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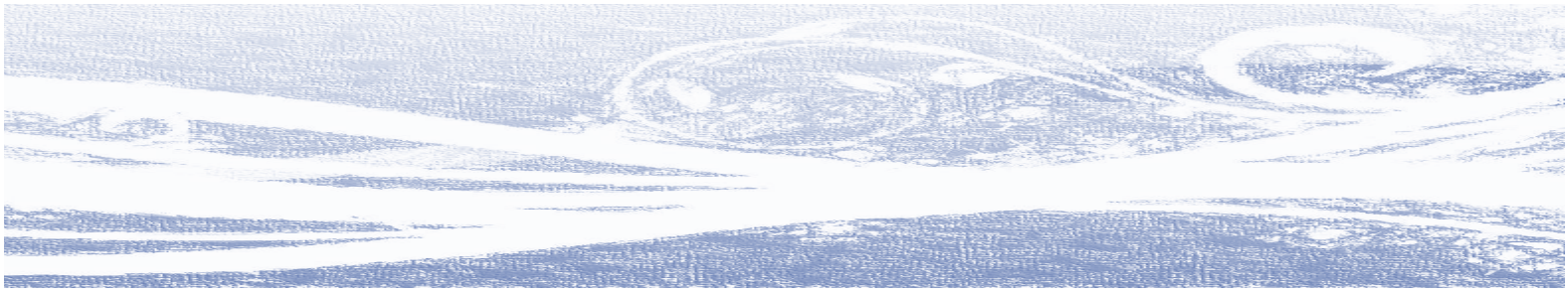

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FROM THE EDITORS

The May issue of *Quarterly Review of Business Disciplines* begins with the research of Jennifer Summary-Smith on thematizing twinness. It poses two research questions: How does society's perception of twin siblings influence their interactions with one another and how does society's perception of twin siblings influence their interactions with other people? The next paper, by Susana Velez-Castrillon and Cory Angert notes that women who make it to the top are statistical outliers and that more research should focus on them. It proposes a framework for the study of female CEOs and the personal and organizational antecedents to the appointment of a woman as CEO.

The research of Saurabh Gupta, is focused on increased collaboration in this age of digital learning. The paper states that no clear measure of the collaborative process exists and that the extent of collaboration needs to be measured as a continuous process variable. Finally, the research of Liqiong Deng, Brad Prince, and Douglas Turner investigates factors influencing adoption of mobile payment. Their survey results suggest that the individual mobility of potential users, the perceived compatibility and risks of mobile payment, and the characteristics of mobile payment use context are significant predictors of the intention to adopt mobile payment.

Margaret A. Goralski, *Quinnipiac University,* Editor-in Chief
Kaye McKinzie, *University of Central Arkansas*, Associate Editor

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THEMATIZING TWINNESS: A FAMILY SYSTEMS THEORY APPROACH

Jennifer J. Summary-Smith, Culver-Stockton College

ABSTRACT

The purpose of this study is to examine audio recordings of naturally occurring conversations between monozygotic and dizygotic twin siblings. This study uses both semi-structured interviews and conversation analysis, investigating communication patterns, practices, and phenomena in everyday twin-to-twin talk. Conversational excerpts displaying the theme of twinness are chosen to guide this study. Thus, the following research questions are posed: (1) How does society's perception of twin siblings influence their interactions with one another? (2) How does society's perception of twin siblings influence their interactions with other people? Findings suggest that the theme of twinness is frequently discussed among the twin sibling participants at home and at school. The family systems theory provides an opportunity to understand the twin sibling subsystem. Although most of the twin siblings' conversations reveal positive sides or benefits of being a twin, one set of twin siblings struggle with de-identification from each other. The purpose of this study is to better understand the relationship and communication between this unique dyad.

Keywords: Twin siblings; conversation analysis, systems theory

INTRODUCTION

Communication scholars are interested in family communication, for its own sake as well as for its greater impact on society. One component of the family unit that has been underrepresented in research is the sibling relationship (Turner & West, 2006b; Vangelisti, 2004). The sibling relationship is distinctive compared to other types (i.e., friendship) because it is essentially a forced relationship which can be a source of joy and/or a breeding ground for conflict. Sibling relationships deserve investigation for other reasons as well. Sibling relationships can potentially outlast marriages, friendships, and parent/child relationships. In addition, most siblings share genetic and social heritage, cultural milieu, and similar earlier experiences within the family. Even though 80% of Americans have this type of relationship (Floyd, 1996), it is not as prevalent in the communication literature compared to other relationships. Various other disciplines have shown more interest in the topic. For example, scholars of child development and psychology have studied siblings, with particular interest in twins and their genetics (Beatty, Marshall, & Rudd, 2001; Graham & Scudder, 2007; Horvath, 1995; Horwitz, Videon, Schmitz & Davis, 2003; Jang, Livesley, & Vernon, 1996; Penninkilampi-Kerola, Moilanen, & Kaprio, 2005; Richardson & Norgate, 2005; Tomblin & Buckwalter, 1998; Turheimer, D'Onofrio, Maes, & Eaves, 2005).

Popular literature on twins addresses the topic of twins and communication; however, they tend to feature articles such as Fierro's (n.d.) "Top Ten Things Not to Say to Twins." She briefly discusses commonly used phrases, explaining why they should not be said to twins, such as

"Why can't you be more like your twin?" and "I won't even try to figure out which one you are." In the communication discipline, researchers have studied sibling subsystems but have yet to analyze sets of twins and how they communicate with each other. The goal of the present study is to analyze naturally occurring talk between twin siblings.

Research on Twins Siblings' Communication

Although the following studies were conducted by communication scholars, they lack any discussion of natural occurrences of talk. Absent a focus on naturally-occurring talk, these studies do not truly analyze communication because of their reliance on self-reports. However, other disciplines such as communication disorders and health sciences have studied communicative phenomena between twin siblings, referred to as twinspeak/twin language/secret language (Bishop & Bishop, 1998; Hayashi, et al., 2006; Thorpe, Greenwood, Eivers, & Rutter, 2001).

Bishop and Bishop's (1998) study examined twin participants seven to 13 years of age with at least one of the twins having speech-language impairment. The results indicated that "twin language is usually use of immature or deviant language by two children at the same developmental level" (Bishop & Bishop, 1998, p. 150). Hayashi et al. (2006) found that twins ranging from 25 to 59 months, without an older sibling, are more likely to have their own "twin language." Unfortunately, the twin language is the result of lack of social experience factors; it is a sign of immature language functioning. In Thorpe et al.'s (2001) study, participants were 20 months to 36 months old. The authors also concluded that the 'secret language' is nothing more than "poor cognitive and language functioning" (Thorpe et al., 2001, p. 43). These studies provide interesting findings, yet it is important to note that the participants' ages range younger than the current study.

Research Using Conversation Analysis

Conversation analysis is a perspective that is here to stay for communication scholars, according to Heritage (1999). He further posits, "I think it is reasonable to treat our knowledge of these practices and their underlying principles as a basic part of what we mean by communication theory" (Heritage, 1999, p. 69). The following pages offer a review of a sample of recent conversation analytic studies that focus on family talk.

Butler and Fitzgerald (2010) examined three short excerpts of a family's interaction at breakfast. The videotape recordings consist of a young child (two years old), his parents, and his grandparents speaking at the kitchen table. The goal of their study is to examine how identities are made operative in and through moment-by-moment organization of specific sequences of action (Butler & Fitzgerald, 2010). The results of the analysis show how memberships (within stage-of-life, family categories, and as guests and hosts) and how the relevance of these memberships are enacted through phenomena such as turn design, turn-taking organization, and embodied action (Butler & Fitzgerald, 2010).

Jacobs (2007) conducted a study on family talk specifically investigating families' co-construction of their youth sports experiences. Through the use of ethnography and conversation

analysis, she examined the socialization processes families encounter and use in initial and enduring youth sports involvement. Jacobs (2007) observed approximately 300 families for 100 hours with children whose ages ranged from four to fifteen. She interviewed ten families, and three of the families participated in self-taping of their conversations regarding sports. The results indicated that socialization of children into sports occurs through ongoing communication among family members and with other families at sporting events (Jacobs, 2007). Parents are the primary agents for socializing children 15 and under into sports through motivating, supporting, and encouraging their children's participation. Conversation analysis revealed how families and sport related talk assisted in constructing the shared sporting experience.

Thomas (2009) examined everyday interactions between fathers and their adult sons (ages 18 and above). He investigated patterns, themes, and topics that occurred within daily conversations of such dyads. The study's participants consisted of seven father-son dyads. Data was collected through participant self-taping and interviews. He used interviews to gather additional information such as their perceptions of specific examples from the transcripts. The results focused on five main categories of interest in father-son talk among the seven dyads—supportive communication, humor, conflict, troubles-talk, and informative talk. Thomas's (2009) study provides a model for using conversation analysis as a primary means of data collection and interviews as a second method for encouraging participants to share their perceptions of their conversations.

Staske-Bell (2008) examined a self-taped, 21 minute conversation between a mother and her adult daughter. The goal of the study was to examine changes in the mother-daughter relationship since the daughter moved to an on-campus residence. One significant change in their relationship pertained to a decrease in relative intimacy. Conversation analysis was used as the methodological tool for her study because, she argues, intimacy is developed through and should be evident in interaction. After analyzing their conversation, Staske-Bell (2008) posits, "This study demonstrates that explaining the construction, maintenance, and change in the relational processes over the many years of the family lifecycle requires examination of the conversational practices family members employ in the natural interactional settings that constitute family life" (p. 170). Conversation analysis provides crucial information such as how and where relational and family identities are formed, negotiated, and renegotiated.

Abu-Akel (2002) conducted a study of family talk using conversation analysis. He was specifically interested in the interactional and psychological dynamics involved in introducing, sustaining, reintroducing, shifting, discontinuing, and ending a topic. He also examined underlying factors that govern topics during a family conversation at dinnertime. A video recorder was used to collect the data on a Caucasian-American family's two-hour dinner conversation. The data indicated that only a small number of topics get accepted and developed during dinnertime conversations (Abu-Akel, 2002). "The data suggest that sustained topics appear to be a function of the psychological and social impacts these topics bear on participants" (Abu-Akel, 2002, p. 1787). Gender roles and power relations also influence topic development in Caucasian-American families' dinnertime conversations (Abu-Akel, 2002). This study provides a basis for analyzing family talk and topic maintenance.

In a larger study of family talk, 100 families from Estonia, Finland, and Sweden were video

recorded during dinnertime, with the analysis focusing on "comments" (De Geer, Tulviste, Mizera, & Tryggvason, 2002). The "comment" is one linguistic tool of socialization in family discourse. A comment is defined as an utterance that has "an explicit or implicit aim to influence a conversational partner to behave in a certain way" (De Geer et al., 2002, p. 1757). Communication researchers might refer to it as a persuasive attempt. The results indicated that Estonians and Finns talked less but Swedish families made more "comments." Their "comments" pertained to moral and ethical behaviors, whereas Estonians and Finns commented more on table manners (De Geer et al., 2002). De Geer et al. (2002) also found that Swedish children, compared to the other groups, commented on and negotiated parents' "comments" more often. The study highlights the importance of family dinnertime in terms of socialization of family interactions by parents.

Pontecorvo, Fasulo, and Sterponi (2001) conducted a study using videotaped dinner conversations of 20 families, each with two Italian parents, at least one child between three and six years of age, and an older sibling. The goal of this study was to examine the idea that parents and children have mutual involvement in the socialization of one another. Pontecorvo et al. (2001) state, "The paper illustrates both the agentive participation of Italian children in a dialogue on normative behavior and ways that their discursive contributions shape the structure and thematic content of parental talk that ensues" (p. 340). The data collected by the researchers revealed that children shape the parental role and provide learning opportunities for adults (Pontecorvo et al., 2001).

Edwards and Middleton (1988) analyzed participant-recorded conversations between mothers and their children, ages two to six years old. Five families were involved in the study, which also included a younger and older sibling within the age range. The purpose of the study was to analyze ways mothers and children use pictures as "depictions of a shared past that could be constructed and communicated in conversation" (Edwards & Middleton, 1988, p. 3). The results indicated that the photos provided rich conversations regarding the content of the pictures, and the opportunity to recall or infer events that were not depicted. The mothers demonstrated to their children important principles of how to remember. The study revealed ways mothers not only demonstrate and communicate their shared past with their children, but also how they assist their child's own efforts at remembering (Edwards & Middleton, 1988).

In 1984, Vuchinich conducted a family talk study specifically analyzing sequencing and social structure in family conflict. Data was collected from 64 recordings (54 video, 10 audio) of 52 different families during family dinnertime (Vuchinich, 1984). The total number of families who participated in self-taping was 52. The results from the study demonstrated a link between the "dynamics of social interaction and the stability of social structure" (Vuchinich, 1984, p. 217). Status (i.e., father, mother, daughter, or son) played a significant role in regard to oppositional exchanges. According to Vuchinich (1984), "Through the oppositional interchange, the person displays respect for the 'sacred' status he or she holds and expresses a relation to other statuses" (p. 233). The data collected from the participants also revealed that family ritual displays are important in organizing verbal family conflict (Vuchinich, 1984).

In another family talk study, Taylor (1995) examined how children interpret and react to their parents' talk. The families were recorded by the researcher on both videotape and audiotape on

two evenings starting before dinner. The data analysis showed how the two children in the study, ages five and eight, expressed an awareness of face threat comments made by their parents to each other during dinner. Taylor (1995) analyzed the children's interpretive phrases and awareness of face threats in comments such as "you were talking mea::n." (Colons indicate a prolonged sound.) Wilson, Cameron, and Whipple (1997) also analyzed the children's reactions to their mothers' regulative strategies. Regulative strategies refer to the regulation of children's misbehaviors such as reflective-enhancing messages. Wilson et al. (1997), using conversation-analysis-style transcripts, analyzed five parent-child interactions and found "three ways that parental regulative communication has been oversimplified and distorted in prior work" (p. 87).

As Stamp (2004) noted, "The field of family studies is a complicated entity, intersecting numerous disciplines and areas of inquiry" (p. 1), and within family communication research there are many different perspectives and competing theories. Stamp performed the daunting task of synthesizing research studies from 12 different journals covering the communication, personal relationships, and family fields. According to Stamp, the objective for his chapter was to "obtain a large sample of recent research and theoretical trends" in a 12-year time frame—1,254 articles total— and within these articles 16 guiding theories received the most scholarly attention (p. 2). Perhaps the most prevalent theory in family communication research is family systems theory (Littlejohn, 1996; Vangelisti, 2004). Systems theory will provide a framework for this study.

Theoretical Perspective

Systems theory. According to family systems theory, family dynamics are organized based on a hierarchy of systems that represent both qualities that expand beyond the combination of individuals (or dyadic relations) within the system, and also subsystems (or subsets) of relationships rooted within the system (Henry, 1994). There is more to the theory than hierarchy and subsystems; family system theory is comprised of key qualities: wholeness and interdependence, hierarchy, balance, change and adaptability, and equifinality (Turner & West, 2006b; Vangelisti, 2004). Although a family can consist of several relationships, the theory holds that a family as a whole is greater than the sum of its parts (i.e., the individual members). A primary goal of a family system is to maintain balance. As Littlejohn (1996) noted, "One task of a system, if it is to remain alive, is to stay in balance. The system must somehow detect when it is off kilter and make adjustments to get back on track" (p. 47). Thus, when the family system is in balance, the theory predicts that family members are living in relative harmony. The value of studying families from a systems perspective is best explained by Yerby (1995), who observed that "Systems theory has taught us to see our own and other family members' behavior as interrelated, to locate the predictable patterns of interaction that seem to exert more over the family than do any individual family members themselves" (p. 339). Examining the family as a dynamic whole can yield advantages by allowing us to see the big picture. Yerby continues by addressing how system theory has taught us "to see problems in terms of relationship struggles rather than the 'fault' of one person who is 'scapegoated' and 'blamed' for others' pain, and to explore the intergenerational legacy of family experience" (p. 317). Yerby's perspective highlights the value of using systems theory when working with families.

An additional advantage of the systems perspective is that the theory is logically simplistic, and parsimonious in nature (Bavelas & Segal, 1982; Braithwaite & Baxter, 2006; Henry, 1994;

Littlejohn, 1996; Turner & West, 2006b; Vangelisti, 2004). This theory assists in explaining how the family system is affected by different roles members play, establishment of implicit and explicit rules, and boundaries. In other words, it offers a "sense-making map" for understanding family behaviors which can range from day-to-day situations to unpredictable undertakings (Braithwaite & Baxter, 2006).

Researchers have invoked systems theory in studying family communication because it provides a rich, extensive framework of concepts. For instance, systems theory identifies and discusses concepts such as wholeness, interdependence, and hierarchy. Wholeness (or nonsummativity) refers to how one can acquire a sense of family by studying the entire system as opposed to focusing on its individual parts (Bavelas & Segal, 1982). In other words, if only one member of a sibling dyad was interviewed for research purposes, the end result would not be an accurate analysis of the sibling subsystem. Every member of a subsystem or system needs to be studied to get a complete understanding of the relationship(s). Family, in a sense, is its own life form, where members play a crucial role in forming and sustaining its existence.

Systems theory is also heavily attuned to the notion of interdependence. Interdependence explains how each member of the family can have an effect on the entire system (Braithwaite & Baxter, 2006). This concept sheds light on how people are interconnected and influenced within the family unit. For example, when parents engage in conflict it has the potential to not only affect the couple but the couple's children, and other family members. Everyone in the system experiences the disruption either in a direct or indirect manner, when interpersonal conflict erupts in a family.

The concepts within systems theory can provide keen insight into the family dynamic. Hierarchy examines the family system as a series of levels which include suprasystems and subsystems (Littlejohn, 1996). A suprasystem would be one's extended family, and a subsystem could represent the relationship between siblings in the immediate family, for instance.

Systems theory is prevalent in family communication research and is highly regarded as a vital research tool (Bavelas & Segal, 1982). This theory will help describe how twin-to-twin talk relates to communication in other subsystems as well as the overall family system.

Several studies within the literature on twins investigate this sibling relationship with the main focus on genetics. Family communication scholars and researchers in related disciplines tend to show interest in comparing twin siblings to address questions of nature versus nurture. A majority of these studies rely on self-reported data; however, there are other valuable ways of understanding communication among twins. To date, researchers in family communication have yet to investigate actual communication among twin siblings. The purpose of this study is to examine naturally occurring talk between pairs of twin siblings through the use of conversation analysis. Conversation analysis (CA) is implemented because it is an approach that places the focus on the communication process, describing what the participants are "doing" in their conversations, and uncovering layers of rich data. As a supplement to the CA data, excerpts from semi-structured interviews with the participants' parents and the twin participants are included in the analysis. The purpose of the interviews is to help clarify the analysis of the conversations. Thus, the following research questions guide this study: 1) How does society's perception of

twin siblings influence their interactions with one another? 2) How does society's perception of twin siblings influence their interactions with other people?

METHOD

Conversation analysis allows researchers the opportunity to investigate naturalistic conversations on audio or videotapes. The researcher transcribes the conversation, providing transcripts that are a visual representation of the participants' talk. After the transcriptions are completed, it is the job of the researcher to analyze and uncover what is happening in the conversation. Conversation analysts are interested in how participants construct everyday social order and through talk (Turner & West, 2006b). In the present study, conversation analysis provides the opportunity to capture and analyze naturally occurring talk between twins in the privacy of their homes. Audiotapes were used as a less intrusive and less intimidating means of collecting data than videotapes. The minimum age was set to ensure that the participants have developed adequate language and conversational skills. For data collection purposes, it was vital that participants reside together, which may not be the case for adult twin siblings.

Turner and West (2006b) report that qualitative interviewing is the most widely used research method among qualitative communication researchers. Baxter and Babbie (2004) discuss five specific reasons for using interviews in communication research. Interviews assist with understanding a communication phenomenon that cannot be directly observed. They help the researcher understand feelings and thoughts of the interviewee regarding a specific experience. Interviewing provides the opportunity to witness how the participant uses language within his or her natural environment. It can be used as validation for an already observed behavior or a supplement to a previous interview. And interviews can be considered as a performance of the interviewee's communicative style. Given the five purposes of qualitative interviews, the participants, and the goal of this study, interviewing was implemented as another research method in this study.

In sum, conversation analysis and interviewing are the two methods implemented in this study. Conversation analysis allows the researcher to investigate natural talk. Since the purpose of this study is to analyze twins communicating with each other in their homes, conversation analysis was chosen as the primary method. In addition to transcribing participants' conversations, I implemented semi-structured interviews to provide insights from parents and twin siblings. Interviews allowed the parents to provide their thoughts, experiences, and examples in regard to the communication of their twins. The interview sessions with the twin siblings presented the opportunity for twins to express their feelings, attitudes, and experiences of being a twin sibling. Face-to-face interviews also provide the researcher an opportunity to learn more about the participants' communicative styles.

Participants

The study includes a total of eight sets of twin siblings from the Midwest, ranging in ages 10 to 17 years old. However, only three sets of twin siblings were chosen for this manuscript due to their topics of conversation. Each set of twins and parents volunteered to participate in the study, signing the appropriate documentations. Although there was no preference as to the types of

twins, the study will note the following dyads: two sets of female/female dyads (monozygotic MZ and Dizygotic DZ) and one set of male/male dyad (DZ).

