing an anticipated separation from caregivers (Faas & Tubman, 2002; Samuolis et al., 2001). It is possible that characteristics of this transition and of the roommate relationship may temporarily overrule attachment as a predictor of trust. For example, living with a roommate requires students to leave



relative strangers with access to their belongings. Although most people would not normally leave a laptop computer unsecured around an unfamiliar person, arriving students have little choice in the matter. Perhaps the behaviors required of them in turn induce trust, to reduce their experience of cognitive dissonance (i.e. ‘I don’t want to leave my stereo with a stranger. I have no choice about leaving it with Alex. If I am leaving her alone with my stereo, Alex must not be a stranger. Because I am behaving as though I trust him, I must trust him; Egan, Santos, & Bloom, 2007).

The roommate assignment process is another characteristic of the dyads studied here which may account for the absence of attachment as a predictor of trust in this specific relationship. The link between attachment status and social relationships during this developmental stage has largely been found in friendships and romantic relationships (Greenberger & McLaughlin, 1998; Mounts et al., 2006). Friends and lovers are chosen in a way randomly assigned roommates are not. Perhaps, because the choice of relationship partner is already made for them, students use the information that this person will be a significant interaction partner as a predictor of trust in place of their own attachment-inspired internal working model (Ainsworth, 1991; Main et al., 1986).

*H5. The relationship between propensity to trust and trust would be partially mediated by social exchange.* Hypothesis five declared that the relationship between propensity to trust and trust would be partially mediated by social exchange. This hypothesis was not supported: propensity to trust did not correlate significantly with either trust or social exchange. This is a departure from the pattern of findings documented in the literature. However, Colquitt and colleagues’ (2007) meta-analysis addressing propensity to trust suggests that the construct has been measured almost exclusively in adult workplace samples. Although the measure’s questions

address broader contexts and propensity to trust is defined as a personality variable that can be used to predict behavior in multiple arenas, propensity to trust may not generalize to college roommate contexts.

Propensity to trust may also differ in utility for adult workplace and emerging adult dorm samples due to context demands. Both workplace and roommate relationships possess elements of interdependence, but the outcomes of that interdependence are very different: roommates rely on one another for social support, but workmates collaborate on common work goals (Lawler, 2006). Additionally, at work, there is generally a clearly defined set of acceptable behaviors and a defined schedule, with a supervisor present to ensure cooperation. In contrast, roommates go home from school (or work) to a shared space for which each possesses equal ownership. In their common room, roommates may engage in a very broad variety of behaviors, spend many consecutive hours together, or bring in outside friends who change the interpersonal dynamic (Dirks & Ferrin, 2002; Lapidus, Green, & Baruh, 1985). It is possible that the differences between workplace and dormitory contexts limit the generalizability of the propensity to trust construct and measure.

*H6. The relationship between perceived similarity and trust would be partially mediated by social exchange.* Hypothesis six, which proposed that the relationship between perceived similarity and trust would be mediated by social exchange, was not supported in the sample as a whole. Despite social exchange and perceived similarity's significant intercorrelation, they appear to predict trust distinct from one another. Although it is interesting to confirm the robust relationship between each of these constructs and our criterion variable, the process question this research hoped to address remains: *how* do these constructs influence trust? It is possible that

trust development is a social exchange process, but this research failed to measure the constructs which influence trust through social exchange.

A potential alternative explanation is that trust development is a cognitive process, with perceived similarity and social exchange affecting trust through a cognitive evaluation process. Support for this idea that trust development is a cognitive process exists in the literature (i.e. Mayer & Davis, 1999; McKnight et al., 1998), with many researchers asserting that the trust development process includes both social exchange (also labeled “affective”) and cognitive components (Dirks & Ferrin, 2002; McAllister, 1995). Another possibility is that, rather than social exchange leading to trust, trust influences social exchange by providing information about the trustee which feeds into a cognitive process that in turn influences social choices. This reversal of the proposed pattern was not specifically tested in this project; however, it is worth noting that the T2 trust score was significantly correlated with all later measurements of social exchange. This finding may reflect that trust (at least as measured by McAllister’s [1995] questionnaire) and social exchange are not orthogonal constructs. This intriguing possibility will be revisited later in this section.

Although the model of trust development conceptualized in this dissertation was not confirmed, the results of this study may still contribute meaningfully to our understanding of the trust development process. The expected relations between trust and the more distal predictors of attachment and propensity to trust were not found. Early social exchanges did not possess extra weight in the trust development process, as anticipated. However, perceived similarity and social exchange together explained over 60% of the variance in trust scores, suggesting that future work in this area would benefit from their inclusion.

