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Kit Scott

*Information Technology and Supply Chain Management, Boise State University, Boise, ID, United States.,*  
[kitscott@boisestate.edu](mailto:kitscott@boisestate.edu)

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# Individual Relationships with Technology

**Kit Scott**

Boise State University  
kitscott@boisestate.edu

## ABSTRACT

In this paper, we explore the nature of the relationships that people develop with technology. In particular, we examine social exchange theory, the norm of reciprocity, and attachment theory to begin to explain how individuals develop, or do not develop, relationships with computers and technology. The theories are summarized, hypotheses are presented, proposed methods for empirical work are presented, and brief discussion is offered suggesting that the reference theories identified provide a novel way to examine the relationship between people and the technologies they interact with.

## Keywords

Attachment, social exchange, personal innovativeness with information technology

## INTRODUCTION

Research in MIS, particularly the TAM literature, examines attitudes and beliefs (PEOU, PU) and how those influence an individual's intention to adopt a new technology (Davis, 1989; Davis et al., 1989; Venkatesh et al., 2003). The TAM literature, as a mature line of research has thoroughly examined other constructs related to such attitudes and beliefs, such as computer self-efficacy (Compeau & Higgins, 1995) and personal innovativeness with information technology (Agarwal & Prasad, 1998).

The Trust, and e-Commerce literature (Ba & Pavlou, 2002; McKnight et al., 2002), on the other hand, have examined the nature of the relationships that people engage in with others through technological intermediaries. The MIS literature on trust emphasizes the development of trusting beliefs on the part of consumers interacting with e-commerce vendors (McKnight et al., 2002). Other e-commerce authors theorize that consumers follow a series of stages in developing relationships with B2C vendors with particular emphasis on attitudes, beliefs, and other cognitions that influence the consumer's calculations in determining to enter into, maintain, and continue relationships with e-commerce vendors (Campbell et al., 2009). While the e-commerce and TAM literatures have matured by examining psychological variables related to beliefs and attitudes, research is beginning to emerge that further examine *innate*, stable, psychological traits and how such traits influence a person's behavior with respect to technology (cf. Devaraj et al., 2008).

The broad question motivating this research, then, is: How do innate psychological traits influence a person's behavior with technology. In line with the recent research in e-commerce on relationships, but taking a slightly different approach informed by Actor Network Theory (Callon, 1986; Latour, 1987), which views technologies as actors in a network, this research further asks: Do people develop relationships with various technologies?

The rest of the paper is structured as follows. In the next section, the theoretical background is presented. Following, hypotheses are developed, a proposed method for addressing the above questions is presented, and discussion will follow.

## THEORETICAL BACKGROUND

How do you react to being separated from your email? How do you feel when you can't find your mobile phone? How do you react when a piece of software is updated and no longer operates the way you're used to it operating? While the answers to these questions may or may not indicate that a particular person can develop a relationship with a technology that is analogous to an interpersonal relationship, there are hints in the literature that suggest that, perhaps, the psychological mechanisms that influence how a person makes and maintains interpersonal relationships can be applied in a technological context.

Theoretically, is it possible to conceptualize a particular technology as a person? At least one theoretical perspective conceptualizes technological artifacts as actors, or actants, that contribute to the aligned interests of a social network

(Walsham & Sahay, 1999). Actor-network theory (Callon, 1986; Latour, 1987) has been utilized in IS research to examine how social networks, including actors such as developers, government entities, and GIS software, for example—and how the interests of the social network—work towards a shared goal (Walsham & Sahay, 1999). While actor-network theory is typically applied to larger networks than dyads (as this research does), and is used to examine how the interests of some actors are transmitted to other actors in the network (which is beyond the scope of this research), it opens the door for us in that it does treat technological artifacts as members of the network, having intentions, even if such intentions are those of the creator(s) of the artifact.

IS research has, for some time, been interested in relationships in technological contexts for some time. Trust in the context of e-commerce has become a rich body of knowledge (c.f., McKnight et al., 2002; Ba & Pavlou 2003) that examines how vendors might engender trust in the consumer. More recently, Campbell and colleagues have theorized regarding the development of relationships between consumers and e-commerce vendors (2009). In these theoretical perspectives, the consumer represents one half of the relationship; however, the e-commerce vendor represents the other half of the relationship rather than the technology itself.