RESULTS

A conversational topic evident in the twin siblings' interactions is the theme of twins. Twins are referenced in each excerpt, functioning as a conversational topic and/or as twin identification. Identification happens when siblings identify themselves as twins and/or identify other twin siblings. It is important to investigate these twin references because they occur frequently, potentially affecting interactions within the twin sibling subsystem.

The first excerpt of conversation is between Stacey and Samantha who are conversing about their day at school. Their interaction takes place in the bedroom of one of the girls. In their interviews, Stacey says she talks to her sister like a friend, whereas Samantha elaborates on their relationship, stating "I talk to Stacey like other people. We don't have a lot of the same friends even though we are twins." During the interviews, they reference twins and use the pronoun "we", displaying their relationship as twins. Their mother said in her interview, "When they were younger the girls used 'we' when communicating. Now that they are older, they use 'I' more often."

Excerpt 1.1: St (Stacey) & Sa (Samantha), MZ twin sisters, age 15

58	Sa:	Mae is like "Okay today's fashions" I'm fashion disasters see I rolled up
59		my sleeve=
60	St:	=You're <u>always</u> <u>fashion</u> <u>disaster</u>
61	Sa:	I rolled up one of my sleeves an my hoods inside out an my pants are
62		rolled up an my shacks don't match
63	St:	My shacks don't match awesome
		[
64	Sa:	An Mister Baker comes- goes to my room an
65		Mister Baker's talkin' to another student an he's like "Mae, can you please
66		hold on a second I am talkin' here" ((performing)) "Mister Baker, what's
67		tomorrow's thing?" "I'll look it up in a second <u>Mae</u> hold on tomorrow is
→68		duplicity day Mae" ((performing)) "Thank you (.) gosh somebody needs
69		just hold on a second an calm down so you can tell me" that is just what
70		she literally said I'm like "oh my gosh there's something wrong with you"
71	St:	She's really like that
72	Sa:	Oh yeah
73	St:	Heh
74	Sa:	My friend told me that- that's how that's the way she talks to her mom
75	St:	(oh my gosh so mean)
76	Sa:	An then- an then um (.) ah she ah ah (.) an then we were through an I was
77		in class thinkin' you know even though we're- we dress- you an me are
→78		gonna dress up tomorrow an look exactly the same (.) I don't really
79		wanna tell Mister Baker that. I wanna surprise him. I want to see if he
80		notices hh so like "Mister Baker, do I have to dress up tomorrow?" he's

81 like “Well yeah of course you have to dress up” I’m like “really? I don’t
82 really want to dress up today- tomorrow” he’s like “What’s tomorrow?”
→83 “duplicity day” he’s like “really?” “yeah they dress like a twin day” “I
84 guess you don’t have to” an like this girl’s like well first I’m like this
85 girl’s like “You have to dress up tomorrow you- you can’t not just skip out
86 it’s not fair” an (.) an Mister Baker’s like “oh it’s fun” an then he’s like
→87 “oh yeah you can’t” I was like “but I’m a twin already. I don’t have to
→88 dress up like my sister when I already have a person who looks just like
89 me” he’s like “that’s right! you don’t have to dress up tomorrow I’ll just
90 count you already” an that girl’s like “that’s that sucks! That’s not even →91
be- you can’t use- use your twin like that an saying that since you guys
→92 looks alike you guys can ah just not skip out on the spirit week”
93 St: We’re not skippin’ out on the whole freakin’ week
94 [
95 Sa: An it’s like then another girl thinks it’s mean too because um
→96 Nicole an me both have twins are twins so we don’t have worry about
97 dressing up (.) awesome
98 St: People are still going to anyway. I still would have looked at her an said
→99 “Yeah I’m sorry your mom should’ve had twins get over it” (.) hehe
100 Sa: Yeah I really don’t care ((yawning))

In lines 68, 83, and 99, the conversational topic of twins is used to highlight this type of sibling relationship, making it relevant to everyone in their high school (twins and nontwins). Sa’s and St’s utterances display their supportiveness of each other and their roles as twin siblings (lines 78, 87, 88, 91, 92, and 96). Sa and St use the pronoun “we” to indicate their shared identity, togetherness, and co-ownership of responsibility (Jacobs, 2007). The types of twin references present in their talk share the end goal of supporting Sa’s and St’s roles as female identical twins at school and home.

Systems theory as a worldview model explains how interactions between society and the family system influence its family members. Turner and West (2006a) claim, “Families are open systems that receive information systems outside themselves such as schools, the media, and religious organizations” (p. 61). This excerpt displays the influence school has on the twin sibling subsystem. The sisters discuss how teachers and students (nontwin and twin) react (positively and negatively) to their twin relationship in the context of Duplicity Day. Duplicity Day is an event during spirit week where students are encouraged to pair with someone and dress alike. Positive feedback about twin siblings is presented when Sa quotes Mr. Baker stating that Re does not have to participate since she is a twin. Negative feedback is addressed (twice) when Sa quotes two female students who say it is “unfair” and “mean” to use your twin as an excuse to skip Duplicity Day.

In this excerpt, Sa’s and St’s roles as twin siblings are enacted through the use of twin references. They are supportive of their unique relationship, and eager to acknowledge it on Duplicity Day. St states “We’re not skippin’ out on the whole freakin’ week” (line 93). According to Turner and West (2006a), “Families create boundaries to restrict this flow of information from the outside and to delineate relationships on the inside” (p. 61). Sa and St are

creating a boundary around their subsystem while discussing reactions from people at school. They evaluate the feedback presented by others, keeping negative responses from affecting their relationship. The property of interdependence, in systems theory, is evident in Sa's and St's interaction. Sa reports to St the comments from people at school, affecting St and the family system. The excerpt shows how the sisters become a unified front at home in preparation for their school's spirit week.

The next excerpt also provides several instances of twins as its theme. Amy, Nicole, and their mother are in the minivan leaving school for the day. Amy and Nicole's topic of conversation is their summertime co-babysitting job. In their interviews, Nicole and Amy made twin references several times using the phrase "my twin" instead of "my sister."

Excerpt 1.2: M (Mother); N (Nicole) & A (Amy), DZ twin sisters, age 13

14	A:	Hey mom you think I can bring that sign out that says	
15		babysitting?	
16	M:	It'll cost you five dollars (.) you still owe me nine	
17	N:	Five dollars plus the nine (inaudible) then five dollars=	
		[	
18	A:	Well technically if you wouldn't have put	
19		our money in the bank then we would've still had money for us	
20		(inaudible)	
21	N:	=that wouldn't be bad (.) that's a pretty good income	
22	A:	But remember (.) you can't you can't just say babysittin' one person	→23
		it's <u>twin</u> babysitting	
24	N:	That can be	
25	M:	What's your babysittin' name?	
→26	A:	The Twinkie baby<u>sitters</u> (.) Momma we decided when we go to=	
		[	
27	N:	Smiths for hire	
→28	A:	=Julibarber we're thinkin' about doin' the twin power	
29	M:	Nice	

In this instance, identification is used as a marketing tool: twin babysitting (line 23), Twinkie babysitters (line 26), and twin power (line 28). N and A are using their twinship to market themselves for business and recreational purposes. The word "Twinkie" implies twins because the Hostess dessert comes with two identical sponge cakes, and the name "Twinkie" contains the word "twin." Twin power implies that both sisters are competitive; their team is doubled in power.

N and A are enacting their roles as twins to reach a shared goal of increasing their savings account. This excerpt of talk and excerpt 1.1 provide several instances of identification of twins. Both sets of twins identify with their unique relationships, and take advantage of the benefits of being a twin sibling. St and Sa are treated special/different during Duplicity Day, whereas N and A benefit monetarily from their twin identities.

Systems theory provides the opportunity to understand twin sibling subsystems through the properties of interdependence and hierarchy. In excerpt 1.1, Sa is reporting to St the various comments people uttered regarding their twin relationship and Duplicity Day. This is a display of interdependence because what Sa experiences affects her sister and potentially influences (positively or negatively) the family system.

Hierarchy refers to how a system can contain several subsystems such as sibling/sibling, parent/child, and husband/wife. There are inputs and outputs, boundaries, rules, feedback, and goals that are crucial elements in systems theory. Each subsystem and family system may differ in regard to expectations for each of the elements and individual roles. Sabourin (2006) posits, "It is important to recognize that the components are not just the family members themselves but also the roles that are played in the family" (p. 51). Twin subsystems are constructed differently in family interactions as a result of enacted roles, expectations of roles, value implied for each role, and the functions each role serves in the family system.

It is important to note that systems theory encourages the analysis of how the family interacts with its environment (Turner & West, 2006a). Outside environments such as school influence the twin subsystem: "For example, parents must adjust constantly to their children's relationships outside the family and deal with the influences from friends, teachers, and television" (Littlejohn, 1996, p. 47). The family has certain roles and expectations which could support or conflict with society's expectations of twin siblings. Sa's and St's school is promoting Duplicity Day, implying that it is fun and unique to be a twin. Their mother said in her interviews that Sa and St are treated as individuals, not as a pair. This is important because their family unit seems to understand the need for individuality, whereas nontwins and the school display the expectation of twins as a couple, a twosome, a duo, or a matched pair.

The last example of thematizing twinness takes place at the dinner table with Justin, Brian, and their mother. The topic of conversation is initiated by Justin who is imagining aloud what it would be like to attend another school. Justin says he would like to fool new classmates into thinking he and Brian are not twin siblings. In Justin's interview he said, "Brian and me are different a lot. Others get along more than us. Brian and I don't get along, most of the time." Brian described what it is like to have a twin: "They are troubling sometimes, they are mean, and throw stuff at you." Their mother said the following about Justin and Brian: "I've always treated them as individuals not as a unit 'the twins.' Teachers have said that the boys don't interact with each other at school. The only thing in common is birthday and last name." This was also reflected in the quality of one-on-one conversations between Justin and Brian.

EXCERPT 1.3: M (Mother); J (Justin) & B (Brian), DZ twin brothers, age 10

73	J:	Wouldn't you move somewhere else just to go- (.) if we
74		moved somewhere else we <u>could</u>
75	B:	Dress like Irish people
76		(1.0)
77	J:	No
78	M:	Dance like Cinderella
79	J:	No we try to convince people that some other person who I

80		just met an we're friends with (.) was our sibling
81		(1.0)
82	J:	((laughs)) Then we can see how far we can go with it an
83		confuse a bunch of people (.) I think it would be fun
→84	M:	You could <u>both</u> do it next year (.) say this is my <u>twin</u>
85		(1.0)
86	J:	An that would be confusing
87		(1.0)
88	J:	I <u>doubt</u> we would be able to (skip) into seventh though
89	B:	I'm not doing that
90	J:	Hm
91	B:	In seventh grade
→92	J:	But we are twins hh
93	B:	I'm not gonna joke about it
94	J:	What?
95	B:	I'm not gonna joke about it
96		(1.0)
97	J:	It's not jokin' about it
98		(1.0)
99	M:	Well like, you were pullin' a prank
100	J:	An that's when you came up with one
101	M:	Okay
→102	J:	It's not a <u>prank</u> to say that we are (.) twins (.) me an Brian (.) er it's okay
103	B:	To say it is me an you
104	M:	No I was talkin' about you could-=
105	B:	=Even an eighth grader won't think that=
106	M:	=you could say even some random person in eighth grade is
→107		your twin (.) some new person that you met
108	J:	Hm that would be weird

This excerpt of talk is interesting because there are four instances of identification of twins uttered by J (twice) and M (twice). Unlike the previous excerpt of talk, their mother suggests de-identification to J and B for the purpose of pulling a prank. J expresses his desire to participate in the joke while B does not, making it difficult to successfully fool new classmates. The earlier excerpts (1.1 and 1.2) display each set of sisters' supportiveness towards identification as a twin sibling. The twin references in Sa's and St's excerpt (1.1) function as a means of supporting their twin role in the school environment and the family unit. The goal of their subsystem is to express appreciation towards Duplicity Day, promoting their biological likeness. N and A use their twin identification as a marketing tool to reach their mutual goal of profit. Both sets of female twins recognize the benefits of their relationships; however, B does not agree that pulling a prank is beneficial (1.3). In this instance, twin references function as a way to trick people, which is J's and M's intent. B says he does not want to participate in the prank, implying that de-identification is not an effective way to fool classmates. It is uncertain whether J and B will participate in the prank. Turner and West (2006a) claim, "siblings do not always support one another, and their failure to do so can be a major source of stress in the family" (p. 243). If

negative tension is experienced in J's and B's relationship, it could potentially lead to stress within other subsystems and the family system.

DISCUSSION

The conversational excerpts in this section were chosen because they represent themes of twinness. References to twins in the excerpts are used as a conversational topic and as a way of marking twin identification. Two out of the three excerpts display the positive side or benefits of being a twin. In excerpt 1.3, the set of twin brothers show how tensions arise when one sibling expresses negativity towards his twin identity. Systems theory is the guiding theory used in this section to analyze how twin references affect interactions within twin sibling subsystems, the family unit and sibling subsystems, and twins and society. Twins enact socially constructed roles and biological roles assigned to them by the family. The family system has different role expectations for their twins, making the family unit an important part of the analysis. This is another reason why interviews were used to provide crucial information from parents and twin siblings. The roles twin participants enact outside the system are constructed socially through interactions with friends, classmates, and school officials. Classmates and teachers have different role expectation for twins, making school an important influence on their sibling relationship.

It is important to note that this study does not attempt to make generalizations that all twin siblings engage in these conversational practices and phenomena. There is still an abundance of undiscovered information regarding twin siblings and communication between them. This study does open up for discussion the notion that twin siblings do engage in specific communication patterns.

Future studies in the area of family communication are needed to further investigate conversational patterns, practices, and phenomena as they relate to the unique twin siblingship. The purpose of this study is to report these findings as preliminary insights into twin siblings' everyday conversations; nevertheless, this study has limitations that
need to be addressed.

LIMITATIONS

One limitation of this study is the demographics of the twin sibling participants. There were a total of eight sets of twins whose ages ranged from 10 to 17 years. The age of the participants was initially capped at age 18, but no twins older than 17 volunteered for the study. The sets of twin participants were Caucasian, living in a rural Midwest town. There were two sets of female/female twins, six sets of male/male twins, and no female/male twins. This study was not interested in comparing MZ to DZ twins, which is a limitation for researchers interested in generalizing these findings to twins of each type. The youngest sets of twins were males age 10. They were not able to maintain conversations like the oldest set of twins (age 17), who conversed at length in private. The younger boys wanted to engage in activities that were distracting to the recording process. For this reason, parents participated in their conversations, facilitating their twin-to-twin talk. Other limitations regarding the participants pertain to no representation of minorities, rural location, common social class, no male/female twins, and seven sets of twins were from nuclear families, with only one set from a single-parent family. A

representative sample might include Hispanic, Asian, and Black minorities from urban locations and participants from various socioeconomic classes, as well as participants age 18 and younger who are raised by other types of families such as stepfamilies and gay and lesbian parent families. A sample that includes female/male sets and mirror-imaged MZ twins would also be ideal.

Another limitation regarding the participants is how they engaged in the process of self-taping. I gave each set of twins a tape recorder, back up batteries, and four 90-minute audiotapes. The data-base provided a rich amount of data from the twin siblings in addition to family conversations worthy of future investigation. The transcription process took six months to complete, ending in a total of 150 pages. Typically, I would transcribe an entire tape while the twin siblings recorded their second, third, or fourth audiotape. The two sets of twin girls are the only participants that recorded four tapes, resulting in a larger amount of talk by the females than the males. Each set of twin boys recorded two tapes of their everyday talk. There were several hours of tapes that included parents, other siblings, friends, and/or neighbors. This was problematic because individuals interrupted and distracted the twin siblings' conversations. Other pitfalls of participant self-taping include cell phone interference and texting while talking. I did not anticipate the younger siblings having their own cell phones. A number of cell phones caused electronic interference with the tape recorder, making it difficult to decipher what the participants were saying. A number of twin siblings had similar voices which became time consuming to differentiate when their utterances overlapped.

This leads to another limitation which is participant recollections. There was a time lag of a month between transcription and any follow-up interviews. I discovered that most of the participants could not recall exactly what they said, or what they were referring to at the time of the recordings. During the follow-up interviews with the participants, they frequently talked about their reliance on nonverbal communication with their twin. There were instances in the transcripts that would have benefited from the use of videotaped interactions. Videotaping the participants interacting would assist the researcher during the process of transcription, helping with voice recognition. However, videotaping would have been more intrusive than audiotaping the participants' conversations, and more time-consuming to transcribe.

CONCLUSION

These findings contribute to research on twins in related fields by introducing CA as a new approach to twin-to-twin talk. Future scholars can build and extend on this preliminary collection of talk-in-interaction by twin siblings. This study advocates CA as a method of research for all family communication scholars to explore, analyzing instances of real-life communication by participants. In the family communication literature, there are only a small amount of studies that analyze relationships that are commonly shared in America such as siblingship, mother/daughter dyads, mother/son dyads, father/daughter dyads, father/son dyads, cousins, and aunts/uncles dyads (Floyd, 1996; Turner & West, 2006a).

This study calls for scholars in family communication and related disciplines to make wider use of the CA approach. This study contributes to the area of family communication as it provides a new understanding of an underrepresented participant sample in the research. Twins are a unique

relationship that is becoming more prevalent in our society due to advancements in fertility treatments. Our culture and others have been fascinated with this type of siblingship for hundreds of years, yet it does not receive as much attention from family communication scholars as other types of family relationships. Even though most of the family communication studies are quantitative in nature, qualitative methodologies also have their place in the research (Vangelisti, 2004). Qualitative research, such as conversation analysis, needs to be implemented more frequently within family communication research. Conversation analysis reaches the heart of communication through studying natural occurrences of talk. I argue that the combination of participants—twin siblings—with an underutilized methodology—conversation analysis—offers new insights for family communication research.

REFERENCES

Abu-Akel, A. (2002). The psychological and social dynamics of topic performance in family dinnertime conversation. *Journal of Pragmatics, 34,* 1787-1806.

Bavelas, J., & Segal, L. (1982). Family systems theory: Background and implications. *Journal of Communication, 32,* 99-107.

Baxter, L., & Babbie, E. (2004). *The basics of communication research*. Belmont, CA: Thomson, Wadsworth.

Beatty, M. J., Marshall, L. A., & Rudd, J. E. (2001). A twins study of communication adaptability: Heritability of individual differences. *Quarterly Journal of Speech, 45,* 446-460.

Bishop, D. V. M., & Bishop, S. (1998). Twin language: A risk factor for language impairment? *Journal of Speech, Language, and Hearing Research, 41,* 150-160.

Braithwaite, D., & Baxter, L. (2006). *Engaging theories in family communication: Multiple perspectives.* Thousand Oaks, CA: Sage.

Butler, C., & Fitzgerald, R. (2010). Membership-in-action: Operative identities in a family meal. *Journal of Pragmatics, 42,* 2462-2474.

De Geer, B., Tulviste, T., Mizera, L., & Tryggvason, M. T. (2002). Socialization in communication: Pragmatic socialization during dinnertime in Estonian, Finnish and Swedish families. *Journal of Pragmatics, 34,* 1757-1786.

Edwards, D., & Middleton, D. (1988). Conversational remembering and family relationships: How children learn to remember. *Journal of Social and Personal Relationships, 5,* 3-25.

Fierro, P. (n.d.). *Top 10 things not to say to twins.* Retrieved from http://multiples.about.com/od/familyissues/tp/dontsaytwins.htm

Floyd, K. (1996). Communicating closeness among siblings: An application of the gender closeness perspective. *Communication Research Reports, 13,* 27-34.

Graham, T., & Scudder, R. (2007). Parents' interactions with twins who are developmentally different: Case study. *Communication Disorders Quarterly, 28,* 107-115.

Hayashi, C., Hayakawa, K., Tsuboi, C., Oda, K., Amau, Y., Kobayahi, Y., & Kato, K. (2006). Relationship between parents' report rate of twin language and factors related to linguistic development: Older sibling, nonverbal play and preschool attendance. *Twin Research and Human Genetics, 9,* 165-174.

Henry, C. (1994). Family system characteristics, parental behaviors, and adolescent family life satisfaction. *Family Relations, 43,* 447-455.

Heritage, J. (1999). Conversation analysis at century's end: Practices of talk-in-interaction, their distributions, and their outcomes. *Research on Language and Social Interaction, 32*, 69-76.

Horvath, C. (1995). Biological origins of communicator style. *Communication Quarterly, 43*, 394-407.

Horwitz, A., Videon, T., Schmitz, M., & Davis, D. (2003). Rethinking twins and environments: Possible social sources for assumed genetic influences in twin research. *Journal of Health and Social Behavior, 44,* 111-129.

Jacobs, A. (2007). *Family interactions within the context of organized youth sports: An examination of the sporting family identity* (Doctoral dissertation). Southern Illinois University Carbondale, Carbondale, IL.