### *Social Exchange and Trust*

As hypothesized, social exchange scores were highly related to trust level in this sample. Regression findings indicate that variance in social exchange scores accounted for more than 60% of the variance in trust scores. Although it is exciting to identify a variable that may explain so much of the trust development process, the huge intercorrelation between these constructs is also somewhat suspect. It is possible that the strong relation between these two scores truly reflects the integral connection between social exchange and trust (Ainsworth, 1979; 1991; De Wolff & Van Ijzendoorn, 1997; Markey & Kurtz; 2006). By five weeks into a relationship, we would expect the link between these constructs to be strong and bi-directional, with high trust encouraging greater social exchange, and positive social exchanges in turn producing more trust.

Alternatively, the large correlation between trust and social exchange may indicate that both measures are assessing a common underlying construct. The social exchange measure used in this research is very concrete and behaviorally based. This six item social interaction measure asks participants about the amount of time they have spent interacting with their trustee (two questions) and the effect of those interactions on their own emotional state (four questions). The trust measure is less concrete, inquiring about a variety of perceptions and preferences related to the trustee (McAllister, 1995). Although this 11 item measure is widely used to measure trust in adult samples and possesses very high internal consistency, it is possible that its items are actually providing a muddled measure of social exchange and trust, rather than being cleanly related to trust alone.

The exploratory factor analysis performed for this study supports this interpretation, suggesting that trust and social exchange, as measured here, load largely on a single factor (15 of 17 items), suggesting a high level of either construct or measurement overlap across these

variables. The items that do not load primarily on the first factor are the two social exchange questions which address negative emotion (“How many times have you been annoyed or angry with your roommate in the last week?” and “How many times have you been sad due to your roommate in the last week?”). It is possible that these items are too broad in scope to measure only social exchange. For example, a respondent could report sadness or annoyance due to annoying social exchanges with their roommate or from, for example, jealousy over the roommate being invited to pledge a sorority (when the respondent was not). The other four social exchange items and all eleven trust items that loaded on the common first factor may collectively provide a better measure of the social exchange construct.

However, before concluding that the high intercorrelation between social exchange and trust and overlapping factor structure of these measures is due only to muddled measurement or that social exchange explains so much of the trust development process, further research is needed to confirm the validity of our measures and distinctness of these constructs. The social exchange measure used in this research was very concrete, and the trust measure is not. Because of this, their common factor loading suggests that increased precision in the measurement of trust would greatly benefit research in this area.

#### *Analyzing the Process of Trust Development.*

As mentioned above, the failure to confirm hypotheses one and two, that the quality of early social exchanges would be a better predictor of trust development and that T2 trust would show a stronger relationship with propensity to trust than with social exchanges or T5 trust, suggests that the design of this project may have missed the critical window for assessing early, diagnostic interactions and perceptions in the absence of relationship information (Simpson,

2007). Reflecting on this possibility, it is important to consider the process by which trust develops in order to better identify critical stages and improve our research design.

A conceptual framework that may illuminate the trust development process is Coie's (1990) theory of peer rejection. Although Coie was particularly interested in peer rejection of aggressive children, the evaluation process he outlined may also be used to describe social acceptance (e.g. when different judgments are made at key points in the peer rejection process, it leads to acceptance by one's peers). Three of his four phases – precursor, emergence, and maintenance – provide a useful framework for the trust development process. The final phase of the peer rejection process, which he labels the “consequence” phase, describes negative outcomes for the individual resulting from peer rejection and is thus peripheral to this discussion.

In the first, “precursor” phase of Coie's (1990) peer socialization process, individuals develop patterns of social behavior, competencies, and expectations for interaction partners that will affect their later peer relationships. For the purposes of this project, the precursor phase encompasses all the learning and experiences that students bring to the university residence halls with them, including their attachment internal working models and propensity to trust.

The second phase of the process is labeled the “emergent” phase, in which individuals act empirically, interacting with peers and observing their behavior and characteristics closely. Although Coie does not specifically describe the emergent phase as incorporating social exchange, he emphasizes the role of social behavior and describes interactions that are clearly social exchanges. In the trust development process, the emergent phase would encompass Simpson's (2007) trust-diagnostic interactions. During these early social exchanges, trusters evaluate their trustee on the same questions used in the more general social acceptance process Coie describes: Is this person fun to be around? What kind of person is she? How does being

with him make me feel? What kind of influence will we be on each other? Are we more alike or more different?

The answers to these questions, along with evaluations of the trustee's behavior, will evolve during the emergence phase, as more information is collected. Once enough time has passed and enough interactions have occurred that trustors believe they have sufficient knowledge of the trustee, that information will be used to make an empirically based decision about how much they trust their roommates. There is no defined time frame for this transition, and it is likely to differ across trustors. According to Coie (1990), once a status is determined, relationships move into the third, "maintenance" phase. In the maintenance phase, relationship dynamics shift and individuals modify their behavior towards, feelings about, and expectations for their freshly categorized peer, to bring their day to day interactions into line with the status assigned at the end of the emergent phase. During the maintenance phase, this set of expectations may manifest as a self-fulfilling prophecy, as interacting with someone according to your expectations for them can in turn produce behavior confirming the categorization (Darley & Fazio, 1980).