The focus of this research is on conceptualizing the relationship between a person and a particular technology analogously to an interpersonal relationship. Many theories have been advanced to examine such interpersonal relationships, including the norm of reciprocity (Gouldner, 1960), social exchange (Thibaut & Kelley, 1959), and attachment theory (Bowlby, 1982) and the purpose here is to examine their applicability in a technological context between a person and the technology.

### **The Norm of Reciprocity and Social Exchange**

Social exchange theory and the norm of reciprocity suggest that people enter into and seek to cultivate relationships in order to obtain social rewards from the other party (Blau, 1964; Gouldner, 1960). The basis of these theories suggests that, in order to receive such social rewards, the participants in the relationship must also provide “investments that constitute commitments to the other party,” and involves “trusting others to reciprocate” (Blau, 1964 p. 98). In fact, Gouldner argued that the norm of reciprocity—that “people should help those who have helped them, and people should not injure those who have helped them”—may, in fact, be universal (1960, p. 171).

Work is still needed to evaluate whether people treat technology in a similar way, but if we examine a person’s relationship with, say, their mobile phone using these theories we can thus theorize that, if these mechanisms are in place during these interactions, it may be a costless, or very low cost investment, in social terms, for the person in this example. There is a financial cost in obtaining the technology and the services to utilize it, but the social cost for the person is nil. However, in exchange for the financial “investment” the person should expect for their mobile phone to provide social rewards, such as providing a connection to others, providing reliable service, or even providing an image of status (Osborne, 2011).

### **Attachment Theory**

Attachment theory examines relatively stable psychological traits to explain how individuals behave with respect to others (Bowlby, 1982). The theory developed by Bowlby (1982) and Ainsworth and colleagues (1978) examine the attachment style of children and adults and ties that style and the behavioral manifestations of that style to developmental interactions between the individual and their caregiver in childhood (Bartholomew & Shaver, 1998). According to the theory, as a child is cared for as a newborn and infant by their mother, or some other primary caregiver, that child will develop expectations and a style of “relational behavior” as the result of the type of care given by the primary caregiver (Bartholomew & Shaver, 1998). For instance, if a caregiver consistently responds appropriately to their child’s needs, such behavior on the part of the caregiver will tend to result in a stronger, healthier attachment bond to the child, referred to as a secure attachment pattern (Ainsworth et al., 1978). On the other hand, if the caregiver primarily does not respond to the child’s needs or distress, and over-encourages independence, that child may develop an avoidant attachment style, characterized by treating strangers in similar terms as the caregiver, rebellion and lower self-esteem (Ainsworth et al., 1978). Two other attachment styles have been identified in Ainsworth’s research, also known as ambivalent/resistant, characterized by distress and anger when the caregiver is absent and anxiety due to the caregiver’s inconsistent availability; and disorganized, characterized by contradictory attachment behaviors that may result from frightening, abusive, or withdrawal behaviors exhibited by the caregiver (Ainsworth, 1978). As these attachment styles are developed very early in a person’s life, attachment theorists have suggested that the relationship between the child and caregiver results in the child developing a “working model” for how they expect others to behave, relationally, toward them (Fraley et al., 2011). While other researchers have argued that there’s no theoretical reason to believe that working models should be stable over time, empirical data have been advanced to support the hypothesis that working models are, in fact, fairly stable over time (Fraley et al., 2011).

In adults, attachment style is often studied with respect to how individuals engage in relational behavior towards friends (Bachman & Bippus, 2005) and lovers (Brennan & Bosson, 1998). The theoretical basis for these studies suggests that in anticipation of social exchange, or reciprocity, a person's relational behavior towards another is influenced by their attachment style. An individual with a secure attachment style will expect others' behavior to exhibit secure tendencies as well (Hazan & Shaver, 1990). Likewise, an individual with an avoidant attachment style will expect others' behavior to exhibit avoidant tendencies, and will behave consistent with the avoidant attachment style toward others expecting avoidant reciprocity (Hazan & Shaver, 1990).