Jang, K. L., Livesley, W. J., & Vernon, P. A. (1996). Heritability of the big five personality dimensions and their facets: A twin study. *Journal of Personality, 64,* 577-591.

Littlejohn, S. (1996). *Theories of human communication* (6th ed.). Belmont, CA: Wadsworth Publishing Company.

Penninkilampi-Kerola, V., Moilanen, I., & Kaprio, J. (2005). Co-twin dependence, social interactions, and academic achievement: A population-based study. *Journal of Social and Personal Relationships, 22,* 519-541.

Pontecorvo, C., Fasulo, A., & Sterponi, L. (2001). Mutual apprentices: The making of parenthood and childhood in family dinner conversations. *Human Development, 44,* 340-361.

Richardson, K., & Norgate, S. (2005). The equal environments assumption of classical twins studies may not hold. *British Journal of Educational Psychology, 75,* 339-350.

Sabourin, T. (2006). Theories and metatheories to explain family communication. In L. Turner and R. West (Eds.), *The family communication sourcebook* (pp.43-82). Thousand Oaks, California: Sage Publications.

Stamp, G. (2004). Theories of family relationships and a family relationships theoretical model. In A.L. Vangelisti (Ed.), *Handbook of family communication* (pp. 1-30). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Staske-Bell, S. (2008). Communicating intimacy, affection, and social support. In L. Arnold (Ed.), *Family communication: Theory and research* (pp. 160-172).

Taylor, C. (1995). You think it was a fight: Co-constructing (the struggle for) meaning, face, and family in everyday narrative activity. *Research on Language and Social Interaction, 28,* 283-317.

Thomas, S. (2009). *An examination of everyday interactions between fathers and their adult sons* (Doctoral dissertation). Southern Illinois University Carbondale, Carbondale, IL.

Thorpe, K., Greenwood, R., Eivers, A., & Rutter, M., (2001). Prevalence and development course of 'secret language'. *International Journal of Language & Communication Disorders, 36,* 43-62.

Tomblin, J. B., & Buckwalter, P. R. (1998). The heritability of poor language achievement among twins. *Journal of Speech, Language, and Hearing Research, 41,* 188-199.

Turheimer, E., D'Onofrio, B., Maes, H., & Eaves, L. (2005). Analysis and interpretation of twin studies including measures of the shared environment. *Child Development, 76,* 1217-1233.

Turner, L., & West, R. (2006a). *Perspectives on family communication*. New York: New York: McGraw Hill.

Turner, L., & West, R. (Eds.) (2006b). *The family communication sourcebook.* Thousand Oaks, California: Sage Publications.

Vangelisti, A. L. (Ed.) (2004). *Handbook of family communication*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Vuchinich, S. (1984). Sequencing and social structure in family conflict. *Social Psychology, 47,* 217-234.

Wilson, S., Cameron, K., & Whipple, E. (1997). Regulative communication strategies within mother-child interactions: Implications for the study of reflection-enhancing parental communication. *Research on Language and Social Interaction, 30,* 73-92.

Yerby, J. (1995). Family systems theory reconsidered: Integrating social construction theory and dialectical process. *Communication Theory, 5,* 339-365.

ENGENDERING A SheEO: INDIVIDUAL AND ORGANIZATIONAL ANTECEDENTS TO THE APPOINTMENT OF A FEMALE CEO

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ABSTRACT

Many studies of women in organizations have focused on analyzing barriers to the ascent of women to top managerial positions. As important as this research is, we argue that those women who make it to the top are noteworthy statistical outliers and that more research should center on them. This paper proposes a framework for the study of female Chief Executive Officers (CEOs) and the personal and organizational antecedents to the appointment of a woman as CEO – a salient event in organizational life. While the framework is based on Upper Echelons theory, the study of female CEOs can be fertile ground for testing hypotheses based on many micro- and macro-level theories and for understanding career progression and leadership development.

Keywords: Upper Echelons Theory, Institutional Theory, Female CEOs, Glass Cliff.

INTRODUCTION

The paucity of female Chief Executive Officers (CEOs), combined with the perceived unique traits that women bring to the business world, has led to a fascination with women in top-level corporate leadership positions. *Forbes* and *Fortune* magazines publish annual lists of the most powerful women in business, and the 2016 United States presidential primaries especially focused attention on female CEOs as Carly Fiorina, former CEO of Hewlett Packard, sought to pursue the Republican nomination; yet, despite the media's buzz, a quick look at the current position of women in public companies highlights how rare female CEOs actually are. In 2015, only twenty women held CEO positions at S&P 500 companies (Catalyst, 2016). In a study of smaller firms included in the S&P 400 index of mid-cap companies, researchers found that between 2006 and 2010 women constituted only 2.4% of the CEOs in the sample (Center for Women in Business, 2011). Furthermore, in a broader sample of the S&P 1500 between 1992 and 2006, the percentage of companies with more than one female executive in the Top Management Team (TMT) never exceeds 8.5% (Dezsö & Ross, 2012). Female CEOs are a subject of articles printed not only in business publications such as *The Wall Street Journal* but also in more mainstream magazines such as *Marie Claire*; yet, with few exceptions (Fitzsimmons, Callan, & Paulsen, 2014; Lee & James, 2007; McGuinness, Lam, & Vieito, 2015; Oakley, 2000; Sahoo & Lenka, 2016; Yu, Johnson, & Zhang, 2009), management researchers have largely ignored female CEOs or have merely studied them in the aggregate, focusing on potential explanations for the slow advance of women corporate officers and board members.

The academic community has shed light upon many of the social, psychological and organizational hurdles that women must overcome in order to progress in organizations (Cook & Glass, 2014;

Helfat, Harris, & Wolfson, 2006; Ibarra, Ely, & Kolb, 2013; Schein, 2001; Simpson, Sturges, Woods, & Altman, 2004; Terjesen, Sealy, & Singh, 2009). Studying the careers of women who advance to positions of power can assist in answering several salient questions: Are those women who make it to the top different from those who have filled the corporate ranks for years without ever gaining entry into the TMT? Are female CEOs different from male CEOs; and, if so, how? Are there specific circumstances that make a company more likely to appoint a female CEO? How do female CEOs respond to the challenge of rising to the upper echelons of public companies?

Female CEOs may face several obstacles beyond those associated merely with how others perceive and portray them. Their gender identity and their drive for political control of the TMT may compel them to include more women who can serve as strategic advisers (Arendt, Priem, & Ndofor, 2005; Tzioti, Wierenga, & van Osselaer, 2014) and with whom they can form coalitions based on demographic homophily (Carpenter, Westphal, & McDonald, 2010; Kogut, Colomer, & Belinky, 2014; P. McDonald, Brown, & Bradley, 2005). Seemingly counterintuitively, their own stereotypes as to what constitutes desirable managerial traits (Litzky & Greenhaus, 2007; Paustian-Underdahl, Walker, & Woehr, 2014; Powell, Butterfield, & Parent, 2002; von Hippel, Issa, Ma, & Stokes, 2011), and the desire to avoid perceptions of favoritism based on gender solidarity, may prevent them from adding more women to the team. Despite the fact that some female CEOs may have been appointed at a time of sluggish results (Kulich, Lorenzi-Cioldi, Iacoviello, Faniko, & Ryan, 2015; Ryan & Haslam, 2005; Ryan, Haslam, Hersby, & Bongiorno, 2011), all female CEOs tend to be held to higher performance standards than are male CEOs (Fitzsimmons et al., 2014; Ibarra et al., 2013; Weyer, 2007). Moreover, while the management style that many female CEOs tend to practice may be appropriate for turbulent times (Heifetz, Grashow, & Linsky, 2009; Kulich et al., 2015; Rosette & Tost, 2010), subordinates may not respond to this approach (Katila & Eriksson, 2013; von Hippel et al., 2011). Should female CEOs instead opt for a more "masculine" management style, they may be perceived as more competent, but also as "interpersonally deficient" (Rudman & Glick, 1999, p. 1004).

We begin this paper with a theoretical outline of the role of demographics in TMTs. We then present some propositions about the personal and organizational antecedents to the appointment of a female CEO. Understanding the careers of these female high-flyers – what Altman (1997) deems "the clearest manifestation of the language of achievement and success" (p. 329) – can help scholars, human resources professionals, career coaches, and advisors in assisting women to successfully navigate the course to the office of CEO (Ackah & Heaton, 2003; Burke & Vinnicombe, 2005; Gray & O'Brien, 2007; O'Neil, Hopkins, & Sullivan, 2011; Simpson et al., 2004).

LITERATURE REVIEW

The characteristics of top management teams (TMTs) and their influence in organizational decisions have been at the forefront of management research since Donald Hambrick and Phyllis Mason, in 1984, formulated the Upper Echelons (UE) theory. A widely-cited theory (Carpenter, Geletkanycz, & Sanders, 2004; Certo, Lester, Dalton, & Dalton, 2006; Wang, Holmes, Oh, & Zhu, 2016), UE emphasizes the effect of top managers on organizational outcomes through their influence on a firm's strategic choices. This perspective has motivated research in several specific areas, such as the study of boards and directors, chief executive succession, selection and

compensation, and the relationships between the composition of TMTs and different aspects of the organization.

Upper Echelons and Gender

Upper Echelons theory focuses on the study of top management teams as relates to the observable characteristics of TMT members. Demographic characteristics are the variables of choice in studies of the managerial elites for such reasons best summarized by Pfeffer (1983) as: "parsimony, comprehensibility, logical coherence, predictive power, and testability " (p. 352) These observable characteristics are thought to influence the behaviors, preferences, and values of the individuals studied. The demographic characteristics are used as proxies, because direct cognitive and psychological measures are more difficult to operationalize and assess (Carpenter et al., 2004; Cycyota & Harrison, 2006). In their initial formulation of UE theory, Hambrick and Mason (1984) proposed that both psychological and observable characteristics of the upper echelons determine organizational performance through their influence on strategic choices. The observable variables initially proposed by Hambrick & Mason (1984) included age, functional tracks, career experiences, education, socioeconomic roots, and financial position. These variables, however, were not meant to be exhaustive, and demographic characteristics such as race and gender have since been included in studies of upper echelons (Buyl, Boone, & Matthyssens, 2011; Carpenter et al., 2004; Richard, Barnett, Dwyer, & Chadwick, 2004; Wang et al., 2016; Westphal & Milton, 2000).

In addition to focusing on demographic characteristics, Upper Echelons theory also emphasizes the study of an entire group – the TMT (Hambrick & Mason, 1984). Different definitions of this group have been used, and there is still controversy about the boundaries for inclusion of individuals as members of the top management team (Carpenter et al., 2004). More traditional definitions of TMT include only a company's executives, whereas a broader definition known as supra-TMT incorporates the board of directors as well as the executives (Jensen & Zajac, 2004). Despite these differences in the unit of analysis, research consistently supports upper echelons propositions (Buyl et al., 2011; Certo et al., 2006; Hambrick, 2005; Ling, Wei, Klimoski, & Wu, 2015; Wang et al., 2016). For instance, the cognitive characteristics of top executives have been associated with the strategies chosen by companies, the international experience of the TMT has been related to the internationalization of a firm's strategies, and the executives' educational levels have been related to innovation in a variety of industries (for two reviews that includes many other examples of the predictive validity of UE theory see Hambrick, 2005; and 2007).

Study of the TMT requires an understanding of both the central characteristics of the entire team and of the intra-team variance, or group heterogeneity (Hambrick & Mason, 1984; Ling et al., 2015). Moreover, this heterogeneity is not a static property, and organizational demography is better explained as a process by which some members join and some leave the organization (Boone, Olffen, Witteloostujin, & Brabander, 2004; Burton & Beckman, 2007; Carpenter et al., 2004). An initial point in the organizational life must be designated as a reference point by which to study the changes in the demographic constitution of the organization (Pfeffer, 1983); the appointment of a female CEO can be such a reference point. In general, CEO succession is an important event in the life of an organization (Kang, Ding, & Charoenwong, 2010; Lee & James, 2007; Martin, Nishikawa, & Williams, 2009); the appointment of a woman to the top executive office is an uncommon event and thus can be a very prominent experience in organizational life.

Organizational Antecedents to the Appointment of Female CEOs

Research on the barriers that prevent women from ascending to the CEO position has mostly focused on the individual characteristics of female executives, largely ignoring the organizational and institutional factors that constraint the pipeline to the top position of the corporation (Cook & Glass, 2014; M. L. McDonald & Westphal, 2013). It is therefore important to theorize about organizational and institutional level antecedents to the appointment of a female CEO, and are that remains relatively underexplored.

A female CEO may be a counterexample of widely held stereotypes of the archetypal manager (Katila & Eriksson, 2013; Litzky & Greenhaus, 2007; Powell et al., 2002; von Hippel et al., 2011) and may indicate an effort by the company to break with the current state of affairs (Boone et al., 2004; Heifetz et al., 2009; Kulich et al., 2015; Ryan & Haslam, 2005). In a study of British firms, Ryan and Haslam (2005) found that the appointments of women as corporate officers or directors coincided with periods of declining stock performance, while men were typically named to these positions when the share price was stable or growing. These authors suggest that companies appoint women to the supra-TMT to send the message that changes are underway; however, this practice places women on the "glass cliff," a precarious position in which poor performance proves almost inevitable and which could lead to people's attributing the adverse results to the appointed women (Cook & Glass, 2014; Ryan et al., 2011). A less cynical explanation for adding women to TMTs when companies are coping with crisis is that firms may be interested in drawing on uniquely-female leadership qualities (Heifetz et al., 2009; Kulich et al., 2015), as well as on women's knowledge of certain markets and customers (Heifetz et al., 2009; Helfat et al., 2006), to help guide them through difficult times. The generalizability of the glass cliff phenomenon to settings outside the UK has been questioned by Adams, Gupta, and Leeth (2009), although other authors have stressed that the phenomenon holds true if one considers the totality of the environments and positions of leaders from different genders (Ryan & Haslam, 2009), thus, our understanding of the glass cliff is far from settled (Cook & Glass, 2014; Ryan, Haslam, Morgenroth, Rink, Stoker, & Peters, In Press). Whether it is to signal change or to respond to crisis by diversifying the skill base of the TMT, it can be posited that:

> *Proposition 1: The appointment of a female CEO is more likely to occur when a company is going through a crisis.*

Not long ago, the appointing a female CEO – even during times of crisis – was almost completely unheard of. Women's access to managerial positions is a relatively new phenomenon that may be a result of social and legal developments external to the organization (Cook & Glass, 2014; Dalton & Dalton, 2010; Dezső, Ross, & Uribe, 2016). First, women entered the corporate world as a response to the scarcity of labor created by World Wars I and II (Amott & Matthaei, 1996). Then, the women's rights movement and government legislation against discrimination made it mandatory for companies to give equal opportunities to all individuals, regardless of gender (Amott & Matthaei, 1996). However, what started as coercion has become accepted as legitimate and has developed into an ethical standard (Burke, 1997; Torchia, Calabrò, & Huse, 2011). Thus, the entrance of women into the organization illustrates some of the postulates of institutional theory (Blum, Fields, & Goodman, 1994; DiMaggio & Powell, 1983), which proposes that "the expectations of significant actors in an organization's environment, including professional organizations, government entities,

and lenders, will influence the gender mix of its management" (Blum et al., 1994). Although the appointment of a female CEO is not required by legislation ─ nor is it likely to be expected by stakeholders ─ institutional forces might be at play when a company appoints a female CEO. It may be possible that some companies choose a woman as CEO in an attempt to follow the lead of other companies with females at the helm that they perceive as successful or in order to conform to a diversity practice that they see as popular in the industries or geographic regions in which they operate. This drive toward mimetic isomorphism (DiMaggio & Powell, 1983; Terjesen et al., 2009) could help to explain why the number of women in managerial positions is higher in certain industries. For instance, Helfat, Harris and Wolfson (2006) found that there are more women in the supra-TMTs of computer software and transportation equipment companies than there are in those of furniture companies. The authors noted that these results do not conform to general preconceptions of the degree to which women are customarily represented in particular industries. In this example, the explanation could be that having women in the TMT has become institutionalized in the software and transportation equipment industries but not in the furniture industry. Further evidence of the industry-level forces that might influence the appointment of female CEOs comes from a study of mid-cap firms in the US by the Center for Women in Business (2011). This study found that between 2000 and 2010, some industries (namely: media, pharmaceuticals, and retailing) consistently had larger proportions of female executives. Thus, from an institutional theory perspective, it can be proposed that:

> *Proposition 2: The appointment of a female CEO is positively related to how ingrained women are in an industry's TMTs.*

Although the institutionalization of non-discriminatory promotion practices may not directly lead to the appointment of a female CEO, this trend has certainly contributed to the proliferation of women in corporate upper echelons (Daily, Certo, & Dalton, 1999; Dezső et al., 2016; Sheridan, 2002; Terjesen et al., 2009; Torchia et al., 2011). There are more women in managerial positions now than there were ten years ago (Catalyst, 2006, 2016). Rosabeth Kanter (1977) argued that the opportunities available to minorities are, in part, an effect of demographic proportions; as the minority widens its representation in the organization, it gains political strength and social support within the firm (Hillman, Cannella, & Harris, 2002; Jacobs, 1992). This strength in numbers may increase the minorities' chances of advancement (Huffman, Cohen, & Pearlman, 2010; Jacobs, 1992). Interestingly, the Center for Women in Business of the US Chamber of Commerce (2011) found that industries with a higher representation of female executives, also tended to show a higher proportion of women CEOs. Accordingly, the appointment of a female CEO may be the result not only of a social process external to the organization but also of the increased gender heterogeneity experienced within the firm.

> *Proposition 3: The ratio of female hires is positively related to the appointment of a female CEO.*

The selection of a new CEO is a complex process. Empirical studies about CEO succession have shown that the "accession schedule" (Daily et al., 1999) typically begins with the extending of an invitation, to a potential CEO successor, to join the board, as data shows that new CEOs are almost always drawn from the established board of directors (Vancil, 1987). Daily, Certo, and Dalton (1999) failed to support their hypothesis that Fortune 500 firms, in 1996, had more female inside

directors than they had in 1987, and these researchers went on to predict that this dearth of female directors would result in few women in the executive suite in the years after 1996. Although a newly-appointed CEO can be an outside director, or even completely new to the organization (Vancil, 1987), an inside directorship provides an opportunity to uncover information concerning a director's background, managerial skills, and knowledge, as well as the unique insights and perspectives the director brings to the company (Zelechowski & Bilimoria, 2004). Evidence from research on internal labor markets suggests that promotion ladders are highly segregated by sex and that male outsiders can access male ladders – namely, the one that leads to the CEO position – more readily than can women (Lucey & Carron, 2011; Smith, 2012; Stockdale & Nadler, 2013). Since female outsiders have limited access to male ladders, it can be posited that, in order to become CEOs, women need to be in the internal pipeline (Helfat et al., 2006; Terjesen et al., 2009; Zelechowski & Bilimoria, 2004). If this is indeed the case, and if this criterion is applied differently for men than for women, then it can be proposed that:

> *Proposition 4: The appointment of female inside directors increases the likelihood that a female CEO will be appointed.*

Propositions 1 through 4 present only some of the potential organizational antecedents to the appointment of a female CEO. Other management perspectives, particularly theories used in corporate governance such as Agency Theory and the Resource-Based View of the firm, may also provide fruitful areas for developing our knowledge of the organization-level factors conducive to appointing a woman as CEO. Moreover, we advocate the undertaking of studies that compare the antecedents that lead to the appointment of male CEOs to those that result in the promotion of minorities to CEO. These investigations will not only likely provide a greater understanding of the succession process but will also highlight any differences that may exist within the professional trajectories of these groups.

The Individual Career Paths of Female CEOs

Organizational characteristics, such as those put forward in Propositions 1 to 4, represent only some of the antecedents that can result in the appointment of a female CEO. If we want to understand the process that leads to a woman's becoming CEO, we also need to understand the careers of the women who have ascended to the top of the corporate ladder (Altman, 1997; Fitzsimmons et al., 2014). The existence of separate promotion ladders for men and women (Lucey & Carron, 2011; Stockdale & Nadler, 2013), as well as the predominance of the "think manager-think male" stereotype (Koenig, Eagly, Mitchell, & Ristikari, 2011; Litzky & Greenhaus, 2007; Ryan et al., 2011; von Hippel et al., 2011), indicates that, in order to promote a woman to the top managerial position, long-held stereotypes and traditions must be overcome. Sometimes, however, these promotions have been considered a result of tokenism (Fairhurst & Snavely, 1983; Kanter, 1977). Individuals are considered tokens when they enter a social environment in which their presence has traditionally been rare. The dynamics of tokenism depend on the degree of majority/minority imbalance. Numerical imbalance makes the tokens more salient to the other members of the group, which increases the performance pressures for tokens. As tokens, the burden is on the women to prove that they should be considered in the CEO succession process (Murrell & Zagenczyk, 2006; Torchia et al., 2011).