Coie (1990) asserts that it is difficult it is to change one's social status in maintenance phase, although some rejected children are eventually able to move from rejected to neutral (but not popular). Similarly, trust may remain fluid during the emergence stage, then crystallize and become difficult to manipulate in the maintenance phase. Coie provides no clear answer to the question of what must change for a status promotion to take place in the peer social relationships he addresses, but suggests that poor social behavior by children may contribute to a demotion. In the trust paradigm, I suggest that increasing trust during the maintenance phase would require

consistent trustworthy behavior over a long period of time, whereas quickly destroying trust through a single harmful act remains a possibility.

Coie (1990) is explicit in stating that relationship dynamics differ across the stages of his model. Recognizing this, it makes sense that attachment and propensity to trust, which are individual differences that developed during the precursor phase, failed to significantly predict trust in the maintenance phase. Applying Coie's model to the roommate trust development process measured in this project, perhaps participants made an early decision about trust in their roommate and moved to the maintenance phase before the time two measures took place. In the maintenance phase, respondents were likely to use the trust categorization, rather than empirical data, to report on their perceived similarity, trust, and social exchanges. The assignment made during the emergence phase could also affect respondents' social exchange behaviors directly by influencing the frequency and type of social exchanges in which they chose to participate.

Although the process of trust development outlined in this paper concerns a dyadic relationship, rather than addressing the construct at the peer group level, both processes address interpersonal relationships. Coie's (1990) clearly defined assumptions – that social behavior influences relationships with peers, that individuals' responses to others' social gestures reflect their social exchange history, and that people judge others empirically based on their social exchanges – are congruent with the assumptions of trust development as outlined in this paper. More research will be required to evaluate the utility of a Coie-inspired model for describing trust development; however, at this point, it appears to provide a useful description of the relationship development process described in this paper. This theoretical framework will provide a useful tool in future research efforts, encouraging scientists to focus on identifying the critical periods in the trust development process and the factors that contribute to each phase.



*Conclusions*

The take home message from this research is that trust is strongly related to perceived similarity and social exchange. These proximal cues provided better prediction of trust in roommate relationships than the more distal predictors of attachment and propensity to trust.

Although the hypotheses developed a priori were not confirmed in this study, the project itself possessed many strengths. This work made use of robust measures, a longitudinal design, and a sample size which provided adequate statistical power to contribute to our understanding of trust development. The strong link between perceived similarity and trust is novel in this arena and adds to the cognitive explanation for trust development in the literature.

The project was limited by reliance on self-report measures and a relatively homogenous undergraduate sample. The high correlation between social exchange and trust in this sample suggests that the measurement of trust may benefit from a more distinct measure. In addition, the findings are hampered by a research design limitations: due to the nature of the academic transition process, it was not possible to assess respondents' parental attachment and propensity to trust before they met their new relationship partner. Additionally, the timing of the first social exchange and trust measurements may have missed the diagnostic period in which respondents began to acquire information about their roommates.

Future work in this area would benefit from a more rigorous longitudinal design, focusing on early measurement; evaluation of trust development using a sample of dyads rather than individuals; the incorporation of behavioral measures of trust; and consideration of qualitatively different kinds of trust. New longitudinal work would provide an opportunity to measure constructs of interest during the early critical period for trust development that this study may have missed. Studies evaluating trust development will also benefit from examining the

trajectories of social exchange and trust development over time, as the trajectory of social exchange may provide a better prediction of trust than any single or aggregate score.

Additionally, although recruiting dyadic samples is more challenging, we need to look at the interactive nature of trust development as a function of two people's exchanges and perceptions. This shift from focusing on individual participants and a trustee with whom they interact to examining trust development in dyads would provide an opportunity to examine social exchange more finely, recognizing social exchanges as bi-directional and interdependent. Incorporating behaviorally based measures of trust, assessing how respondents and their trustees would behave or have actually behaved in specific trust-relevant situations, may also help research in this area by providing a more concrete trust measure. This type of measurement could possess stronger ecological validity than the Likert-type scales currently in common use, and help researchers understand whether very high intercorrelation, such as that found between social exchange and trust in this study, reflect muddy measurement or strong relations.

To date, there has been little work evaluating qualitative, rather than quantitative, differences in trust. As our understanding of trust grows, it is becoming important to recognize that qualitatively different kinds of trust exist and may develop differently. For example, trusting someone to take care of your plants is qualitatively different from trusting them to make medical decisions on your behalf, suggesting the existence of distinct trust categories. Future work will benefit from expanding measurement techniques to account for important qualitative differences in trust and assess their unique contributions to the trust development process.