## **HYPOTHESIS DEVELOPMENT**

Now consider how people interact with technology. Agarwal and Prasad (1998) identified a construct they termed personal innovativeness with information technology (PIIT), which is defined as "the willingness of an individual to try out any new information technology" (p. 206). They argued that PIIT is also a stable trait. From a social exchange perspective, it follows that people who score high on the PIIT scale do so because they expect value (social or otherwise) from various technologies and are willing to "invest" in developing a relationship with the technology, whereas a person who scores low on PIIT does not expect, in general, reciprocation from technology so are not as willing to "invest" in a particular technology. Thus, we hypothesize:

H1: Expectations of reward and value derived from technology is positively related to PIIT.

Furthermore, we can see parallels between attachment styles with respect to developing adult relationships and how a particular attachment style might influence how willing people are to try new technology. A person's attachment style, developed from their early childhood experience with their caregiver, and further influenced by previous interactions with technology, will influence their level of PIIT. For instance, a person who has favorable expectations regarding the performance of technology in general (i.e., secure attachment style), they will be more willing to try new technologies. A person who has lower expectations of the performance of technology (i.e., anxious-avoidant attachment style) will be less likely to try new technologies, and may, in fact, worry about trying new technologies. A person who perceives that they are self-sufficient and does not have a need for close relationships (i.e., dismissive-avoidant attachment style) may be even more willing than a person with a secure attachment style to try new technologies, but also avoid technologies they have low opinions of. Finally, a person who does not trust technology and feels uncomfortable with technology (i.e., fearful-avoidant attachment style) will be even less likely that the anxious avoidant person to try new technology. Based on the above discussion, the following hypotheses are suggested:

H2: Fearful-avoidant attachment style individuals will have the lowest scores on PIIT

H3: Anxious-avoidant attachment style individuals will have the next lowest scores on PIIT

H4: Secure attachment style individuals will have a higher score on PIIT

H5: Dismissive-avoidant individuals will have the highest score on PIIT

## **PROPOSED METHOD**

As an initial test to determine the applicability of these socio-psycho-behavioral theories in a technological context, we propose a survey methodology in an attempt to determine the correlations (or lack thereof) between expectations of social exchange and the adult attachment styles and PIIT. This is only a very initial step to more fully examine how individual differences in attachment style, and expectations of reciprocity influence technology use.

To alleviate the concern of common-method bias, the survey instruments will be administered at several different times over the course of 3-4 months. For instance, personality and attachment-style questionnaires can be administered early in the study, then later in the study, PIIT, computer-anxiety, and computer self-efficacy can be administered.

### **Instruments**

To address the hypotheses presented above, several well-established measures will be used and/or adapted for use in this study.

The PIIT instrument developed by Agarwal and Prasad (1998) will be used, as will the Experiences in Close Relationships scale developed by Brennan and colleagues (1998) to measure adult attachment styles. This scale can be used as is, but in the future can also be adapted to be more specific to technological relationships. To assess expectations of social exchange, a measure previously designed to measure the social exchange between employees and their supervisors (LMX; Graen & Uhl-

Bien, 1995) will be adapted for use in this context. Other scales to provide context for convergent and discriminant validity that will also be used are computer self-efficacy (Compeau & Higgins, 1995), computer-anxiety (Thatcher & Perrewe, 2002), and the Big-5 personality assessment (John & Srivastava, 1999).

## DISCUSSION

Microsoft, in competition with Apple in 2008, launched an advertising campaign titled “I’m a PC” to respond to Apple’s advertising characterizing a Mac (personified) as “hip [and] unflappable,” and the PC (again personified) as “bumbling” (Nudd, 2011). Likewise, Samsung’s recent advertising campaign for its Galaxy smartphone attempted to “capture the absurdity of fans’ blind devotion to all things Apple” (Learmonth, 2001) in which a person standing in line for a new Apple product declares “I could never get a Samsung. I’m creative.” These marketing campaigns seem to be touching on a phenomenon that this research seeks to discover and examine. That is, we sometimes refer to the technologies in terms that indicate our perceptions of the technology as personal, and relational. If this research finds support for the hypotheses above, the door would be wide open to change how we examine such topics that are of interest to IS scholars, such as technology acceptance and continuance topics, computer self-efficacy, and trust.

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