To be considered good directors, members of the board have to fulfill two main roles: the provision of strategic advice and information and the exercise of control over top managers' decision making (Mizruchi, 2004). The ability to provide advice seems to be particularly important for the advancement of minorities to board positions (Tzioti et al., 2014). Westphal and Stern (2007) indicate that members of demographic minorities, such as women, must engage in a higher level of advice-giving in order to receive the same rewards as do members of the demographic majority. Additionally, career researchers have shown that, to be perceived as role models, women need to furnish – but not seek – advice (Murrell & Zagenczyk, 2006). One's ability to advise largely hinges on his/her level of expertise, what Amabile (1999) defines as a construct that "encompasses everything that a person knows and can do in the broad domain of his or her work" (p. 5). Thus, expertise is acquired through a long process by which people gain new knowledge and skills while also increasing their social capital, learning the idiosyncrasies and fundamentals of the organization, and familiarizing themselves with the external constituencies that affect the firm. Minorities can leverage their expertise in order to not only demonstrate their comparable competence relative to that of the majority members but to also change the balance of power (Fiske, 2010). A female CEO or, in fact, any demographic minority, needs superior expertise in order to provide the high level of strategic advice expected (Murrell & Zagenczyk, 2006; Westphal & Stern, 2007) and to redress the inherent power imbalance (Fiske, 2010). Since education (Martelli & Abels, 2010; Wai & Lincoln, 2016) and experience (Dokko, Wilk, & Rothbard, 2009) represent two sources of expertise, we propose that:

> *Proposition 5: Female CEOs have higher educational attainment and experience than do their male counterparts.*

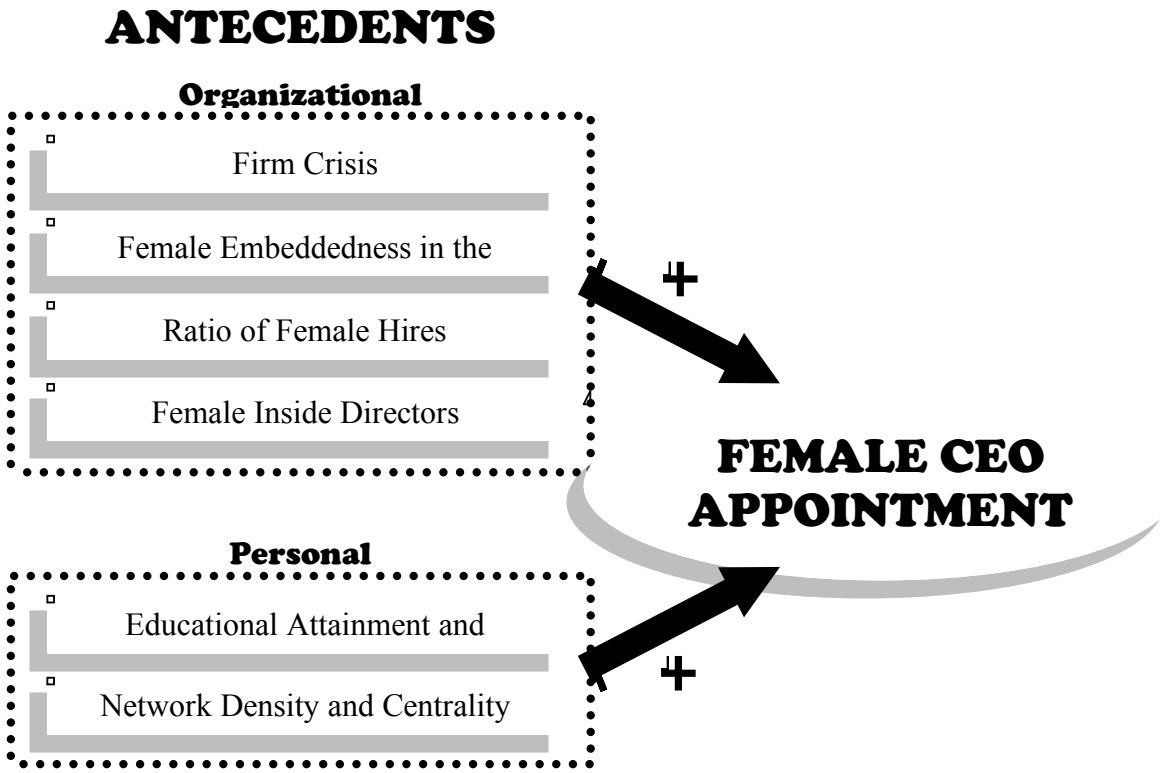
Possessing résumés with impressive educational and work credentials may help women overcome initial concerns about their abilities but may not be enough to advance their progress toward the organizational upper echelons (O'Neil et al., 2011; Simpson et al., 2004). The careers of successful female managers may be bolstered by a network of allies and mentors both within and outside of the organization (Kogut et al., 2014; M. L. McDonald & Westphal, 2013; Sheridan, 2002). Contacts outside of the organization may help women's careers by affording them information about the external environment, providing them recommendations for managerial and board positions, informing them of attractive jobs in other companies, etc. Information about the organization's external environment can help women advise the firm about courses of action, thus allowing them to better perform in their advisory roles (M. L. McDonald & Westphal, 2013; Murrell & Zagenczyk, 2006). Besides enhancing the quality of the advice that women can extend, an extensive business network can open doors for women (O'Neil et al., 2011). In a study of ultra-high net worth individual (UHNW), Wai and Lincoln (2016) found that self-made UHNW females, had the highest network power. Furthermore, Burke (1997) and Sheridan (2002) found that personal relationships proved key in the nomination of women to the board of directors of public companies in Canada and Australia; thus, we posit that women in TMTs have broken the glass ceiling, in part as a result of the strength of their social networks. We believe that these networks help women to be perceived as role models, a perception that then allows them to secure the employment and board offers necessary to advance in the business world. In social network theory terms:

> *Proposition 6: Women in the upper echelons have denser networks and a higher centrality within those networks than do men.*

An important aspect of studying the career paths of females in the upper echelons is the examination of what happens when a woman joins the TMT. While CEO succession can result in dramatic shifts, executive team changes can have significant effects of their own, particularly in rapidly-changing environments (Virany, Tushman, & Romanelli, 1992). Therefore, in order to understand the outcomes of dominant organizational coalitions, not only CEO succession but also TMT changes should be studied.

In summary, as Figure 1 shows, this paper proposes that women are appointed as CEOs when organizations are going through crisis, when women are more ingrained in an industry's TMTs, when a critical mass of women has joined the organization, and/or when female insiders are appointed to a company's board of directors. The women who are appointed as CEOs are held to different standards than those set for male CEOs; these women are more likely than are men to be inside directors of the company at the time they are appointed CEO and are more educated and experienced than are their male counterparts.

Figure 1. Summary of the Proposed Model of Antecedents to the Appointment of a Female CEO



Organizational Level Outcomes

Demographic diversity directly affects firm performance, but it also exerts a positive influence through effects on organizational processes (Herring, 2009; Ling et al., 2015). From a strategic point of view, diversity enhances the understanding of market niches, makes the decision-making process more rational (Buyl et al., 2011; Goll & Rasheed, 2005; Papadakis, Thanos, & Barwise, 2010), and facilitates the emergence of more creative and innovative thinking (Welbourne, Cycyota,

& Ferrante, 2007). Diversity also increases board independence and the monitoring of management (Carpenter et al., 2010; Carter, Simkins, & Simpson, 2003). In line with Hambrick and Mason's (1984) theory of Upper Echelons, diversity widens the lenses through which TMTs look at the organization and its environment. Increases in heterogeneity may lead to greater adaptability and, hence, improved long-term performance, although the effect may be moderated by industry (Bell, Villado, Lukasik, Belau, & Briggs, 2010; Joshi & Roh, 2009). A disadvantage of heterogeneity is that it can reduce efficiency because it hinders communication and social integration (van Dijk, van Engen, & van Knippenberg, 2012). Efficiency can be further decreased by the conflict created by boundary heightening. If male managers spend energy and resources in "reclaiming their turf," the decision-making process and the organization become less efficient. Nevertheless, instead of hindering the decision-making process, conflict can enhance the quality of decisions, as long as rigorous debate promotes the consideration of all alternatives and helps to achieve a final decision that proves superior to that of any of the initial solutions (de Wit, Greer, & Jehn, 2012; Walter, Kellermanns, Floyd, Veiga, & Matherne, 2013).

Above and beyond the benefits of gender heterogeneity, the decision-making process of the TMT can also be improved by assembling a well-qualified group. If Proposition 5 is correct, females who join the TMT have received more formal education and have more experience than do their male counterparts; therefore, the average education and experience of the TMT should increase. Higher average educational attainment and experience of the TMT has been associated with innovativeness, the propensity for change, and company growth (Bell et al., 2010; Hambrick, 2005; Jaw & Lin, 2009).

The initial arrival of a female CEO, and the subsequent adjustment in the gender composition of the TMT, changes the decision making process in three ways: first, more gender heterogeneity widens the lens through which the dominant coalition looks at its environment; second, subsequent changes in the TMT improve the depth and breadth of expertise available; and third, the increased diversity of the TMT creates conflict that can lead to protracted decision making – and sometimes better decisions – by creating a dialectic dialogue in which more options are considered and the best solution is found by considering the relative merits of different alternatives (Buyl et al., 2011; de Wit et al., 2012). How can we know whether the effects of conflict are going to be positive or negative? We think that the answer depends on how the male members of the TMT feel about having more women among them. CEO succession literature avers that the men who are part of the TMT presumably possess positive attitudes toward women, since it is very likely that it was the men themselves who nominated a woman as CEO (Pollak, 2000). Negative feelings, on the other hand, can arise if the female CEO is imposed upon the male TMT members by others, such as after a takeover or in response to demands from activists.

The above discussion highlights several positive outcomes that organizations can reap from increased diversity in their TMTs and, in particular, from the sequence of transformations that occur after naming a woman as CEO. Decision making, innovation, propensity for change, growth, and creativity can all improve as a result of increased diversity and expertise.

IMPLICATIONS FOR RESEARCH AND MANAGEMENT

Despite the scarcity of women in CEO positions – and, in fact, in any other positions within firms' dominant coalitions – researchers have largely ignored female CEOs, tending to focus more on discovering barriers to the advancement of women in organizations. We believe that more attention should be paid to the women who make it to the top, especially since they are the few who have overcome the stereotypes. These female CEOs have finally attained positions from which they can effect greater gender diversity and remove many of the barriers that prevent female professional advancement. Successful executive women are more than role models; they themselves have faced organizational and societal prejudices, so they are in a unique position to mentor other women, and they have the skills and experience to help other females navigate the obstacles that women face in the corporate world (M. L. McDonald & Westphal, 2013; Ramaswami, Dreher, Bretz, & Wiethoff, 2010).

The proposed framework is based on the proposition of UE theory that states that executives matter and that their demographic characteristics prove excellent proxies by which to study their cognitive styles (Hambrick & Mason, 1984). Mainly, we claim that gender affects these cognitive styles and generates group dynamics that need to be studied in order to understand mixed-gender TMTs. Furthermore, mixed-gender TMTs may be better equipped for the decision-making process not only as a result of their heterogeneity but also as a result of the higher standards for expertise placed on women who are part of these teams. Notwithstanding the proposed basis in UE theory, the study of female CEOs can be fertile ground for testing hypotheses based on institutional theory, resource-dependence theory, social network theory, group-dynamics, and many other micro- and macro-level theories.

Empirical work in this area can focus on studying what female CEOs actually do. Most studies of the gender characteristics of TMTs have used archival data, annual reports, and surveys in order to discover the differences between male and female managers (Cycyota & Harrison, 2006; Helfat et al., 2006; M. L. McDonald & Westphal, 2013) or to find the characteristics that help aspirants further their goal of joining the dominant coalition (Cook & Glass, 2014; M. L. McDonald & Westphal, 2013; Westphal & Stern, 2007). Although all of this evidence supports the existence of barriers to the advancement of women in the corporate world, there has been a lack of attention to the actual behaviors of female CEOs. When they become CEOs, do men and women take similar courses of action, or can we definitively differentiate between the styles adopted by each of the genders? A benefit of this line of inquiry is that it can be addressed by looking directly at the CEOs' dealings from the first day that they are appointed. Such research could discern a company's situation before and after the appointment and trace the subsequent changes in strategy, corporate governance, and corporate responsibility policies and practices, among other variables. The fact that there are not many female CEOs can either be a disadvantage for statistical analysis or an advantage for those interested in exhaustiveness.

Future theoretical work can extend the proposed framework to include other demographic minorities. Perhaps we should not address the situation solely concerning female CEOs but, instead, label the discussion as "minority CEOs," individuals who, because of their gender, ethnicity, race, or any other characteristic that may set them apart from the group, face the dynamics of homophily, boundary heightening, and tokenism. Such extension of this framework

will need to address the question of how demographic characteristics other than gender affect cognitive styles. At any rate, we propose that companies, and society as a whole, can benefit from all forms of heterogeneity. A quick look at the demographic proportions of TMTs tells us a story of imbalance. Focusing solely on redressing discrimination misses much, as the opportunities created by heterogeneity, through better decision making and plasticity for those firms that conquer demographic stereotypes, prove boundless. As Amason (1996) aptly puts it, "Diversity provides an assorted stock of capabilities upon which a team can draw when making complex decisions" (p.124).

Despite the potential advantages of increased heterogeneity, firms may be reluctant to name a woman as CEO. First, they may perceive a scarcity of sufficiently qualified women for the position (Burke, 1997; Terjesen et al., 2009). Second, they may fear a backlash from employees or from other members of the TMT (Brescoll, 2012; Heminway, 2007; Katila & Eriksson, 2013; Phelan & Rudman, 2010). The solution to the alleged scarcity of women with the necessary skills to become CEOs stems from the policies set by firms. Companies should develop the managerial capabilities of women (Catalyst, 2016; Evans, 2011) and create internal corporate pipelines to promote the most talented people within the organization, regardless of gender (Helfat et al., 2006). In doing so, companies could also address the second part of the problem, the potential negative reaction toward a female CEO. If the company puts in place programs to train and retain female managers, all stakeholders would likely grow used to working and negotiating with women, thereby engaging in meaningful discussions in order to collaboratively effect fruitful outcomes. The eventual appointment of a woman as CEO may still come as a surprise, but the shock will be tempered. For the organization, the rewards reaped by the naming of a female CEO include a greater stock of talented managers, improved decision making, and reputational benefits from the firm's commitment to equal opportunity and diversity.

There are many factors that influence women's interests, abilities, and the likelihood of their becoming the CEOs of any size company. There are also many possible effects that result from women's being appointed CEO. This study plots a preliminary map that management researchers can use to trace both the antecedents and outcomes of such a unique event as the appointment of a female CEO. Executives matter, and their gender should be part of the picture.

REFERENCES

Ackah, C., & Heaton, N. (2003). Human resource management careers: Different paths for men and women? *Career Development International, 8*(3), 134 - 142.

Adams, S. M., Gupta, A., & Leeth, J. D. (2009). Are female executives over-represented in precarious leadership positions? *British Journal of Management, 20*(1), 1-12.

Altman, Y. (1997). The high-potential fast-flying achiever: Themes from the English language literature 1976-1995. *Career Development International, 2*(7), 324 - 330.

Amabile, T. (1999). How to kill creativity. In H. B. School (Ed.), *Harvard business review in breakthrough thinking* (pp. 1-27). Boston, MA: Harvard Business School Publishing.

Amason, A. C. (1996). Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of Management Journal, 39*(1), 123-148.

Amott, T. L., & Matthaei, J. (1996). *Race, gender, and work: A multi-cultural economic history of women in the united states* (2 ed.). Boston, MA: South End Press.

Arendt, L. A., Priem, R. L., & Ndofor, H. A. (2005). A CEO-adviser model of strategic decision making. *Journal of Management, 31*, 680-699.

Bell, S. T., Villado, A. J., Lukasik, M. A., Belau, L., & Briggs, A. L. (2010). Getting specific about demographic diversity variable and team performance relationships: A meta-analysis. *Journal of Management*.

Blum, T. C., Fields, D. L., & Goodman, J. S. (1994). Organizational-level determinants of women in management. *Academy of Management Journal, 37*(2), 241-268.

Boone, C., Olffen, W. V., Witteloostujin, A. V., & Brabander, B. D. (2004). The genesis of top management team diversity: Selective turnover among top management teams in Dutch newspaper publishing. *Academy of Management Review, 47*, 633-656.

Brescoll, V. L. (2012). Who takes the floor and why: Gender, power, and volubility in organizations. *Administrative Science Quarterly*.

Burke, R. J. (1997). Women on corporate boards of directors: A needed resource. *Journal of Business Ethics, 16*, 909-915.

Burke, R. J., & Vinnicombe, S. (2005). Advancing women's careers. *Career Development International, 10*(3), 165 - 167.

Burton, M. D., & Beckman, C. M. (2007). Leaving a legacy: Position imprints and successor turnover in young firms. *American Sociological Review, 72*(2), 239-266.

Buyl, T., Boone, C., & Matthyssens, P. (2011). Upper echelons research and managerial cognition. *Strategic Organization, 9*(3), 240-246.

Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management, 30*, 749-778.

Carpenter, M. A., Westphal, J. D., & McDonald, M. (2010). Corporate governance and knowledge management: How board independence may increase CEO paranoia and lead to increased top management team homophily. *International Journal of Strategic Change Management, 2*(4), 327-351.

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *The Financial Review, 38*, 33-53.

Catalyst. (2006). *2005 catalyst census of women corporate officers and top earners of the fortune 500. Ten years later: Limited progress, challenges persist.* New York:

Catalyst. (2016). Women CEOs of the S&P 500. Retrieved from http://www.catalyst.org/knowledge/women-ceos-sp-500

Center for Women in Business. (2011). *Women in leadership: A look at companies in the S&P midcap 400 index, 2000–2010.* Washington, DC: U.S. Chamber of Commerce.

Certo, S. T., Lester, R. H., Dalton, C. M., & Dalton, D. R. (2006). Top management teams, strategy and financial performance: A meta-analytic examination. *Journal of Management Studies, 43*(4), 813-839.

Cook, A., & Glass, C. (2014). Women and top leadership positions: Towards an institutional analysis. *Gender, Work & Organization, 21*(1), 91-103.

Cycyota, C. S., & Harrison, D. A. (2006). What (not) to expect when surveying executives: A meta-analysis of top manager response rates and techniques over time. *Organizational Research Methods, 9*(2), 133-160.

Daily, C. M., Certo, T., & Dalton, D. R. (1999). A decade of corporate women: Some progress in the boardroom, none in the executive suite. *Strategic Management Journal, 20*, 93-99.

Dalton, D. R., & Dalton, C. M. (2010). Women and corporate boards of directors: The promise of increased, and substantive, participation in the post sarbanes-oxley era. *Business Horizons, 53*(3), 257-268.

de Wit, F. R. C., Greer, L. L., & Jehn, K. A. (2012). The paradox of intragroup conflict: A meta-analysis. *Journal of Applied Psychology, 97*(2), 360-390.

Dezsö, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal, 33*(9), 1072-1089.

Dezső, C. L., Ross, D. G., & Uribe, J. (2016). Is there an implicit quota on women in top management? A large-sample statistical analysis. *Strategic Management Journal, 37*(1), 98-115.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147-160.

Dokko, G., Wilk, S. L., & Rothbard, N. P. (2009). Unpacking prior experience: How career history affects job performance. *Organization Science, 20*(1), 51-68.

Evans, D. (2011). Room at the top: Advancement and equity for women in the business world. *National Civic Review, 100*(2), 62-64.

Fairhurst, G. T., & Snavely, B. K. (1983). Majority and token minority group relationships: Power acquisition and communication. *Academy of Management Review, 8*(2), 292-300.

Fiske, S. T. (2010). Interpersonal stratification: Status, power, and subordination *Handbook of social psychology*: John Wiley & Sons, Inc.

Fitzsimmons, T. W., Callan, V. J., & Paulsen, N. (2014). Gender disparity in the C-suite: Do male and female CEOs differ in how they reached the top? *The Leadership Quarterly, 25*(2), 245-266.

Goll, I., & Rasheed, A. A. (2005). The relationship between top management demographic characteristics, rational decision making, environmental munificence, and firm performance. *Organization Studies, 26*, 999-1023.

Gray, M. P., & O'Brien, K. M. (2007). Advancing the assessment of women's career choices: The career aspiration scale. *Journal of Career Assessment, 15*(3), 317-337.

Hambrick, D. C. (2005). Upper echelons theory: Origins, twists and turns, and lessons learned. In K. G. Smith & M. A. Hitt (Eds.), *Great minds in management: The process of theory development* (pp. 109-127). New York: Oxford University Press.

Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review, 32*(2), 334-343.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*, 193-206.

Heifetz, R., Grashow, A., & Linsky, M. (2009). Leadership in a (permanent) crisis. *Harvard Business Review, 87*(7/8), 62-69.

Helfat, C. E., Harris, D., & Wolfson, P. J. (2006). The pipeline to the top: Women and men in the top executive ranks of US corporations. *Academy of Management Perspectives, 20*(4), 42-64.

Heminway, J. M. (2007). Sex, trust, and corporate boards. *Hastings Women's LJ, 18*, 173.

Herring, C. (2009). Does diversity pay?: Race, gender, and the business case for diversity. *American Sociological Review, 74*(2), 208-224.