More theoretical work backed by empirical testing is needed to evaluate the utility of models of trust development. The field will also gain greatly from rigorous longitudinal work, evaluation of trust in dyadic samples, incorporation of behavioral measures of trust, and an

increased focus on defining qualitatively different kinds of trust and the different trust development processes which may contribute to them. This area remains ripe for future research, and I look forward to the trust development process becoming more transparent as work in this area continues.

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## Tables

Table 1

## Data Collection Procedure

Timing	Label	Construct	Measure & Source
First 72 hours of semester	T1	Attachment	<i>Inventory of Parent &amp; Peer Attachment</i> (Armsden & Greenberg, 1987)
		Propensity to Trust	<i>Interpersonal Trust Scale</i> (Rotter, 1967)
		Demographics	
One week after classes began	T2	Perceived Similarity	<i>Perceived Similarity</i> (based on Berg, 1984)
		Trust	<i>Measure of Trust in a Specific Peer</i> (McAllister, 1995)
		Social Exchange	<i>Social Interaction Measure</i>
Two weeks after classes began	T3	Social Exchange	<i>Social Interaction Measure</i>
Three weeks after classes began	T4	Social Exchange	<i>Social Interaction Measure</i>
Four weeks after classes began	T5	Social Exchange	<i>Social Interaction Measure</i>
		Trust	<i>Measure of Trust in a Specific Peer</i> (McAllister, 1995)

Table 2

## Summary Statistics for Construct Measures

Variable	M	SD	N	2	3	4	5	6	7	8	9
1. Attachment	43.11	14.50	214	.20(**)	-.01	.10	.04	.05	.03	.04	.08
2. Propensity to Trust	37.46	4.86	214	-	-.13	.12	.06	.08	.08	.04	.08
3. Perceived Dissimilarity	21.18	9.06	214		-	-.59**	-.48**	-.48**	-.51**	-.43**	-.54**
4. Trust – T2	52.44	10.33	214			-	.72**	.71**	.70**	.67**	.80**
5. Social Exchange – T2	12.09	3.81	214				-	.84**	.80**	.73**	.63**
6. Social Exchange – T3	11.60	3.85	214					-	.87**	.82**	.70**
7. Social Exchange – T4	11.36	3.88	214						-	.87**	.77**
8. Social Exchange – T5	11.15	4.09	214							-	.79**
9. Trust – T5	51.21	13.16	214								-

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

Table 3

Summary of Stepwise Regression Analysis for Social Exchange Scores Predicting Trust (N=214)

Variable	B	SE B	$\beta$	$R^2$	$\Delta R^2$
Step 1					
T5 Social Exchange	2.53**	0.14	0.79	0.62	
Step 2					
T5 Social Exchange	1.53**	0.27	0.48		
T4 Social Exchange	1.21**	0.29	0.36	0.65	0.03

\*\* Significant at the 0.01 level.

Table 4

Summary of Stepwise Regression Analysis for Predicting Trust (N=214)

Variable	B	SE B	$\beta$	$R^2$	
Predictor Variable Only, Predicting Hypothesized Mediator					
Dissimilarity	-1.95**	0.02	-0.43	0.19	
Predictor Variable and Hypothesized Mediator, Predicting Trust					
Dissimilarity	-0.36**	0.06	-2.51		
T5 Social Exchange	2.18**	0.14	0.68	0.67	0.48

\*\* Significant at the 0.01 level.

Table 5

Summary of Multiple Regression Analysis Predicting Change in Trust Scores Using Early

Predictors

Variable	B	SE B	$\beta$	$R^2$
Attachment	0.00	0.04	0.01	
Propensity to Trust	-0.06	0.12	-0.04	
Perceived Dissimilarity	-0.11	0.07	-0.12	
T2 Social Exchange	0.10	0.17	0.05	0.02

\* Significant at the 0.05 level.

Table 6

Summary of Stepwise Regression Analysis Predicting Change in Trust Scores Using Early

Predictors

Variable	B	SE B	$\beta$	R <sup>2</sup>
Step 1				
Perceived Dissimilarity	-.12	0.06	-0.14	0.02

\* Significant at the 0.05 level.

Table 7

Summary of Multiple Regression Analysis Predicting Change in Trust Scores Using All

Predictors

Variable	B	SE B	$\beta$	R <sup>2</sup>
Attachment	0.00	0.03	0.00	
Propensity to Trust	-0.06	0.10	-0.04	
Perceived Dissimilarity	-0.01	0.05	-0.01	
T2 Social Exchange	-1.02**	0.23	-0.49	
T3 Social Exchange	-0.36	0.29	-0.18	
T4 Social Exchange	0.84**	0.31	0.41	
T5 Social Exchange	1.11**	0.24	0.57	0.31

\* Significant at the 0.05 level.