Hillman, A. J., Cannella, A. A., & Harris, I. C. (2002). Women and racial minorities in the boardroom: How do directors differ? *Journal of Management, 28*, 747-763.

Huffman, M. L., Cohen, P. N., & Pearlman, J. (2010). Engendering change: Organizational dynamics and workplace gender desegregation, 1975–2005. *Administrative Science Quarterly, 55*(2), 255-277.

Ibarra, H., Ely, R. J., & Kolb, D. M. (2013). Women rising: The unseen barriers. *Harvard Business Review, 91*(9), 60-66.

Jacobs, J. A. (1992). Women's entry into management: Trends in earnings, authority, and values among salaried managers. *Administrative Science Quarterly, 37*(2), 282-301.

Jaw, Y.-L., & Lin, W.-T. (2009). Corporate elite characteristics and firm's internationalization: CEO-level and TMT-level roles. *The International Journal of Human Resource Management, 20*(1), 220-233.

Jensen, M., & Zajac, E. (2004). Corporate elites and corporate strategy: How demographic preferences and structural differences shape the scope of the firm. *Strategic Management Journal, 25*, 507-524.

Joshi, A., & Roh, H. (2009). The role of context in work team diversity research: A meta-analytic review. *Academy of Management Journal, 52*(3), 599-627.

Kang, E., Ding, D. K., & Charoenwong, C. (2010). Investor reaction to women directors. *Journal of Business Research, 63*(8), 888-894.

Kanter, R. M. (1977). *Men and women of the corporation*. New York: Basic Books.

Katila, S., & Eriksson, P. (2013). He is a firm, strong-minded and empowering leader, but is she? Gendered positioning of female and male CEOs. *Gender, Work & Organization, 20*(1), 71-84.

Koenig, A. M., Eagly, A. H., Mitchell, A. A., & Ristikari, T. (2011). Are leader stereotypes masculine? A meta-analysis of three research paradigms. *Psychological Bulletin, 137*(4), 616-642.

Kogut, B., Colomer, J., & Belinky, M. (2014). Structural equality at the top of the corporation: Mandated quotas for women directors. *Strategic Management Journal, 35*(6), 891-902.

Kulich, C., Lorenzi-Cioldi, F., Iacoviello, V., Faniko, K., & Ryan, M. K. (2015). Signaling change during a crisis: Refining conditions for the glass cliff. *Journal of Experimental Social Psychology, 61*, 96-103.

Lee, P. M., & James, E. H. (2007). She'-e-os: Gender effects and investor reactions to the announcements of top executive appointments. *Strategic Management Journal, 28*(3), 227-241.

Ling, Y., Wei, L., Klimoski, R. J., & Wu, L. (2015). Benefiting from CEO's empowerment of TMTs: Does CEO–TMT dissimilarity matter? *The Leadership Quarterly, 26*(6), 1066-1079.

Litzky, B., & Greenhaus, J. (2007). The relationship between gender and aspirations to senior management. *Career Development International, 12*(7), 637 - 659.

Lucey, B. M., & Carron, B. (2011). The effect of gender on stock price reaction to the appointment of directors: The case of the FTSE 100. *Applied Economics Letters, 18*(13), 1225-1229.

Martelli, J., & Abels, P. (2010). The education of a leader: Educational credentials and other characteristics of chief executive officers. *Journal of Education for Business, 85*(4), 209-217.

Martin, A. D., Nishikawa, T., & Williams, M. A. (2009). CEO gender: Effects on valuation and risk. *Quarterly Journal of Finance and Accounting, 48*(3), 23-40.

McDonald, M. L., & Westphal, J. D. (2013). Access denied: Low mentoring of women and minority first-time directors and its negative effects on appointments to additional boards. *Academy of Management Journal, 56*(4), 1169-1198.

McDonald, P., Brown, K., & Bradley, L. (2005). Have traditional career paths given way to protean ones?: Evidence from senior managers in the Australian public sector. *Career Development International, 10*(2), 109 - 129.

McGuinness, P. B., Lam, K. C. K., & Vieito, J. P. (2015). Gender and other major board characteristics in China: Explaining corporate dividend policy and governance. *Asia Pacific Journal of Management, 32*(4), 989-1038.

Mizruchi, M. S. (2004). Berle and means revisited: The governance and power of large U.S. Corporations. *Theory and Society 33*(5), 579-617.

Murrell, A. J., & Zagenczyk, T. J. (2006). The gendered nature of role model status: An empirical study. *Career Development International, 11*(6), 560 - 578.

O'Neil, D. A., Hopkins, M. M., & Sullivan, S. E. (2011). Do women's networks help advance women's careers?: Differences in perceptions of female workers and top leadership. *Career Development International, 16*(7), 733 - 754.

Oakley, J. G. (2000). Gender-based barriers to senior management positions: Understanding the scarcity of female CEOs. *Journal of Business Ethics, 27*(4), 321-334.

Papadakis, V., Thanos, I., & Barwise, P. (2010). Research on strategic decisions: Taking stock and looking ahead. *Handbook of decision making, 37*, 31-69.

Paustian-Underdahl, S. C., Walker, L. S., & Woehr, D. J. (2014). Gender and perceptions of leadership effectiveness: A meta-analysis of contextual moderators. *Journal of Applied Psychology, 99*(6), 1129-1145.

Pfeffer, J. (1983). Organizational demography. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 5, pp. 299-357). Greenwich, CT: JAI Press.

Phelan, J. E., & Rudman, L. A. (2010). Prejudice toward female leaders: Backlash effects and women's impression management dilemma. *Social and Personality Psychology Compass, 4*(10), 807-820.

Pollak, M. (2000). Catalyst corporate board placement: New seats at the table. In R. J. Burke & M. C. Mattis (Eds.), *Women on corporate boards of directors: International challenges and opportunities* (pp. 263-269). Dordrecht: Springer Netherlands.

Powell, G. N., Butterfield, D. A., & Parent, J. D. (2002). Gender and managerial stereotypes: Have the times changed? *Journal of Management, 28*(2), 177-193.

Ramaswami, A., Dreher, G. F., Bretz, R., & Wiethoff, C. (2010). Gender, mentoring, and career success: The importance of organizational context. *Personnel Psychology, 63*(2), 385-405.

Richard, O. C., Barnett, T., Dwyer, S., & Chadwick, K. (2004). Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions. *Academy of Management Journal, 47*, 255-266.

Rosette, A. S., & Tost, L. P. (2010). Agentic women and communal leadership: How role prescriptions confer advantage to top women leaders. *Journal of Applied Psychology, 95*(2), 221-235.

Rudman, L. A., & Glick, P. (1999). Feminized management and backlash toward agentic women: The hidden costs to women of a kinder, gentler image of middle managers. *Journal of Personality and Social Psychology, 77*(5), 1004-1010.

Ryan, M. K., & Haslam, S. A. (2005). The glass cliff: Evidence that women are over-represented in precarious leadership positions. *British Journal of Management, 16*(2), 81-90.

Ryan, M. K., & Haslam, S. A. (2009). Glass cliffs are not so easily scaled: On the precariousness of female CEOs' positions. *British Journal of Management, 20*(1), 13-16.

Ryan, M. K., Haslam, S. A., Hersby, M. D., & Bongiorno, R. (2011). Think crisis–think female: The glass cliff and contextual variation in the think manager–think male stereotype. *Journal of Applied Psychology, 96*(3), 470-484.

Ryan, M. K., Haslam, S. A., Morgenroth, T., Rink, F., Stoker, J., & Peters, K. (In Press). Getting on top of the glass cliff: Reviewing a decade of evidence, explanations, and impact. *The Leadership Quarterly*.

Sahoo, D. K., & Lenka, U. (2016). Breaking the glass ceiling: Opportunity for the organization. *Industrial and Commercial Training, 48*(6), null.

Schein, V. E. (2001). A global look at psychological barriers to women's progress in management. *Journal of Social Issues, 57*(4), 675-688.

Sheridan, A. (2002). What you know and who you know: “Successful” women’s experiences of accessing board positions. *Career Development International, 7*(4), 203-210.

Simpson, R., Sturges, J., Woods, A., & Altman, Y. (2004). Career progress and career barriers: Women MBA graduates in Canada and the UK. *Career Development International, 9*(5), 459-477.

Smith, R. A. (2012). Money, benefits, and power: A test of the glass ceiling and glass escalator hypotheses. *The ANNALS of the American Academy of Political and Social Science, 639*(1), 149-172.

Stockdale, M. S., & Nadler, J. T. (2013). Paradigmatic assumptions of disciplinary research on gender disparities: The case of occupational sex segregation. *Sex Roles, 68*(3), 207-215.

Terjesen, S., Sealy, R., & Singh, V. (2009). Women directors on corporate boards: A review and research agenda. *Corporate Governance: An International Review, 17*(3), 320-337.

Torchia, M., Calabrò, A., & Huse, M. (2011). Women directors on corporate boards: From tokenism to critical mass. *Journal of Business Ethics, 102*(2), 299-317.

Tzioti, S. C., Wierenga, B., & van Osselaer, S. M. J. (2014). The effect of intuitive advice justification on advice taking. *Journal of Behavioral Decision Making, 27*(1), 66-77.

van Dijk, H., van Engen, M. L., & van Knippenberg, D. (2012). Defying conventional wisdom: A meta-analytical examination of the differences between demographic and job-related diversity relationships with performance. *Organizational Behavior and Human Decision Processes, 119*(1), 38-53.

Vancil, R. F. (1987). *Passing the baton: Managing the process of CEO succession*. Boston, MA: Harvard Business School Press.

Virany, B., Tushman, M. L., & Romanelli, E. (1992). Executive succession and organization outcomes in turbulent environments: An organization learning approach. *Organization Science, 3*(1), 72-91.

von Hippel, C., Issa, M., Ma, R., & Stokes, A. (2011). Stereotype threat: Antecedents and consequences for working women. *European Journal of Social Psychology, 41*(2), 151-161.

Wai, J., & Lincoln, D. (2016). Investigating the right tail of wealth: Education, cognitive ability, giving, network power, gender, ethnicity, leadership, and other characteristics. *Intelligence, 54*, 1-32.

Walter, J., Kellermanns, F. W., Floyd, S. W., Veiga, J. F., & Matherne, C. (2013). Strategic alignment: A missing link in the relationship between strategic consensus and organizational performance. *Strategic Organization, 11*(3), 304-328.

Wang, G., Holmes, R. M., Oh, I.-S., & Zhu, W. (2016). Do CEOs matter to firm strategic actions and firm performance? A meta-analytic investigation based on upper echelons theory. *Personnel Psychology*, n/a-n/a.

Welbourne, T. M., Cycyota, C. S., & Ferrante, C. J. (2007). Wall street reaction to women in ipos: An examination of gender diversity in top management teams. *Group & Organization Management, 32*(5), 524-547.

Westphal, J. D., & Milton, L. P. (2000). How experience and network ties affect the influence of demographic minorities on corporate boards. *Administrative Science Quarterly, 45*, 366-398.

Westphal, J. D., & Stern, I. (2007). Flattery will get you everywhere (especially if you are a male caucasian): How ingratiation, boardroom behavior, and demographic minority status affect additional board appointments at U.S. Companies. *Academy of Management Journal, 50*(2), 267-288.

Weyer, B. (2007). Twenty years later: Explaining the persistence of the glass ceiling for women leaders. *Women in Management Review, 22*(6), 482-496.

Yu, T. T., Johnson, V., & Zhang, M. M. (2009). Comparative analysis of financial performance of companies with female CEOs and companies without female CEOs. *International Journal of Economics and Business Research, 1*(2), 204-213.

Zelechowski, D. D., & Bilimoria, D. (2004). Characteristics of women and men corporate inside directors in the US. *Corporate Governance, 12*, 337-342.

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MEASURING THE COLLABORATIVE PROCESS: THE MISSING INSTRUMENT IN DIGITAL LEARNING

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ABSTRACT

The focus on collaboration is increasing in this age of digital learning. Collaboration, combined with advances in technology, has been argued by researchers and educators as the next big push in enhancement of learning. However, no clear measure of the collaborative process exists. Most studies have viewed collaboration as a dichotomous variable or have used post-hoc analysis to understand the impact of collaboration. In this study, we argue that extent of collaboration needs to be measured as a continuous process variable. Based on previous literature in information systems, management, and education, specific dimensions of collaboration are outlined and an instrument is developed. The instrument is then tested for validity and reliability across seven different criteria in line with existing literature. The paper also outlines how the instrument developed in this article can be used to measure the extent of collaboration in future management research as well as presents guidelines to enhance collaboration between teams.

Keywords: Collaboration process, Instrument development, Measurement, Quasi-experiment.

INTRODUCTION

Information Systems (IS) researchers have spent considerable time trying to understand groups and teams, especially in the context of work systems. Dominant among these have been the work in Group Decision Support Systems (GDSS) & Virtual team's research in Information Systems, and more recently, using a team-based approach in technology training literature as well as e-learning in general. Team based methods have also been used in a lot of different areas such as leadership, decision-making, trust-building, communication, conflict-management, and skill development.

GDSS/virtual teams' research provides considerable evidence that good collaboration improves team performance (Garrison, Wakefield, Xu, & `Kim, 2010). However, much of this research was focused on understanding advanced information technology to improve decision making within groups. The initial research in this area was primarily input-output focused i.e. looking at the use of GDSS in different context to measure outcomes (Fjermestad & Hiltz, 1998). Results of these studies, however, had limited generalizability because of variability in GDSS systems or context. Subsequent research has focused more on the quality of usage of this advanced information technology (Limayem, Banerjee, & Ma, 2006). This quality of usage has been found to be a key determinant of outcome. More recently, though, researchers have argued the focus needs to shift to discussion of the usage process, including a discussion of the collaboration process (Denning & Yaholkovsky, 2008; Helquist, Deokar, Meservy, & Kruse, 2011; Piccoli, Powell, & Ives, 2004).
The use of teams in employee training is a more recent phenomenon, especially with the greater adoption of web 2.0, e-learning, and mobile technologies (Ali-Hassan, Nevo, & Nevo, 2010;

Jokela, 2003). Employee training, by itself, has been found to be one of the most pervasive methods for enhancing individual productivity and communicating organizations' goals to new personnel (Arthur, Bennett, Edens, & Bell, 2003). Teams provide an environment where participants draw on each other for social understanding, observations & reflections, thus, improving training outcomes. Various team-based learning methods have evolved over the years, emphasizing different features ranging from discussions to jigsaw puzzles (for a review of major methods, see Johnson and Johnson (2003)). Benefits of team-based learning have been demonstrated in cognitive domains such as mathematics (Webb, 1982), science (Okada & Simon, 1997), problem solving (Chi, Leeuw, Chiu, & Lavancher, 1994), engineering (Dossett & Hulvershorn, 1983) and technology training (Gupta & Bostrom, 2013). However, given the variance in the learning methods, implementations of the features in them, and interactions among team members, it is not surprising that meta-analysis of team-based learning has shown a great variation in results (Gupta, Bostrom, & Huber, 2010; Lou et al., 1996; Springer, Stanne, & Donovan, 1999).

Various streams of research conclude that greater emphasis is needed on studying the collaborative process. GDSS literature has tried to focus on some aspects of collaboration by researching group sizes (Valacich, Wheeler, Mennecke, & Wachter, 1995), group cohesion (Hiltz, Fjermestad, Ocker, & Twoff, 2006; Yoo & Alavi, 2001) and group development (Chidambaram & Bostrom, 1997). On the other hand, much of the research in training/education literature has been post-hoc and atheoritical in nature (Iverson & Roy, 1994; Johnson, 1981).

This lack of ability in measuring the collaborative process with a solid theoretical conceptualization is a major gap in the current literature; especially with technology tools increasing focus on collaboration. Most researchers have either used post-hoc analysis to understand the process, or have used analysis of discussion text to estimate collaboration (Beise, Carte, Vician, & Chidambaram, 2010). This makes it very difficult to compare across studies as well as collaboration levels across time. The measurement of the collaboration process or the level of collaboration within a team not only opens the black box of collaboration, but also helps us understand the disparity in various studies. In addition, it will help us focus on the extent to which antecedents can be structured to enhance collaboration as well as see the extent to which levels of collaboration impact outcomes. Both of these have immense practical applications (outlined later). Finally, by measuring the collaborative process, we can also see the impact of time on collaboration; an assertion made by many practitioners and researchers.

This paper, thus, instead of reviewing the extant literature, presents research on developing an instrument for measuring the extent of collaboration, i.e. the collaborative process. The paper references relevant literature where appropriate. The paper follows the steps suggested in earlier literature to build an instrument (Boudreau, Gefen, & Straub, 2001; Goodhue, 1998; Straub, 1989). These steps are 1) theoretical meaningfulness of constructs 2) observational meaningfulness of concepts 3) discriminant validity 4) convergent validity 5) internal consistency / reliability and 6) nomological validity.

In the next section, we outline the theoretical underpinnings of the collaboration process. Subsequently, the rest of the steps in instrument development are outlined. Next, the paper describes the results of a study conducted to see the convergent validity and reliability of the instrument. The final section summarizes the research and outlines future directions.

THEORETICAL MEANINGFULNESS OF COLLABORATION

The first step in building a valid scale is achieving conceptual clarity on what is to be measured as well as its importance. This is usually rooted in a good theory. The goal of this section to provide conceptual foundation to the concept of collaboration. The paper starts by exploring the accepted definition of collaboration.

Gray (1989) presented one of the most extensive reviews of the theoretical perspectives in behavioral psychology and definitions of collaboration. He defines collaboration as "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible" (p. 5). Building on this Wood and Gray (1991), expanded the meaning of collaboration. They stated that collaboration occurs "When a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms and structures, to act or decide on issues related to that domain." The definition provides three critical insights into collaboration: 1) Collaboration is a process. 2) Collaboration is based on multiple dimensions such as shared rules, norms and structures and 3) the process of collaboration can be used in multiple domains. This paper adopts this definition and expands on the individual components.

Much of the theoretical basis for work on collaboration comes from early work on social development theory (Vygotskiæi & Cole, 1978). It states:

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter psychological) and then inside the child (intra psychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals. (p. 57)

Vygotskiæi's theory was an attempt to explain consciousness as the end product of socialization. Most of the original work using this theory was done in the domain of language learning in children (Vygotskiæi & Hanfmann, 1962). Forman and Cazden (1985) extended the framework to collaborative learning. Developmental and Educational psychologists have identified two major categories of peer influence: (a) peers serve as natural teachers and models to simulate cognitive development and (b) peers contribute to task orientation, persistence and motivation to achieve (Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003). The concepts have been extended in multiple technology training studies with varying results (Bryans & Smith, 2000; Davis & Yi, 2004; Gupta & Bostrom, 2013). Similar variance in results has been observed in meta-studies of GDSS (Dennis, Haley, & Vandenberg, 2001) and virtual teams (Pinsonneault & Caya, 2005) research as well.

A similar construct to collaboration studied extensively in the information systems, and management literature is Group Cohesiveness (Beal, Cohen, Burke, & McLendon, 2003; Gully, Devine, & Whitney, 2012). Group cohesiveness is defined as the extent to which group members feel a part of a group and their desire to remain in the group (Langfred, 1998). While group cohesiveness has a strong relationship to performance, it is argued in a subsequent section, that it is a subset of a larger collaboration construct.

In summary, while social development theory outlines the cognitive reasons for the positive impact of collaboration, it does not provide adequate insight into the concept of collaboration. Additionally, most IS research has looked at collaboration through an input-output lens i.e. studying the causes and consequences of collaboration rather than trying to measure the process; which is where true collaboration exists.

OBSERVATIONAL MEANINGFULNESS OF THE COLLABORATIVE PROCESS

The second major concern in instrument development deals with linking the measures to the theoretical construct defined in the earlier section. Since much of the conceptualization of collaboration is abstract, we use a higher-order framework or meta-theory to develop the specific measure for the collaborative process. The outcome of such a process is an enhanced description of the specific theory involved within a well-defined nomological framework of reference (Utåo, 2005). A meta-theory that fits this purpose is Adaptive Structuration theory (Bostrom, Gupta, & Thomas, 2009). Adaptive Structuration Theory (AST) is formulated as the process through which members' use of rules and resources in interaction in an advanced information technology context. However, in recent years, the concepts from AST has been extended to a variety of contexts (Bostrom et al., 2009).

AST describes 'shared rules, norms and structures' (outlined in the definition of collaboration) in three ways: spirit, features and dimensions (DeSanctis & Jackson, 1994) – see Table 1. AST states that in a 'problem domain', the participants interpret the structures provided, i.e. the intended spirit. The spirit is the "*official line*" which the structures present to the participants regarding how to act, interpret the features, and fill in the gaps in the procedures that are not explicitly specified (DeSanctis & Jackson, 1994). Depending on the interpretation, the levels of collaboration can be vastly different between groups.

Table 1. Structural Descriptors in AST

Structural Descriptor	Definition
Spirit	The general intent of the work system as it is presented to the user. It is reflected in the design and implementation.
Features	Specific type of capabilities, rules and resources offered by or associated with the structures.
Dimensions	An aspect or characteristic of a structure that reflects a bundled set of features implemented in a particular context.