Table 8

Summary of Stepwise Regression Analysis Predicting Change in Trust Scores Using All

Predictors

Variable	B	SE B	$\beta$	$R^2$	$\Delta R^2$
Step 1					
T5 Social Exchange	0.84**	0.12	0.43	0.19	
Step 2					
T5 Social Exchange	1.46**	0.17	0.75		
T2 Social Exchange	-0.92**	0.18	-0.44	0.29	
Step 3					
T5 Social Exchange	1.04**	0.23	0.54		
T2 Social Exchange	-1.16**	0.20	-0.56		
T4 Social Exchange	0.70*	0.28	0.34	0.30	

\*\* Significant at the 0.01 level.

\* Significant at the 0.05 level.

Table 9

## T2 Trust and Social Exchange Item Factor Loadings and Eigenvalues

Items	Factor 1	Factor 2	Factor 3	
(T) We would both feel a sense of loss if one of us was moved and we could no longer live together.	0.83	-0.19	0.06	
(T) I can talk freely to my roommate about difficulties I am having and know that (s)he will want to listen.	0.82	-0.02	0.33	
(T) My roommate and I have a sharing relationship. We can both freely share our ideas, feelings, and hopes.	0.81	-0.15	0.27	
(T) If I shared my problems with my roommate, I know that (s)he would respond constructively and caringly.	0.80	0.11	0.16	
(T) I would have to say that my roommate and I have both made considerable emotional investments in our relationship.	0.78	-0.18	0.15	
(SE) How many times have you had fun with your roommate in the last week?.	0.78	-0.44	-0.07	
(SE) How many times have you been happy due to your roommate in the last week?	0.76	-0.36	-0.04	
(SE) How much time have you spent <i>actively interacting</i> with your roommate in the last week?	0.74	-0.44	-0.12	
(SE) How many joint activities (including meals, classes, social events, exercising, and/or 'hanging out') have you and your roommate participated in together in the last week?	0.72	-0.46	-0.18	
(T) Most people, even those who aren't close friends of my roommate, trust and respect him/her as a person.	0.69	0.26	-0.16	
(T) Other peers of mine who must interact with my roommate consider him/her to be trustworthy.	0.69	0.22	-0.27	
(T) Given my roommate's track record, I see no reason to doubt his/her competence and preparation as a student.	0.63	0.49	-0.29	
(T) My roommate approaches his/her studies with professionalism and dedication.	0.57	0.45	-0.23	
(T) I can rely on my roommate not to make my life more difficult by careless behavior.	0.49	0.47	-0.21	
(SE) How many times have you been annoyed or angry with your roommate in the last week?	0.46	0.52	0.33	
(T) If people knew more about my roommate and his/her background, they would be more concerned and monitor his/her performance more closely.	0.41	0.36	-0.20	
(SE) How many times have you been sad due to your roommate in the last week?	0.28	0.37	0.63	
(T) indicates Trust items	Eigenvalue:	7.89	2.15	1.11
(SE) indicates Social Exchange items	% of Variance:	46.38	12.64	6.51
	Cumulative %:	46.38	59.02	65.53

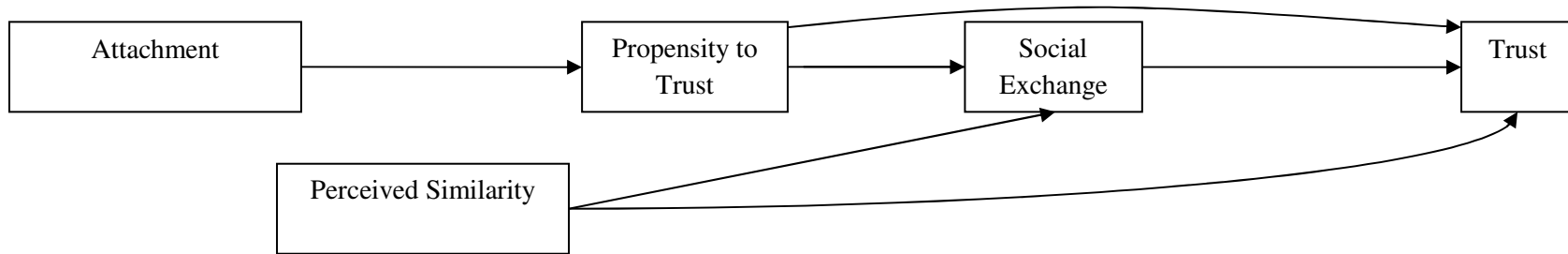
Table 10

## T5 Trust and Social Exchange Item Factor Loadings and Eigenvalues

Items	Factor 1	Factor 2	Factor 3	
(T) My roommate and I have a sharing relationship. We can both freely share our ideas, feelings, and hopes.	0.88	-0.04	0.14	
(T) If I shared my problems with my roommate, I know that (s)he would respond constructively and caringly.	0.87	0.12	0.06	
(T) I can talk freely to my roommate about difficulties I am having and know that (s)he will want to listen.	0.87	0.00	0.14	
(T) We would both feel a sense of loss if one of us was moved and we could no longer live together.	0.86	-0.08	0.07	
(T) I would have to say that my roommate and I have both made considerable emotional investments in our relationship.	0.86	-0.12	0.09	
(T) Most people, even those who aren't close friends of my roommate, trust and respect him/her as a person.	0.84	0.15	-0.07	
(SE) How many times have you been happy due to your roommate in the last week?	0.81	-0.39	0.01	
(SE) How many times have you had fun with your roommate in the last week?.	0.79	-0.47	0.11	
(T) Other peers of mine who must interact with my roommate consider him/her to be trustworthy.	0.78	0.22	0.02	
(SE) How much time have you spent <i>actively interacting</i> with your roommate in the last week?	0.75	-0.50	0.01	
(T) Given my roommate's track record, I see no reason to doubt his/her competence and preparation as a student.	0.74	0.31	-0.44	
(SE) How many joint activities (including meals, classes, social events, exercising, and/or 'hanging out') have you and your roommate participated in together in the last week?	0.73	-0.52	0.03	
(T) My roommate approaches his/her studies with professionalism and dedication.	0.68	0.33	-0.45	
(T) I can rely on my roommate not to make my life more difficult by careless behavior.	0.63	0.31	-0.24	
(T) If people knew more about my roommate and his/her background, they would be more concerned and monitor his/her performance more closely.	0.51	0.40	-0.07	
(SE) How many times have you been annoyed or angry with your roommate in the last week?	0.49	0.53	0.28	
(SE) How many times have you been sad due to your roommate in the last week?	0.27	0.51	0.66	
T) indicates Trust items	Eigenvalue:	9.24	2.00	1.10
(SE) indicates Social Exchange items	% of Variance:	55.44	11.74	6.19
	Cumulative %:	55.44	67.18	73.37

Figures

Figure 1. Hypothesized Model



## Appendices

*Appendix A: Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987)*

Please indicate whether the following items are *almost always or always true, often true, sometimes true, seldom true, or almost never or never true*:

---

## Section 1

(If you have very different relationships with your parents, please respond to the items in reference to the parent who *most influenced* you).

1. My parents respect my feelings.
2. I feel my parents are successful as parents.
3. I wish I had different parents.
4. My parents accept me as I am.
5. I have to rely on myself when I have a problem to solve.
6. I like to get my parents' point of view on things I am concerned about.
7. I feel it's no use letting my feelings show.
8. My parents sense when I am upset about something.
9. Talking over my problems with my parents makes me feel ashamed or foolish.
10. My parents expect too much from me.
11. I get upset easily at home.
12. I get upset a lot more often than my parents know about.
13. When we discuss things, my parents consider my point of view.
14. My parents trust my judgment.
15. My parents have their own problems, so I don't bother them with mine.

16. My parents help me to understand myself better.
17. I tell my parents about my problems and troubles.
18. I feel angry with my parents.
19. I don't get much attention at home.
20. My parents encourage me to talk about my difficulties.
21. My parents understand me.
22. I don't know whom I can depend on these days.
23. When I am angry about something, my parents try to be understanding.
24. I trust my parents.
25. My parents don't understand what I am going through these days.
26. I can count on my parents when I need to get something off my chest.
27. I feel that no one understands me.
28. If my parents know something is bothering me, they ask about it

*Appendix B: Interpersonal Trust Scale (Rotter, 1967; items from Wheelless, 1978)*

Please indicate whether you agree the following items are *almost always or always true, often true, sometimes true, seldom true, or almost never or never true*:

- 
1. Hypocrisy is on the increase in our society.
  2. In dealing with strangers it is better to be cautious until they have proven that they are trustworthy.
  3. Fear of social disgrace or punishment rather than conscience prevents most people from breaking the law.
  4. Parents can usually be relied on to keep their promises.
  5. Using the honor system of *not* having a teacher present during exams would probably result in increased cheating.
  6. Most people can be counted on to do what they say they will.
  7. It is safe to believe that in spite of what people say, most people are primarily interested in their own welfare.
  8. Most people would be horrified if they knew how much news the public sees and hears is distorted.
  9. Most elected officials are really sincere in their campaign promises.
  10. Most experts can be relied upon to tell the truth about the limits of their knowledge.
  11. In these competitive times, one has to be alert or someone is likely to take advantage of you.
  12. Most salesmen are honest in describing their products.
  13. Most students in school would *not* cheat, even if they were sure of getting away with it.
  14. Most repairmen will overcharge if they think you are ignorant of their specialty.
  15. If we really knew what was going on in international politics, the public would have more reason to be frightened than they now seem to be.