Features are options and capabilities offered by (explicitly) or associated (implicitly) with a structure (DeSanctis & Jackson, 1994). IS researchers, while examining the impact of collaboration and technology, have researched a considerable number of structural features, including individual characteristics, situational factors, group structure and task characteristics (Pinsonneault & Caya, 2005). However, the problem with structures and spirit is that they can differ in implementation and interpretation. For example, case studies have been broadly classified as McAleer Interactive Case Analysis (MICA) and Harvard Case Method (HCM) depending on the following features: role of the instructor, participant and the case guidelines (Desiraju & Gopinath, 2001). Although useful in understanding the two different case study methods, the study comparing MICA and HCM has failed to attribute learning variance to the different features

offered by each method because of the difference in implementation (Desiraju & Gopinath, 2001). Thus, spirit and features are not enough to explain structural influences on results.

The AST answer to this problem is to describe structures in terms of structural dimensions. A dimension describes an aspect of structure as a resource or constraint in work (DeSanctis & Jackson, 1994; Gupta, 2008). Dimensions are scalable, reflecting the amount of a given characteristic manifested in the structure. Sets of features are used to create a particular level of a dimension. For example, researchers have used the dimension of restrictiveness to differentiate between decision support systems (Silver, 1991). Restrictiveness measures the degree to which the features of a system limit the decision-making process. Features such as the ability to show a spreadsheet, implement functions and executive programming codes were used to measure restrictiveness of a decision support system. Features can positively or negatively influence existing dimensions of the work system, or provide dimensions that would not otherwise exist.

Drawing on team research in Education (Johnson & Johnson, 1999) and Management (Franklin, Wissler, & Spencer, 1976), six important structural dimensions of teams that influence learning were identified: Coordination, accountability, support, cohesion, goal emphasis, and team feedback. These are outlined in Table 2 and discussed next. The research and theory associated with each of these dimensions represents the little 't' needed to use AST as a meta-theory (Bostrom et al., 2009; Watson, 2007). These are also cited in subsequent paragraphs.

Table 2. Team dimensions

Team Dimensions	Definition	Example of features
Coordination (Johnson & Johnson, 1999)	Perception of the degree to which participants are linked in a way that some benefit is accrued to the collaborating individual.	Role, resource, reward or goal interdependence
Accountability (Franklin, Wissler, & Spencer, 1976)	Individual accountability is the degree to which the performance of each individual participant can be assessed, and feedback is seen by the team as well as the individual.	Using an average score to reflect the score of each individual in the team; random selection of an individual assignment to represent the team
Support (Vygotskiæi & Cole, 1978)	Degree to which participants offer useful help to fellow team members, or provide information that may be useful in understanding a concept.	Shared goals, rewards
Cohesion / Identity (Vygotskiæi & Cole, 1978)	Salience of one's self-definition as a team member	Ground rules (e.g. conflict management, roles, shared goals).
Goal Emphasis (Franklin et al., 1976)	Degree to which participant behavior is focused on accomplishing team goals.	Goal-setting procedures, tracking the extent of achievement of goal
Team feedback (Johnson & Johnson, 1999)	Degree to which team members discuss how well they are achieving their goals and maintaining effective working relationships.	Team performance assessments in weekly meetings, online discussion forum

Coordination is the perception that participants are linked in a way that some benefit is accrued to the collaborating individual. Such interdependence has been shown to have a positive effect on attitude and performance of the group (Shaw, Duffy, & Stark, 2000; Tait & Billinghurst, 2015). Group features used to implement this dimension are role or reward interdependence, resource scarcity, and shared goals. Role interdependence is structured by assigning each student a role. Reward interdependence is structured by providing a team reward to the team if for successful individual performance of all participants. Resource interdependence is created by giving each member a scare resource for problem solving. Finally, goal interdependence is structured by

providing the team with a mutually shared team goal. Higher level's coordination structural dimension has also been found to eliminate negative consequences of virtual teams (Pinsonneault & Caya, 2005).

Accountability is the degree to which performance of each individual student can be assessed and feedback on individual performance seen by the team as well as the individual. It is important that team members know who needs more assistance, and that they cannot '*hitch-hike*' on the work of others or lurk in the shadows (Baumer, Sueyoshi, & Tomlinson, 2011). The extent of accountability outlines the extent to which there is equity of information and participation across the group (Huang, Wei, Watson, & Tan, 2003). A common way of implementing this in a learning context is by giving an individual test for each student and randomly selecting one student's work to represent the efforts of the entire team.

The rest of the dimensions are usually associated with the internal team norms. The support dimension reflects the degree to team members support of each other. Since individuals are working together on tasks, they have many opportunities to supplement each other's efforts. When team norms favor support, individuals more readily offer the help that fellow team members can use, or provide information that may be helpful in understanding a concept (Chidambaram & Tung, 2005). These norms also help manage conflict within a group (Mortensen & Hinds, 2001), making group members more approachable (O'Connor, Gruenfeld, & McGrath, 1993). Considerable support for this dimension can also be found in the social media literature (Purohit et al., 2014).

One of the most extensively studied constructs in team literature is group cohesion or identity – the degree to which members of a group are attracted to another member and are motivated to stay in the group (Bettenhausen, 1991). Researchers have shown that higher level of cohesion plays an additive role in improving group outcomes (Gully et al., 2012; Langfred, 1998; Yoo & Alavi, 2001). Features influencing this dimension focus on formation of convergent values and expectations.

Goal emphasis directly relates to the task and its accomplishment. A higher level of this structural dimension stimulates an enthusiasm among participants for setting and achieving goals contributing to high-quality outcomes. Features that promote this dimension include goal-setting procedures and tracking the learning goals achieved by the team (Poole & DeSanctis, 1992).

Table 3. Team dimensions

Team dimension	Cooperation	Competition	Individualistic
Coordination	Mutual	Relative	Self
Accountability	Mutual	Opposite	Individual
Support	High	Low	None
Identity/ Cohesion	Shared	Relative	Individual
Goal Emphasis	Mutual	Differential	Self
Team feedback	Enhance	Oppose	Oppose

Team feedback is the degree to which team members discuss how well they are achieving their goals and maintaining effective working relationships (Hess, Fuller, & Mathew, 2006; Hiltz et al., 2006). Performance appraisal and feedback are among the features that are commonly used to

implement this dimension. These features are designed to enhance the collaboration level within groups.

An alternate way of conceptualizing the importance of the above mentioned structural dimensions is to map them to the three commonly outlined orientations of a team in the literature: i.e. Collaborative, Competitive, and Individualistic (Denning & Yaholkovsky, 2008; Iverson & Roy, 1994; Johnson, Maruyama, Johnson, Nelson, & Skon, 1981). It has also been suggested that collaborative groups perform better than competing groups (Johnson & Johnson, 1975; Lou et al., 1996). The paper uses the discussion above regarding structural dimensions to see the differences across team orientations that result in performance differences (see Table 3). The table also implies that while the orientation types provide a broad classification of teams, the actual team orientation is a continuous scale varying for low levels of collaboration to high levels of collaboration, changing over time.

FACE VALIDITY AND RELIABILITY

Reliability concerns the extent to which measurements are repeatable (Nunnally, Durham, Struening, & Guttentag, 1975), or have a relatively high component of true score and relatively low component of random error (Carmines & Zeller, 1979).

Table 4. Collaboration Measurement Items

Code	Dimension	Measurement item / Question
Collab1	Coordination	The instructor would view our interpretation of the collaborative guidelines as inappropriate.
Collab2	Coordination	We did not use the collaboration guidelines in the most appropriate fashion.
Collab3	Individual Accountability	I am not in favor of having a partner, because I did not learn anything from my partner.
Collab4	Support	My partner was friendly and easy to approach.
Collab5	Support	My partner paid attention to what I was saying.
Collab6	Cohesion	Working with a partner in the learning process seems like a good idea to me.
Collab7	Cohesion	Having a partner during the learning process was fun
Collab8	Cohesion	I enjoyed working with a partner during the learning process.
Collab9	Goal Emphasis	My partner emphasized learning.
Collab10	Goal Emphasis	My partner encouraged me to give my best effort.
Collab11	Team Feedback	My partner encouraged us to work together.
Collab12	Team Feedback	My partner helped me enhance my learning.

Since the above dimensions are scalable, the following items in Table 4 were developed to measure them. These scales were built by modifying existing scales in cohesion (Yoo & Alavi, 2001), attitude (Kinzie & Delcourt, 1991), consensus (Salisbury, Chin, Gopal, & Newsted, 2002) and faithfulness (Chin, Gopal, & Salisbury, 1997). These items were, initially, vetted with the 45 part-time MBA students from a large southeastern university for face validity tests. These participants were asked to work on a small Microsoft Access project for one hour before doing a card sorting exercise (to provide some context) with multiple constructs. Measurement items (described in Table 4) were listed on the cards, and participants were asked to sort the cards in relevant pre-defined categories (listed as dimensions in Table 4). Overall, this exercise found good face validity,

with over 80% agreement between participants on the collaboration items. Together, they measure the level/extent of collaboration in a team, i.e. collaboration process.

A second, larger, study was done to perform further reliability and validity tests. The context of the study was technology training, a context that provided the ability to compare data with existing literature. The study also used previously developed, and used e-learning methods based on social cognitive theory. This ensured consistent exposure of material across all teams. The study used introduction to MIS undergraduate students from the same university. The students were paired randomly and were tested for history. Only zero-history groups were used for further analysis. These students already had knowledge of basic Excel and thus, were trained in advanced Microsoft Excel (graphs and formulas) in pairs. Questions were noted down for evidence. Teams were given specific guidelines on collaboration i.e. discuss at least three questions with each other. Teams also shared one computer to ensure resource interdependence. Outcome variables were self-efficacy regarding Excel and Satisfaction from the learning process. Self-efficacy has been shown to be the single most important attribute in information systems literature affecting usage while satisfaction from the learning process was captured to evaluate the learning method.

All items were measured on a 7-point scale. Self-efficacy and Satisfaction for the learning process came from existing instruments. Data was collected using web-based instrument, at an individual level. The instrument is shown in Appendix 1. After removing for incomplete data, and other irrelevant data (non-paired data, etc.), the final sample size was 120. Other basic biographical information is presented in Appendix II. As can be seen from that, the sample represents a good cross-section of genders and business majors.

Table 5. Construct reliability (N=120)

Construct	Cronbach's Alpha
Collaboration	0.914
Satisfaction	0.860
Self-efficacy	0.815

Reliability, as measured by multi-item measures, is often estimated by Cronbach's alpha. In this case, SPSS was used to measure Cronbach's alpha. Table 5 the alpha values for the above-mentioned constructs using bootstrapping. Bootstrapping is a random sample – resample method of estimating reliability, reducing the need to have multiple samples. In this case, the reliability values are constantly >.70, showing good internal consistency of constructs.

DISCRIMINANT & CONVERGENT VALIDITY

The discussion of discriminant validity and convergent validity requires a new analysis, i.e. factor analysis. There are two kinds of factor analysis: exploratory factor analysis (EFA) or confirmatory factor analysis (CFA). CFA is generally used for well-formed constructs, coming from existing measures. EFA is better suited for newly developed constructs, especially in the case of similar psychological measures (Thompson, 2004). Thus, EFA was used in this analysis.
Discriminant validity is concerned with the extent to which participants respond similarly to different constructs. Convergent validity is the degree to which multiple attempts to measure the same concepts are in agreement (Bagozzi, Yi, & Phillips, 1991). It can be assessed by inspecting

the estimates of item variance, i.e., is there agreement among the measures of the same trait. This is usually assessed by looking at the factor loading of the measures (Bagozzi et al., 1991). As mentioned earlier, satisfaction and self-efficacy were the other constructs used in this study. Thus, discriminant and convergent validity were assessed by verifying item factor loading on the factor it is measuring is maximally different from other constructs and maximally similar to the construct it is measuring. Table 6 shows the factor matrix using maximum likelihood with varimax rotation for independent variables and dependent variables.

Table 6. Convergent and Discriminant Validity (N=120)

Item	Self-efficacy	Collaboration	Satisfaction	Coordination
Collab1	-0.054	-0.244	-0.058	0.812
Collab2	-0.154	-0.161	-0.111	0.694
Collab3	-0.029	-0.808	-0.062	0.196
Collab4	0.135	0.684	-0.003	-0.152
Collab5	0.111	0.741	0.112	-0.112
Collab6	0.077	0.875	0.051	-0.007
Collab7	0.101	0.885	0.031	-0.002
Collab8	0.045	0.567	0.095	0.008
Collab9	0.092	0.889	0.03	-0.095
Collab10	0.094	0.851	0.05	0.019
Collab11	0.063	0.869	0.076	-0.016
Collab12	0.083	0.829	0.094	-0.035
Satis1	-0.185	-0.146	-0.846	0.05
Satis2	-0.182	-0.18	-0.843	0.068
Satis3	0.304	0.082	0.686	-0.123
Satis4	-0.261	-0.237	-0.809	0.032
SSET1	0.839	0.114	0.127	-0.065
SSET2	0.741	0.09	0.086	0.044
SSET3	0.645	0.038	0.087	-0.061
SSET4	0.665	0.165	0.087	-0.145
SSET5	0.842	0.118	0.167	-0.067
SSET6	0.783	0.028	0.122	-0.098
SSET7	0.84	0.074	0.099	0
SSET8	0.786	0.08	0.098	-0.081
SSET9	0.818	0.058	0.18	-0.029
SSET10	0.819	0.141	0.128	-0.103
SSET11	0.855	0.102	0.082	-0.037

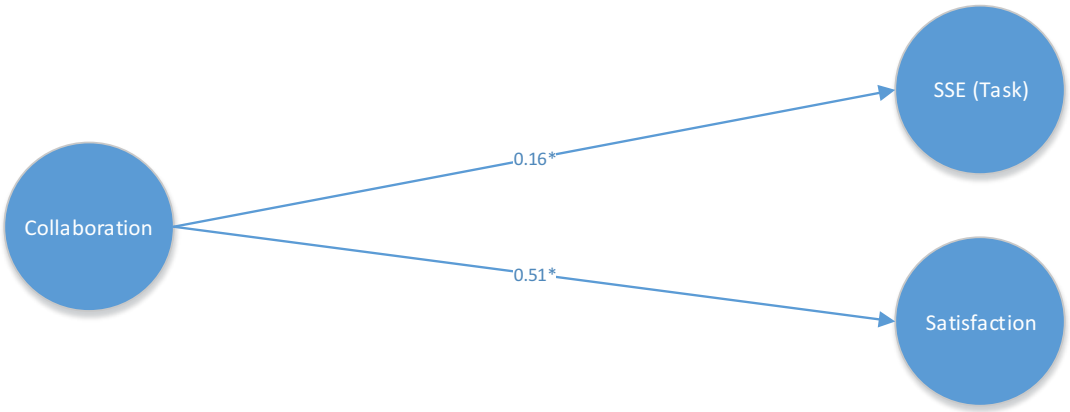
An in-depth review of the feedback based on the instrument, and literature provided insight into the lack of convergence of the two items. Both, as defined, are structures in the form of artifacts, i.e. in a learning context, these are overarching rules imposed on the group by the designer while the other structures are developed by the group themselves. Similarly, in a decision making situation, these structures would be defined by the goals and the mechanism in which appraisal is done. Thus, it is incorrect to include these in the instrument. Overall, however, it can be concluded that sufficient discriminant and convergent validity were achieved. The two items in question were dropped from further analysis. N future studies should continue to include them since non-learning context might not have imposed rules to the extent that this study did.

NOMOLOGICAL VALIDITY

Nomological validity addresses the concern regarding the construct making sense in a larger theoretical framework. If newly measured constructs "behave" in expected ways in an accepted theoretical framework, it increases our confidence in the new measure.

As mentioned earlier, the data set presented here was based on an technology training context & e-learning context. The core hypothesis, drawn from concepts of paired program and collaborative learning, was that the greater the levels of collaboration in a team, the greater the learning outcomes as measured by self-efficacy and satisfaction. The general research model is shown in Figure 1.

Figure 1. Research Model (* P<0.10)



A Structural Equation Model (SEM) based on the above constructs, and paths were done using LISREL. Based on the cutoff values in previous research (Hu & Bentler, 1999; Tanaka, 1993; Vandenberg, 2002), the model showed good fit (NFI > 0.93, CFI > 0.94, RMSEA < 0.065).

Figure 1 also shows the path coefficients, which are significant at P<0.10 level. It implies that changes in the extent of collaboration were found to have a significant effect on satisfaction and specific self-efficacy. Thus, the measures also 'behave' as expected in a greater theoretical setting, providing good nomological validity.

In summary, the instrument developed in this study has been shown to be theoretically grounded. It faithfully represents the underlying theory, and the process of dimensionality assures that the right concept is measured. Empirical study confirmed that what is measured is statistically valid and reliable. The next two sections discuss the limitations of the study, followed by implications and conclusions. The last section also contains a discussion on future research using this instrument and study.

LIMITATIONS

The limitations of the study arise from the context and method of the study. While the development of the collaboration instrument is well conceptualized, the actual instrument is studied in an technology training context. This choice of the context helps in explaining results of previous technology training studies; however, other contexts need to be evaluated. Furthermore, the measurement of the collaboration scale is done with face-to-face groups. Although the scale can be extended to virtual teams, and it should be studied in that context.

The data used for the study was collected using a laboratory quasi-experiment. Thus, it suffers from the generalizability associated with a laboratory experiment. However, since the focus here was on development of a new instrument, the focus was on internal validity instead of external. Secondly, the students were used as a proxy for general business personnel. This is consistent with prior studies as well as with studies that have shown that business students are indeed a good approximation of organization employees (Santhanam, Sasidharan, & Webster, 2008). The third limitation of the study stems from using dyads for collaboration. While dyads have been shown to provide the greatest impact on outcomes in a learning environment, they can be considered as a special class of groups because certain patterns of interaction are dictated by the size of the group. However, while the study results might not be generalizable across larger groups, the instrument itself should be group size neutral. Instead, it could actually be used to see how the collaborative process differs across groups of different sizes.

IMPLICATIONS AND CONCLUSION

The development of a collaboration has implications across a number of different disciplines like management, computer supported collaborative learning, group decision support systems (including research on wikis), project management, human resources and computer science (peer programming). Each of these areas uses teams, and has found a positive effect of using teams, but with high variability in outcomes.

The development of a well validated instrument itself has a lot of benefits. Researchers suggest that using validated instruments in repeated studies allows for great generalizability and comparability (Boudreau et al., 2001). The instrument presented and validated in this research now offers a clear way of measuring the collaborative process, opening the black box in a theoretically grounded manner. This helps researchers to more accurately predict performance.

Theoretically, development of a collaboration instrument also enriches the discipline by going beyond the input-output framework, to an input-process-output framework. The development of the instrument itself is grounded in Adaptive Structuration theory as well as other literature, providing future researchers clear and well defined dimensions on which the instrument is based. This allows researchers to tweak the instrument depending on the context.

The study also enriches AST literature by expanding its tenants beyond advanced information technology. Information systems has generally been viewed as a discipline that borrows theories rather than contributing theories. However, the application of AST to a broader context suggests

that information systems disciplines can borrow a theory (Structuration theory), refine it, and contribute it back to the larger discipline.

More specifically, in the context of the study used to develop the instrument, the results explain the disparity between studies using collaboration. For example, this study explains the variance between education and technology training results in collaborative learning as well as the variance in education studies. Education literature has consistently argued and found a positive impact of teams in learning, but technology training literature within information systems has not been consistent. According to this study, this can be explained by the lack of focus on the development of structural dimension in technology training studies. The variation in education literature can also be explained similarly i.e. the variance in extant literature can be explained by the possible variance in the levels of collaboration dimensions. Similar studies need to be done using this instrument to explain variance in the literature between GDSS / virtual teams.

The study also has important practitioner implications. The collaboration instrument not only outlines the important dimensions of collaboration, but also provides examples of structural features that can enhance these dimensions. Given that the paper outlines the key structural dimensions that go into making a good collaborative process, practitioners can focus on the structural features to externally scaffold the context/domain, to achieve high collaboration and consequently, outcome.

For example, the context of study used for data collection implies that practitioners and developers of e-learning suites can enhance learner self-efficacy and satisfaction using collaboration. Practitioners can also figure out more structural features that can directly contribute to the structural dimensions that contribute to collaboration. The structural features outlined in this paper provide some initial examples. Future developers can also work on how the structural features mentioned earlier can be built directly into the information technology system, whether collaborating with a real or virtual person. An early example of this work can be found in English tutoring (http://callmom.pandorabots.com/static/callmom/tutor.html).

This research opens up multiple opportunities for future research. Future research needs to focus on early development team structures through mechanisms outlined earlier. Another important area for future research is a micro level analysis of the possible self-feeding aspect or reciprocal causation phenomenon regarding collaboration. Such an analysis would focus on the embedded and emergent structures. Such a study would provide a significant contribution to the long term understanding of collaboration.

In conclusion, this research also opens up the black box of the collaborative process not studied by earlier researchers. The findings presented in this paper confirm that appropriation of collaboration structural dimensions play an important role in determining the learning outcomes. The instrument outlined needs to be evaluated in more contexts for it to become more generalizable. Additionally, an important implication of this is that future researchers need to account for the level of appropriation in their studies.