*Appendix C: Perceived Similarity* (based on Berg, 1984)

Please indicate how important each of these items is to **you**: *very important, important, somewhat important, neither important nor unimportant, somewhat unimportant, unimportant, very unimportant*:

---

1. Having time alone
2. Studying
3. Participating in Greek (fraternity / sorority) activities
4. Spending time with family
5. Contacting friends from high school
6. Maintaining a regular sleep schedule
7. Keeping your room neat and organized
8. Exercising
9. Going out / partying
10. Participating in extracurricular activities
11. Having time to “veg” and watch television, listen to music, or take in other media sources
12. Spending money carefully
13. Spending time with a girlfriend / boyfriend
14. Participating in religious activities
15. Having trendy or cool accessories / clothes / etc.



Please indicate how important each of these items is to **your roommate**: *very important, important, somewhat important, neither important nor unimportant, somewhat unimportant, unimportant, very unimportant*:

---

1. Having time alone
2. Studying
3. Participating in Greek (fraternity / sorority) activities
4. Spending time with family
5. Contacting friends from high school
6. Maintaining a regular sleep schedule
7. Keeping your room neat and organized
8. Exercising
9. Going out / partying
10. Participating in extracurricular activities
11. Having time to “veg” and watch television, listen to music, or take in other media sources
12. Spending money carefully
13. Spending time with a girlfriend / boyfriend
14. Participating in religious activities
15. Having trendy or cool accessories / clothes / etc.

*Appendix D: Roommate Rapport Scale – Short Form*

(Cary, Stanley, Werring, & Yarbrough, 1988)

Please mark all of the following items as ‘Never; this is never true,’ ‘Seldom; this is seldom true,’ ‘Occasionally; this is occasionally true,’ ‘Often; this is often true,’ ‘or ‘Always; this is always true.’ Work rapidly and mark all items according to your feelings today.

---

1. I have confidence in my roommate
2. My roommate is artificial in his or her behavior toward me.
3. I feel that my roommate has a genuine desire to help out.
4. I feel a sense of satisfaction from talking with my roommate.
5. I feel blocked and frustrated in my attempt to relate to my roommate.
6. I feel grateful for my roommate’s help.
7. My roommate acts cold and distant.
8. My roommate is open, honest, and genuine with me.
9. I feel frustrated with my roommate.
10. I am comfortable talking with my roommate.

*Appendix E: Measurement of Communal Strength (Mills, Clark, Ford, Johnson, 2004)*

Keeping in mind your roommate, please answer the following questions. Circle one answer for each question on the scale from '0 = not at all' to '10 = extremely' before going on to the next question.

---

1. How far would you be willing to go to visit your roommate?
2. How happy do you feel when doing something that helps your roommate?
3. How large a benefit would you be likely to give your roommate?
4. How large a cost would you incur to meet a need of your roommate?
5. How readily can you put the needs of —— out of your thoughts?
6. How high a priority for you is meeting the needs of your roommate?
7. How reluctant would you be to sacrifice for your roommate?
8. How much would you be willing to give up to benefit your roommate?
9. How far would you go out of your way to do something for your roommate?
10. How easily could you accept not helping your roommate?

*Appendix F: Social interaction measure.*

Please answer the following questions as accurately as possible.

---

1. How much time have you spent *actively interacting* with your roommate in the last week?

None.          A little.          Some.          A lot.

2. How many joint activities (including meals, classes, social events, exercising, and/or 'hanging out') have you and your roommate participated in together in the last week?

None.          A few.          Some.          A lot.

3. How many times have you had fun with your roommate in the last week?

None.          A few.          Some.          A lot.

4. How many times have you been annoyed or angry with your roommate in the last week?

None.          A few.          Some.          A lot.

5. How many times have you been sad due to your roommate in the last week?

None.          A few.          Some.          A lot.

6. How many times have you been happy due to your roommate in the last week?

None.          A few.          Some.          A lot.

*Appendix G: Measure of Trust in a Specific Peer Items (McAllister, 1995).*

---

The items in this measure were modified by the researcher to reflect trust in a specific peer, rather than trust in a specific coworker.

Please indicate whether to *strongly agree, agree, somewhat agree, neither agree nor disagree, somewhat disagree, disagree, or strongly disagree* with the following statements about your roommate.