REFERENCES

Ali-Hassan, H., Nevo, D., & Nevo, S. (2010). Mobile collaboration: exploring the role of social capital. *SIGMIS Database, 41*(2), 9-24. doi:10.1145/1795377.1795379

Arthur, W., Bennett, W., Edens, P. S., & Bell, S. T. (2003). Effectiveness of Training in Organizations: A Meta-Analysis of Design and Evaluation Features. *Journal of applied Psychology, 88*(2), 234-245.

Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing Construct Validity in Organizational Research. *Administrative Science Quarterly, 36*(3), 421-458.

Baumer, E. P. S., Sueyoshi, M., & Tomlinson, B. (2011). Bloggers and Readers Blogging Together: Collaborative Co-creation of Political Blogs. *Computer Supported Cooperative Work (CSCW), 20*(1), 1-36. doi:10.1007/s10606-010-9132-9

Beal, D. J., Cohen, R. R., Burke, M. J., & McLendon, C. L. (2003). Cohesion and Performance in Groups: A Meta-Analytic Clarification of Construct Relations. *Journal of applied Psychology, 88*(6), 989-1004. doi:10.1037/0021-9010.88.6.989

Beise, C., Carte, T. A., Vician, C., & Chidambaram, L. (2010). A case study of project management practices in virtual settings: lessons from working in and managing virtual teams. *SIGMIS Database, 41*(4), 75-97. doi:10.1145/1899639.1899644

Bettenhausen, K. (1991). Five Years of Groups Research: What We Have Learned and What Needs to Be Addressed. *Journal of Management, 17*(2), 345-381.

Bostrom, R., Gupta, S., & Thomas, D. (2009). A Meta-Theory for Understanding Systems within Socio-Technical Systems. *Journal of Management Information Systems, 26*(1), 17-47.

Boudreau, M.-C., Gefen, D., & Straub, D. W. (2001). Validation in Information Systems Research: A State of the Art Assessment. *MIS Quarterly, 25*(1), 1-16.

Bryans, P., & Smith, R. (2000). Beyond training: reconceptualising learning at work. *The Journal of Workplace Learning, Vol. 12*(6), pp. 228-235.

Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment*. Beverly Hills, CA: Sage Publications.

Chi, M. T. H., Leeuw, N. D., Chiu, M.-H., & Lavancher, C. (1994). Eliciting self-explanations improves understanding. *Cognitive Science, 18*(3), 439-477.

Chidambaram, L., & Bostrom, R. P. (1997). Group development(II): Implications for GSS research and practice. *Group Decision and Negotiation, 6*(3), 231-254.

Chidambaram, L., & Tung, L. L. (2005). Is out of sight, out of mind? An empirical study of social loafing in technology-supported groups. *Information Systems Research, 16*(2), 149-168.

Chin, W., W., Gopal, A., & Salisbury, W. D. (1997). Advancing the theory of adaptive structuration: The development of a scale to measure faithfulness of appropriation. *Information Systems Research, 8*(4), 342-397.

Davis, F. D., & Yi, M. Y. (2004). Improving Computer Skill Training: Behavior Modeling, Symbolic Mental Rehearsal, and the Role of Knowledge Structures. *Journal of applied Psychology, 89*(3), 509-523.

Denning, P. J., & Yaholkovsky, P. (2008). Getting to "we". *Communications of ACM, 51*(4), 19-24. doi:10.1145/1330311.1330316

Dennis, A. R., Haley, B. J., & Vandenberg, R. J. (2001). Understanding fit and appropriation effects in group support systems via meta-analysis. *MIS Quarterly, 25*(2), 167-193.

DeSanctis, G., & Jackson, B. M. (1994). Coordination of Information Technology Management: Team-based Structures and Computer-based Communication Systems. *Journal of Management Information Systems, 10*(4), 85-110.

Desiraju, R., & Gopinath, C. (2001). Encouraging Participation in Case Discussions: A Comparison of the MICA and the Harvard Case Methods. *Journal of Management Education, 25*(4), 394-408.

Dossett, D. L., & Hulvershorn, P. (1983). Increasing technical training efficiency: Peer training via computer assisted instruction. *Journal of applied Psychology, 68*, 552-558.

Fjermestad, J., & Hiltz, S. R. (1998). An Assessment of group support systems experimental research: Methodology and results. *Journal of Management Information Systems, 15*(3), 7-149.

Forman, E. A., & Cazden, C. B. (1985). Exploring Vygotskian perspectives in education: the cognitive value of peer interaction. In J. V. Wertsch (Ed.), *Culture communication, and cognition : Vygotskian perspectives*. Cambridge Cambridgeshire ; New York: Cambridge University Press.

Franklin, J. L., Wissler, A. L., & Spencer, G. J. (1976). *Survey-guided development : a manual for concepts training*. Ann Arbor, MI: University of Michigan.

Garrison, G., Wakefield, R. L., Xu, X., & `Kim, S. H. (2010). Globally distributed teams: the effect of diversity on trust, cohesion and individual performance. *SIGMIS Database, 41*(3), 27-48. doi:10.1145/1851175.1851178

Goodhue, D. L. (1998). Development and measurement validity of task-technology fit instrument for user evaluations of information systems. *Decision Sciences, 29*(1), 105-138.

Gray, B. (1989). *Collaborating : finding common ground for multiparty problems* (1st ed.). San Francisco: Jossey-Bass.

Green, G. I., & Hughes, C. T. (1986). Effects of Decision Support Training and Cognitive Style on Decision Process Attributes. *Journal of Management Information Systems, 3*(2), 83-93.

Gully, S. M., Devine, D. J., & Whitney, D. J. (2012). A Meta-Analysis of Cohesion and Performance: Effects of Level of Analysis and Task Interdependence. *Small Group Research, 43*(6), 702-725. doi:10.1177/1046496412468069

Gupta, S. (2008). *New Approaches to End-User TrainingTechnology training*: VDM Verlag Dr. Mueller e.K.

Gupta, S., & Bostrom, R. P. (2013). An Investigation of the Appropriation of Technology-Mediated Training Methods Incorporating Enactive and Collaborative Learning. *Information Systems Research, 24*(2), 454-469.

Gupta, S., Bostrom, R. P., & Huber, M. (2010). End-user trainingTechnology training methods: What we know, Need to know. *SIGMIS Database for Advances in Information Systems, 41*(4), 9-39. doi:10.1145/1899639.1899641

Helquist, J. H., Deokar, A., Meservy, T., & Kruse, J. (2011). Dynamic collaboration: participant-driven agile processes for complex tasks. *SIGMIS Database, 42*(2), 95-115. doi:10.1145/1989098.1989104

Hess, T., Fuller, M., & Mathew, J. (2006). Involvement and Decision-Making Performance with a Decision Aid: The Influence of Social Multimedia, Gender, and Playfulness. *Journal of Management Information Systems, 22*(3), 15-54.

Hiltz, S. R., Fjermestad, J., Ocker, R., & Twoff, M. (2006). Asynchronous Virtual Teams: Can Software Tools and Structuring of Social Processes Enhance Performance? In D. Galletta & P. Zhang (Eds.), *Human-Computer Interaction and Management Information Systems - Applications.* Armonk, NY: M. E. Sharpe.

Hollenbeck, J. R., & Brief, A. P. (1987). The effects of individual differences and goal origin on goal setting and performance. *Organizational Behavior and Human Decision Processes, 40*(3), 392-414.

Hu, L.-t., & Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. *Structural Equation Modeling, 6*(1), 1-55.

Huang, W. W., Wei, K.-K., Watson, R. T., & Tan, B. C. (2003). Supporting virtual team-building with a GSS: an empirical investigation. *Decision Support Systems, 34*(4), 359-367.

Iverson, R., & Roy, P. (1994). A Causal Model of Behavioral Commitment: Evidence From a Study of Australian Blue-collar Employees. *Journal of Management, 20*(1), 15-41.

Johnson, D. W. (1981). Student-student interaction: The neglected variable in education. *Educational Research, 10*(1), 5-10.

Johnson, D. W., & Johnson, F. P. (2003). *Joining together : group theory and group skills* (8th ed.). Boston: Allyn and Bacon.

Johnson, D. W., & Johnson, R. T. (1975). *Learning together and alone : cooperation, competition, and individualization*. Englewood Cliffs, N.J.: Prentice-Hall.

Johnson, D. W., & Johnson, R. T. (1999). Making Cooperative Learning Work. *Theory into Practice, 38*(2), 67-74.

Johnson, D. W., Maruyama, G., Johnson, R. T., Nelson, D., & Skon, N. L. (1981). Effects of Cooperative, Competitive, and Individualistic Goal Structures on Achievement: A Meta-Analysis. *Psychological Bulletin, 89*(1), 47-62.

Jokela, P. (2003). *Peer-to-Peer Learning - an Ultimate Form of e-Learning.* Paper presented at the World Conference on E-Learning in Corp., Govt., Health., & Higher Ed., Chesapeake, VA.

Kinzie, M. B., & Delcourt, M. A. (1991). Computer technologies in teacher education: The measurement of attitudes and self-efficacy.

Langfred, C. (1998). Is Group Cohesiveness a Double-Edged Sword? An Investigation of the Effects of Cohesiveness on Performace. *Small Group Research, 29*(1), 124-143.

Limayem, M., Banerjee, P., & Ma, L. (2006). Impact of GDSS: Opening the black box. *Decision Support Systems, 42*(2), 945-957.

Lou, Y., Abrami, P. C., Spence, J. C., Poulsen, C., Chanbers, B., & d'Apollonia, S. (1996). Within-class grouping: A meta-analysis. *Review of Educational Research, 66*(4), 423-458.

Mortensen, M., & Hinds, P. J. (2001). Conflict and shared identity in geographically distributed teams. *International Journal of Conflict Management, 12*(3), 212-238.

Nunnally, J. C., Durham, R. L., Struening, E. L., & Guttentag, M. (1975). Validity, reliability, and special problems of measurement in evaluation research *Handbook of evaluation research*. Beverly Hills: Sage Publications.

O'Connor, K. M., Gruenfeld, D. H., & McGrath, J. E. (1993). The experience and effects of conflict in continuing work groups. *Small Group Research, 24*(3), 362-382.

Okada, T., & Simon, H. A. (1997). Collaborative discovery in a scientific domain. *Cognitive Science, 21*(2), 109-146.

Piccoli, G., Powell, A., & Ives, B. (2004). Virtual teams: team control structure, work processes, and team effectiveness. *Information Technology & People, 17*(4), 359 - 379.

Pinsonneault, A., & Caya, O. (2005). Virtual Teams: What We Know, What We Don't Know. *International Journal of e-Collaboration, 1*(3), 1-16.

Poole, M. S., & DeSanctis, G. (1992). Microlevel structuration in computer-supported group decision making. *Human Communication Research, 19*(1), 5-49.

Purohit, H., Hampton, A., Bhatt, S., Shalin, V. L., Sheth, A. P., & Flach, J. M. (2014). Identifying Seekers and Suppliers in Social Media Communities to Support Crisis Coordination. *Computer Supported Cooperative Work (CSCW), 23*(4), 513-545. doi:10.1007/s10606-014-9209-y

Rohrbeck, C. A., Ginsburg-Block, M. D., Fantuzzo, J. W., & Miller, T. R. (2003). Peer-Assisted Learning Interventions With Elementary School Students: A Meta-Analytic Review. *Journal of Educational Psychology, 95*(2), 240-257.

Salisbury, W. D., Chin, W., W., Gopal, A., & Newsted, P. R. (2002). Research Report: Better Theory Through Measurement--Developing a Scale to Capture Consensus on Appropriation. *Information Systems Research, 13*(1), 91--103.

Santhanam, R., Sasidharan, S., & Webster, J. (2008). Using Self-Regulatory Learning to Enhance E-learning-based Information Technology Training. *Information Systems Research, 19*(1), 26-47.

Shaw, J., Duffy, M., & Stark, E. (2000). Interdependence and Preference for Group Work: Main and Congruence Effects on the Satisfaction and Performance of Group Members. *Journal of Management, 26*(2), 259-279.

Silver, M. S. (1991). *Systems that support decision makers : description and analysis*. Chichester; New York: Wiley.

Springer, L., Stanne, M. E., & Donovan, S. S. (1999). Effects of Small-Group Learning on Undergraduates in Science, Mathematics, Engineering, and Technology: A Meta-Analysis. *Review of Educational Research, 69*(1), 21-51.

Straub, D. W. (1989). Validating Instruments in MIS Research. *MIS Quarterly, 13*(2), 147-165.

Tait, M., & Billinghurst, M. (2015). The Effect of View Independence in a Collaborative AR System. *Computer Supported Cooperative Work (CSCW), 24*(6), 563-589.

Tanaka, J. S. (1993). Multifaceted conceptions of fit in structural equation models. In K. A. Bollen & J. S. Long (Eds.), *Testing Structural Equation Models* (pp. 10-39). Newbury Park, CA: Sage.

Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*: American Psychological Association.

Utåo, S. (2005). *Constructics : a methodology of theory construction*. Lanham, Md.: University Press of America.

Valacich, J. S., Wheeler, B. C., Mennecke, B. E., & Wachter, R. (1995). The effects of numerical and logical group size on computer-mediated idea generation. *Organizational Behavior and Human Decision Processes, 62*(3), 318-329.

Vandenberg, R. J. (2002). Toward a further understanding of and improvement in measurement invariance methods and procedures. *Organizational Research Methods, 5*(2), 139-158.

Vygotskiæi, L. S., & Cole, M. (1978). *Mind in society : the development of higher psychological processes*. Cambridge: Harvard University Press.

Vygotskiæi, L. S., & Hanfmann, E. (1962). *Thought and language*. Cambridge,: M.I.T. Press Massachusetts Institute of Technology.

Watson, H. J. (2007). *The Efficacy of the "Little t" Theories.* Paper presented at the Hawaii International Conference on System Sciences, Hawaii.

Webb, N. M. (1982). Peer interaction and learning in cooperative small groups. *Journal of Educational Psychology, 74*, 642-655.

Wood, D. J., & Gray, B. (1991). Toward a comprehensive theory of collaboration. *Journal of Applied Behavioral Science, 27*(2), 139-162.

Yoo, Y., & Alavi, M. (2001). Media and Group Cohesion: Relative Influences on Social Presence, Task Participation, and Group Consensus. *MIS Quarterly, 25*(3), 371-390.

Appendix A: Scales Used

Table 1. Items for measuring Satisfaction from Process Reliability in (Chin et al., 1997)= 0.82, (Green & Hughes, 1986) = 0.88

How would you describe your learning process on the scale below? The two ends of the scale represents the two ends of a continuum.		
Question	Agreement Scale	
Efficient	1(Strongly Agree) – 7(Strongly Disagree)	Inefficient
Coordinated	1(Strongly Agree) – 7(Strongly Disagree)	Uncoordinated
Fair	1(Strongly Agree) – 7(Strongly Disagree)	Unfair
Confusing	1(Strongly Agree) – 7(Strongly Disagree)	Understandable
Satisfying	1(Strongly Agree) – 7(Strongly Disagree)	dissatisfying

Table 2. Items for measuring self-efficacy (Reliability in (Hollenbeck & Brief, 1987) = 0.89)

The following questions ask you to rate your CURRENT ability regarding using Excel. Please rate your level of agreement with the following statements		
Code	Questions	Agreement Scale
SE1	I have mastered Excel use	1(Strongly agree) – 7(Strongly disagree)
SE2	I cannot yet use Excel as well as I would like	1(Strongly agree) – 7(Strongly disagree)
SE3	I am able to perform tasks using Excel well	1(Strongly agree) – 7(Strongly disagree)
SE4	It is not yet possible for me to use Excel at the level I like	1(Strongly agree) – 7(Strongly disagree)

Appendix B: Population demographics

Table 1. Population Demographics

Sample size	120
CGPA	3.33
Gender (%)	
Girls	51.7
Boys	48.3
Major (%)	
Accounting	11.67
Economics	0.83
Finance	16.67
Int' Business	7.50
Management	8.33
MIS	1.67
Marketing	21.67
Real Estate	6.67
Risk Management	2.50
Other	22.50

INVESTIGATING FACTORS INFLUENCING ADOPTION OF MOBILE PAYMENT

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ABSTRACT

In recent years, mobile payment has emerged as a new payment method transcending both the temporal and spatial constraints. However, the adoption of mobile payment has been slow. Mobile payment refers to the use of mobile devices to initiate, authorize, and confirm payment transactions (Au & Kauffman, 2008). Drawing on the traditional technology adoption theories and more recent research on mobile payment adoption, this paper develops a research model to explore important factors underlying users' intention to adopt mobile payment. The model focuses on the effects of perceptions of mobile payment characteristics (perceived relative advantages, perceived effort expectancy, perceived compatibility, and perceived risks of mobile payment), characteristics of mobile payment use context (time criticality and spatial criticality of access to payment service), subjective norm concerning mobile payment usage, and individual characteristic of potential users (individual mobility). An online survey study was conducted to test the research model and its associated hypotheses. The survey results suggest that the individual mobility of potential users, the perceived compatibility and risks of mobile payment, and the characteristics of mobile payment use context are significant predictors of the intention to adopt mobile payment.

Keywords: mobile payment adoption, perceived characteristics of mobile payment, characteristics of use contexts, individual mobility

INTRODUCTION

In recent years, mobile payment has emerged as a potential new payment method transcending both the temporal and spatial constraints. The mobile technology innovations allow consumers to make payments via mobile devices at anytime and from anywhere without the limitations of time and space. Mobile payment is defined as the use of mobile devices to initiate, authorize, and confirm payment transactions (Au & Kauffman, 2008). Mobile payment is a key component of but not limited to the practice of mobile commerce. It not only can be used for remote payment transactions such as e-commerce, but it can also be used for proximity payment applications such as payment at point of sales (e.g., vending machine, ticketing kiosks, etc.) (Chandra, Srivastava, & Theng, 2010). Despite the ubiquity of mobile devices and the potential benefits of mobile payment technology, the adoption of mobile payment has been slow (Chandra et al., 2010). The adoption rate of mobile payment has emphasized the need for more substantive research to provide a better understanding of user acceptance and adoption of mobile payment. The focus of this paper is to examine user adoption of mobile payment by identifying important issues and determinants of mobile payment adoption.

Mobile Payment

Mobile payment is a small piece of a much bigger puzzle. It has been defined as "that type of payment transaction processing in the course of which - within an electronic procedure - (at least) the payer employs mobile communication techniques in conjunction with mobile devices for initiation, authorization or realization of payment" (Pousttchi, 2003). Once the payment is initiated, several payment procedures are then identical regardless of how the payment was started. However, the beginning and end of the transaction is through a mobile device. This change has created several opportunities for businesses because it opens the door for mobile commerce, which involves the completing a sale via a wireless device without time or space limitations (Au & Kauffman, 2008; Mallat, 2007). However, just because the technology exists does not mean that users will automatically adopt the new models.

Mobile Payment Environment

A significant portion of the mobile devices market is the smart phone. Smart phones accounted for over 50% of the mobile phone market in 2012 and over 64% in 2015 (Scott, 2012; Smith, 2015). While the growth in the use of smart phones (opposed to tablets and other devices) may not be fully responsible for the volume of mobile payment functions, the adoption rate of smart phones should be recognized as the strong contributor influencing mobile payment growth. Consumers are adapting to smart phone uses, but the focus seems to be centered on other applications opposed to the activity of mobile payment. As highlighted in the digital consumer report smart phone users access their social media sites over 45% each day, 44% shop and browse product purchases (mobile shopping less mobile payment), and 66% surfing for various information (U.S. Digital Consumer Report, 2014). Supporting the modest rate of user adoption of mobile payment is the 2015 survey report that reported 75% of respondents found using cash or card for transactions easier, with 59% stated that they saw no benefit to using mobile payment (Stewart, 2015). Reardon (2012) from CNET suggested that the infrastructure of mobile payments today "seemed more like a novelty than a necessity". In contrast the availability of mobile payment has exploded since the introduction of Apply Pay in the fall of 2014, yet Apple Pay had reported only 13% usage and a projection of an addition 11% for 2015. (Electronic Verification Systems, 2015; Borison, 2015). Potential users of mobile payment may well be conflicted by the benefits of speed and convenience against security and privacy issues associated with mobile payment.

LITERATURE REVIEW AND THEORETICAL BACKGROUND

In the IS research field, a number of theories and research models have been developed or applied to predict and explain acceptance and adoption of information technology innovations. The most prominent theories include the Diffusion of Innovations Theory (DIT) (Rogers, 1995), Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Technology Acceptance Model (TAM) (Davis, 1989), and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003).

DIT postulates five characteristics of innovation as important determinants of innovation diffusion (Rogers, 1995). These are identified as relative advantage, compatibility, complexity, trialability, and observability. Relative advantage is the degree to which an innovation is perceived to be better

than other alternatives (Rogers, 1995). Complexity refers to the degree to which an innovation is perceived as being complex and difficult to use or understand (Rogers, 1995). Compatibility is the degree to which an innovation is perceived as compatible with the existing practices, values, and experiences of potential users (Rogers, 1995). Trialability is the degree to which an innovation can be tried on a limited basis before adoption (Rogers, 1995). Observability refers to the degree to which an innovation provides observable results to potential users (Rogers, 1995). The innovation characteristics of complexity, relative advantage and compatibility have been consistently supported to be significant predictors of information technology adoption behavior (Moore & Benbasat, 1991; Tornatzky & Klein, 1982).