- 
1. My roommate and I have a sharing relationship. We can both freely share our ideas, feelings, and hopes.
  2. I can talk freely to my roommate about difficulties I am having and know that (s)he will want to listen.
  3. We would both feel a sense of loss if one of us was moved and we could no longer live together.
  4. If I shared my problems with my roommate, I know that (s)he would respond constructively and caringly.
  5. I would have to say that my roommate and I have both made considerable emotional investments in our relationship.
  6. My roommate approaches his/her studies with professionalism and dedication.
  7. Given my roommate's track record, I see no reason to doubt his/her competence and preparation as a student.
  8. I can rely on my roommate not to make my life more difficult by careless behavior.
  9. Most people, even those who aren't close friends of my roommate, trust and respect him/her as a person.
  10. Other peers of mine who must interact with my roommate consider him/her to be trustworthy.
  11. If people knew more about my roommate and his/her background, they would be more concerned and monitor his/her performance more closely.

*Appendix H: Demographics questionnaire.*

Please answer the following questions as accurately as possible.

- 
1. What is your age (in years)? \_\_\_\_\_
  2. What is your sex? Male / Female / Transgendered
  3. What is your marital status? Single / Married / Divorced / Widowed
  4. What is your ethnicity? \_\_\_\_\_
  5. What year in college is the 2008-2009 school year for you? 1<sup>st</sup> / 2<sup>nd</sup> / 3<sup>rd</sup> / 4<sup>th</sup> / 5<sup>th</sup>
  6. What year did you graduate from high school or complete your GED? \_\_\_\_\_
  7. Are your biological parents currently married to each other? Yes / No
  8. If divorced from each other, are either of your parents currently remarried?  
Not applicable / Neither is remarried / One is remarried / Both are remarried
  9. If your parents are divorced, how old were you when the divorce occurred?  
Not Applicable / \_\_\_ years old
  10. Where have you lived for the majority of your life?  
With both parents / With Mother / With Father / Other: \_\_\_\_\_ (please specify)
  11. How many siblings do you have? \_\_\_\_\_
  12. Do you currently live on campus in a university residence hall or off campus? On / Off
  13. Do you have at least one roommate? Yes / No  
(If you have more than one roommate, please select one to use as for the following questions).
  14. If you have a roommate, were you and your roommate assigned to live together or did you choose to live together? Assigned / By choice / Not applicable – no roommate
  15. If you have a roommate, how long have you known your current roommate?  
\_\_\_ years, \_\_\_ months, \_\_\_ weeks, \_\_\_\_\_ days / Not applicable – no roommate

IRB Approval Letter – IRB # 08-427



Office of Research Compliance  
Institutional Review Board  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, Virginia 24061  
540/231-4991 Fax 540/231-0959  
e-mail moored@vt.edu  
www.irb.vt.edu


FWA00000572( expires 1/20/2010)  
IRB # is IRB00000667

DATE: July 21, 2008

MEMORANDUM

TO: Julie C. Dunsmore  
Corrie Whitmore

Approval date: 7/18/2008  
Continuing Review Due Date:7/3/2009  
Expiration Date: 7/17/2009

FROM: David M. Moore 

SUBJECT: **IRB Expedited Approval:** "Pilot Testing for the Evaluation of Trust Development in Undergraduate Roommate Relationships", IRB # 08-427

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective July 18, 2008.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

**Important:**

If you are conducting **federally funded non-exempt research**, please send the applicable OSP/grant proposal to the IRB office, once available. OSP funds may not be released until the IRB has compared and found consistent the proposal and related IRB applicaton.

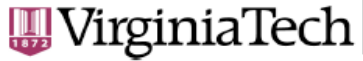
cc: File  
Department Reviewer:David W. Harrison

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IRB Approval Letter – IRB # 08-457



**Office of Research Compliance**  
 Institutional Review Board  
 2000 Kraft Drive, Suite 2000 (0497)  
 Blacksburg, Virginia 24061  
 540/231-4991 Fax 540/231-0959  
 e-mail moored@vt.edu  
 www.irb.vt.edu

FWA00000572( expires 1/20/2010)  
 IRB # is IRB00000667

DATE: August 5, 2008

## MEMORANDUM

TO: Julie C. Dunsmore  
Corrie Whitmore

FROM: David M. Moore

Approval date: 8/5/2008  
 Continuing Review Due Date: 7/21/2009  
 Expiration Date: 8/4/2009

SUBJECT: **IRB Expedited Approval:** "Trust Development: Testing a New Model in Undergraduate Roommate Relationships", IRB # 08-457

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective August 5, 2008.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

**Important:**

If you are conducting **federally funded non-exempt research**, please send the applicable OSP/grant proposal to the IRB office, once available. OSP funds may not be released until the IRB has compared and found consistent the proposal and related IRB application.

cc: File  
 Department Reviewer: David W. Harrison

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