TRA is a general theory that attempts to explain any human behavior from the perspective of social psychology. TRA suggests that a person's certain behavior is determined by his/her behavioral intention to perform the behavior, which in turn is jointly determined by the person's attitude and subjective norm concerning the behavior (Fishbein & Ajzen, 1975). One limitation of TRA is its inadequacy in predicting intentions and behaviors (Armitage & Conner, 2001; Sheeran & Orbell, 1998; Sheeran & Taylor, 1999; Werner, 2004). A set of meta-analyses found that TRA could explain only 33%-50% of the variance in intentions and 19%-38% of the variance in behaviors (Ajzen, 1991; Armitage & Conner, 2001; Sheeran & Orbell, 1998; Sheeran & Taylor, 1999). A number of researchers have identified additional variables (e.g., past behavior and habits, self-identity, affect, anticipated regret, social relations, and etc.) that could increase the predictive ability of TRA (Conner & Armitage, 1998; Landridge, Sheeran, & Connolly, 2007; Rhodes & Courneya, 2003; Sheeran & Orbell, 1998).

TAM builds on and extends TRA to explain user's adoption behavior of information technology (Davis, 1989). According to TAM, a user's intention to adopt a technology is determined by two salient beliefs about the technology – perceived usefulness and perceived ease of use (Davis, 1989). Perceived usefulness is the extent to which a user believes that using the technology will improve his/her job performance, and perceived ease of use refers to the extent to which a user believes that using the technology will be free of effort (Davis, 1989). Both perceived usefulness and perceived ease of use have been found to directly influence technology adoption intention (Davis, 1989).

UTAUT extends TAM by proposing four factors – performance expectancy, effort expectancy, social influence, and facilitating conditions – as determinants of technology adoption intention and behavior (Venkatesh et al., 2003). In addition, a set of moderating factors (i.e. gender, age, experience, and voluntariness of use) are posited to moderate the influences of the four key factors on adoption intention and behavior (Venkatesh et al., 2003). Similar to TAM's perceived usefulness, performance expectancy is the degree to which a person believes that using the technology will help him/her to enhance job performance (Venkatesh et al., 2003). Effort expectancy, like perceived ease of use in TAM, refers to the degree of ease related to the use of the technology (Venkatesh et al., 2003).

A number of studies have utilized DIT, TRA, TAM, and UTAUT to explore the factors influencing user adoption of mobile payment (Chandra et al., 2010; Kim, Mirusmonov, & Lee, 2010; Mallat, Rossi, Tuunainen, & Öörni, 2009; Schierz, Schilke, & Wirtz, 2010; Yang, Lu, Gupta, Cao, & Zhang, 2012). Besides the existing factors in DIT, TRA, TAM, and UTAUT, these studies have enhanced our understanding of mobile payment adoption intention and behavior by identifying

additional factors specifically pertaining to mobile payment technology, including perceptions of mobile payment characteristics (e.g., perceived mobility, reachability, convenience, costs, risks, security, structural assurance, and network externalities), individual characteristics of potential users (e.g., individual innovativeness, individual mobility, and individual knowledge about mobile payment), perceived characteristics of mobile payment providers (e.g., perceived reputation and perceived opportunism of technology providers), and use contexts of mobile payment (e.g., lack of cash or no service personnel in a service location) (Chandra et al., 2010; Kim et al., 2010; Mallat et al., 2009; Schierz et al., 2010; Slade, Williams, & Dwivedi, 2013; Yang et al., 2012). These studies provide a set of potentially relevant factors influencing user adoption of mobile payment. However, there is a lack of understanding of the relative importance and interactions of different factors in predicting mobile payment adoption (Schierz et al., 2010). More empirical research is required to provide a deeper understanding of the dynamics of mobile payment adoption.

RESEARCH MODEL AND HYPOTHESES

Drawing on the traditional technology acceptance and adoption theories and more recent research on mobile payment adoption, this paper develops a research model of key factors influencing user intention to adopt mobile payment (Figure 1). This model focuses on the effects of perceptions of mobile payment characteristics (perceived relative advantages, perceived effort expectancy, perceived compatibility, and perceived risks of mobile payment), characteristics of mobile payment use context (time criticality and spatial criticality of access to payment service), subjective norm concerning mobile payment usage, and individual characteristic of potential users (individual mobility).

Prior research suggests the perceived characteristics of technology innovation play a significant role in technology adoption and diffusion (Davis, 1989; Fishbein & Ajzen, 1975; Rogers, 1995; Venkatesh et al., 2003). The perception of relative advantages offered by a new technology has been found to determine the technology adoption (Rogers, 1995; Venkatesh et al., 2003). In order for a new technology to be widely adopted, the technology has to be perceived to offer advantages relative to the existing comparable technologies it intends to replace. This is especially true for mobile payment, whose success largely depends on its additional benefits and values compared with traditional payment methods, such as ubiquitous access to payment service without time and spatial limitations, timely payment, convenience, and queue avoidance (Mallat et al., 2009). Therefore, the following hypothesis is proposed.

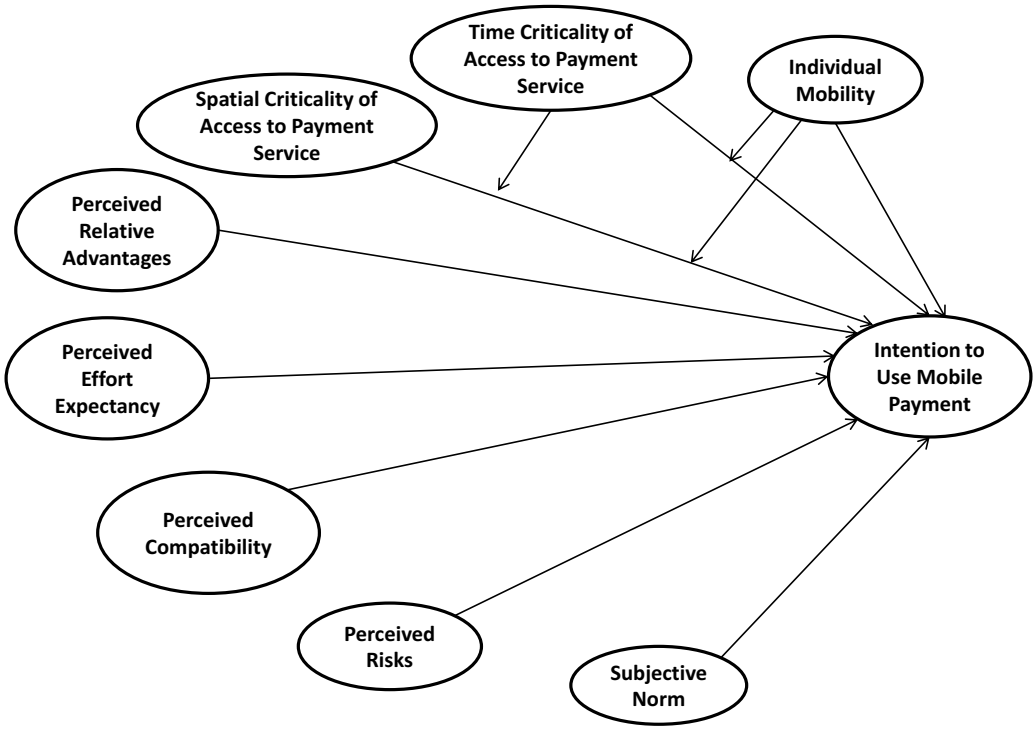
> *Hypothesis 1: Perceived relative advantages of mobile payment will have a positive effect on the intention to use mobile payment.*

Another important determinant of new technology adoption is perceived effort expectancy of technology, which refers to the amount of effort required in using the technology (Venkatesh et al., 2003). It reflects the degree of ease associated with the use of the technology (Venkatesh et al., 2003) and embodies the concepts of perceived ease of use in TAM (Davis, 1989) and perceived complexity in DIT (Rogers, 1995). Perceived effort expectancy is especially critical during the initial stage of mobile payment adoption, when the complexity of initial setup and difficult-to-use small displays and keypads may significantly increase the perception of required effort and diminish the intention to use mobile payment. It is reasonable to expect that the higher the effort

required in using mobile payment, the lower the intention to adopt mobile payment; and vice versa. Thus a second hypothesis is proposed.

> *Hypothesis 2: Perceived effort expectancy of mobile payment will have a negative effect on the intention to use mobile payment.*

Figure 1. Research Model of Key Factors Influencing User Intention to Adopt Mobile Payment



The perceived compatibility of a new technology has also been established as a significant factor influencing the intention to adopt the technology (Karahanna, Agarwal, & Angst, 2006; Rogers, 1995). The perceived compatibility focuses on the fit between a new technology and users' existing practices, values and experiences. In the case of mobile payment, whether it is congruent with users' payment habits and preferences determines the likelihood of its being adopted and integrated into users' daily lives (Kim et al., 2010; Mallat et al., 2009; Yang et al., 2012). This suggests the following hypothesis.

> *Hypothesis 3: Perceived compatibility of mobile payment will have a positive effect on the intention to use mobile payment.*

Due to the potential financial loss associated making a mobile payment, researchers have also recognized the perceived risks of mobile payment as a critical factor inhibiting mobile payment adoption (Mallat et al., 2009; Schierz et al., 2010; Yang et al., 2012). The perceived risks stem from users' concerns on network security, data confidentiality, transaction errors, and service reliability of mobile payment. Therefore, the following hypothesis is suggested.

Hypothesis 4: Perceived risks of mobile payment will have a negative effect on the intention to use mobile payment.

In addition to the perceptions of technology characteristics, social influence also plays an important role in determining technology adoption (Fishbein & Ajzen, 1975; Venkatesh et al., 2003). As the most important construct of social influence in the traditional technology adoption theories, subjective norm refers to user's perception that other people who are important to him/her think he/she should use the technology (Fishbein & Ajzen, 1975; Venkatesh et al., 2003). The effect of subjective norm is especially important during the early stage of new technology adoption when most users lack enough information or knowledge of the technology (Venkatesh et al., 2003). The important role of subjective norm has also been supported in the studies of mobile payment adoption (Schierz et al., 2010; Yang et al., 2012). This suggests the following hypothesis.

Hypothesis 5: The subjective norm concerning mobile payment usage will have a positive effect on the intention to use mobile payment.

More recent research on mobile services in general and mobile payment in specific has highlighted the significance of use context in determining the adoption intention and behavior (Heinonen & Pura, 2006; Mallat et al., 2009; Mallat, 2007; Van der Hejden, 2005). It has been found that users tend to use mobile payment only in certain use situations, such as presence of queues, time pressure, and lack of other payment alternatives (Mallat, 2007). Mobile payment seems to be most preferred in situations where time and/or location are critical for access to payment service (Heinonen & Pura, 2006). By providing ubiquitous access to payment service independent of time and location, mobile payment is considered especially valuable in urgent situations where payments must be made at a specific time and/or a specific location on the move (Heinonen & Pura, 2006). Therefore, it is reasonable to expect that high time or spatial criticality of access to payment service will increase the intention to use mobile payment. In addition, in the situations with high time criticality where the access to payment service is urgently needed, individuals are likely to use mobile payment instantly regardless of location, no matter whether location is critical for the access to payment service. Thus, the positive effect of the spatial criticality of access to payment service on the adoption intention will become weaker when the access to payment service is highly time-critical. So, the time criticality of access to payment service negatively moderates the effect of the spatial criticality of access to payment service on the intention to use mobile payment. Thus, the following three hypotheses are proposed.

Hypothesis 6: The spatial criticality of access to payment service will have a positive effect on the intention to use mobile payment.

Hypothesis 7: The time criticality of access to payment service will have a positive effect on the intention to use mobile payment.

Hypothesis 8: The increased time criticality of access to payment service will weaken the effect of the spatial criticality of access to payment service on the intention to use mobile payment.

The individual characteristics of technology users, such as individual experience, knowledge, training, and etc., have also been found to significantly influence the intention to adopt technology (Kim et al., 2010; Rogers, 1995; Venkatesh et al., 2003; Yang et al., 2012). Individual mobility is the degree to which an individual leads a mobile lifestyle (Schierz et al., 2010) and reflects the individual's past behavior and habit with regard to the usage of mobile applications. Since past behavior has been identified as a useful variable that could predict current or future behavior (Conner & Armitage, 1998; Rhodes & Courneya, 2003), individual mobility may determine the individual's current or future adoption behavior of mobile payment (Schierz et al., 2010). Prior research has provided empirical evidence that individual mobility positively influences mobile payment adoption (Schierz et al., 2010). Individuals with high mobility heavily rely on innovative mobile applications that provide them with the freedom and flexibility to connect and interact anytime, anywhere. Their prior experience with mobile applications is expected to facilitate mobile payment adoption (Venkatesh et al., 2003). People who already use some mobile applications may be more receptive to new mobile applications, less concerned with security issues associated with mobile payment, and find mobile payment easier to use and more compatible with their existing preferences than those without such experience. Those people tend to have positive attitude toward and high intention to adopt mobile payment, which fits their mobile lifestyle and satisfy their needs for ubiquitous access to payment service (Schierz et al., 2010). Furthermore, individuals with high mobility have become so used to relying on their mobile phones that they are likely to use mobile payment wherever and whenever possible, not just in the situations where time and location are critical for access to payment service. Therefore, individual mobility may negatively moderate the effects of the time and spatial criticality of access to payment service on the intention to use mobile payment. In other words, when individual mobility increases, the effects of time and spatial criticality of access to payment service on the intention to use mobile payment will become weaker. Hence, the following three hypotheses are proposed.

Hypothesis 9: Individual mobility of payment service user will have a positive effect on the intention to use mobile payment.

Hypothesis 10: The increased individual mobility will weaken the effect of the time criticality of access to payment service on the intention to use mobile payment.

Hypothesis 11: The increased individual mobility will weaken the effect of the spatial criticality of access to payment service on the intention to use mobile payment.

RESEARCH METHOD

To test the proposed research model and its associated hypotheses, we conducted a web-based survey to collect data from the existing users of smartphones. Only users of smartphones were recruited to participate in the study. The survey used a 2 (time criticality of access to mobile payment) x 2 (spatial criticality of access to mobile payment) between-subject design, producing 4 use contexts for mobile payment. The first factor consisted of two levels: Access to payment service is not time-critical or highly time-critical. The second factor also varied at two levels: Access to payment service is not spatial-critical or highly spatial-critical. Four hypothetical scenarios are designed to respectively induce four use contexts varying at 2 levels of time criticality of access to mobile payment and 2 levels of spatial criticality of access to mobile payment (See

Appendix A). These hypothetical scenarios were reviewed by several faculty members and students to ensure their appropriate wording.

Sample and Data Collection

An email invitation with a link to the survey was sent to an online survey panel consisting of adults who are at least 18 years old, use smart phones, and live in the New York metropolitan area. Cash incentive was provided to encourage participation in the survey. All the participants are smartphone users, but have never used mobile payment before. The participants were randomly assigned to each use context. Before starting the survey, the participants were instructed to watch a video clip of an individual using mobile payment technology to pay for a train ticket. Then, they were asked to rate their perception of mobile payment characteristics, such as perceived relative advantage, effort expectancy, compatibility, risks, subjective norm concerning mobile payment usage. Then, they read a hypothetical scenario that describes one of the four use contexts (See Appendix A). After that, they rated their intentions to use mobile payment and levels of individual mobility. A total of 249 useable responses were received. The response rate was 21.65%. 47% of the participants were females and 53% were males. The respondents' ages ranged from 18 to 80. 196 respondents were between 18 and 54 years old (78.71%), and 53 respondents were between 55 and 80 years old (21.29%).

Measures

Our survey instrument was developed by incorporating and adapting existing valid and reliable scales where possible (See Appendix B). All measurement items are scored on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) with 4 as a neutral midpoint (neither disagree nor agree).

DATA ANALYSIS AND RESULTS

We performed manipulation checks by conducting two independent sample t-tests respectively on the participants' perceived time criticality and spatial criticality of access to payment service. The results from these t-tests demonstrated the effectiveness of the manipulations of time criticality and spatial criticality of access to payment service. The participants reading the scenario describing a use context with high time criticality of access to payment service had a significantly higher mean score on the perceived time criticality of access to payment service ($t = 7.33$, $p < 0.001$, $Mean_{low\text{-}time\text{-}criticality} = 3.93$ vs. $Mean_{high\text{-}time\text{-}criticality} = 5.36$) than those who read the scenario intended for a use context with low time criticality of access to payment service. Likewise, the participants exposed to the scenario describing a use context with high spatial criticality of access to payment service had a significantly higher mean score on the perceived spatial criticality of access to payment service ($t=7.90$, $p<0.001$, $Mean_{low\text{-}spatial\text{-}criticality}=3.48$ vs. $Mean_{high\text{-}spatial\text{-}criticality}=5.15$) than those reading the scenario intended for a use context with low spatial criticality of access to payment service. A MANOVA test was also conducted using the measures of perceived time criticality and spatial criticality of access to payment service as the dependent variables and the manipulations of time criticality and spatial criticality of access to payment service as the independent variables. Consistent with the t-tests, the MANOVA test yielded significant main effects of the manipulation of time criticality ($F=27.36$, $p < 0.001$) and the manipulation of spatial

criticality of access to payment service of ($F=31.41$, $p < 0.001$). No significant interaction effect was found between these two factors. These results suggest that the participants were successfully induced into the respective use contexts that the hypothetical scenarios were intended for.

A component-based SEM (structural equation modeling) technique, partial least square (PLS) was used for data analysis. PLS is considered suitable for this study due to its superior prediction capability and minimal demands on sample size and residual distributions (Fornell & Bookstein, 1982; Chin, 1998a; Chin, 1998b). In addition, PLS allows us to test the psychometric properties of the measurement scales (the measurement model) and the relationships among the variables (the structural model) simultaneously. All the constructs were modeled using multiple reflective indicators. Each moderating effect was represented as an interaction term, which is a product term derived from the product of the indicators of the predictor and moderator constructs (Chin, Marcolin, & Newsted, 2003).

Measurement Model

The psychometric properties of the measurement scales for the factors were assessed in terms of convergent validity, discriminant validity, and reliability. All the factor loadings of the measurement items on their corresponding constructs exceed 0.70, indicating adequate convergent validity. To establish the discriminant validity, the measurement items should load higher on their respective constructs than the remaining constructs. The results indicate all the items' loadings on their own constructs were higher than the cross-loadings on other constructs. Another criterion for evaluating discriminant validity suggests that the average variance shared between the constructs and its indicators should be larger than the variance shared between the construct and other constructs (Fornell & Larcker, 1981). In other words, the square root of average variance extracted (AVE) of the constructs should exceed the inter-correlations among the constructs in the model (Chin, 1998b; Fornell & Larcker, 1981). The correlation matrix presented in Table 1 indicates that the square roots of AVE on the diagonal are greater than the corresponding off diagonal inter-construct correlations. Thus, the discriminant validity of all the factors is supported.

The reliability of the measurement items was examined using the statistics of Cronbach's alpha (Cronbach, 1971), composite reliability (Chin, 1998a), and AVE (Fornell & Larcker, 1981). It is suggested that Cronbach's alpha should exceed 0.70 (Cronbach, 1971), AVE should be 0.5 or greater (Fornell & Larcker, 1981), and composite reliability should be above 0.70 (Chin, 1998a) to indicate adequate reliability. Table 1 shows that all the values of composite reliability, AVE, and Cronbach's alpha are well above the 0.70, 0.50, and 0.70 thresholds. These results indicate high reliability of the items.

Since a single questionnaire was used to collect all measures in this study, common method bias (CMB) could be viewed as a potential problem. First, we conducted the Harman's single factor test to investigate common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). An unrotated exploratory factor analysis was performed on all items to assess the fit of a single factor model. The variance extracted for the one-factor solution was below 50% (42.97%). It appears that no single factor accounts for the majority of the covariance among the measures (Podsakoff et al., 2003). Second, we checked the correlation matrix of the latent variables (see Table 1). The highest correlation is 0.741, which is lower than the correlation coefficient indicating common method bias (0.90) (Pavlou, Liang, & Xue, 2007). Third, we incorporated a latent common method

variance factor (LCMVF) in the PLS model (Podsakoff et al., 2003). Each item loads on the LCMVF and on the original construct it is intended to measure. The LCMVF was modeled using Liang et al.'s approach (Liang, Saraf, Hu, & Xue, 2007). All the constructs and the LCMVF are modeled as second-order constructs. Each indicator is represented as a single-indicator first-order construct, which loads on both the LCMVF and its respective construct. This method enables the assessment of the influence of CMB on the indicators because it allows the calculation of each indicator's variances as substantively explained by the theorized construct as well as by the method. As a result of the test, we found that the factor loadings in the measurement models with and without the LCMVF are significant and of similar magnitude. The path coefficients of the structural models, with and without the LCMVF, also showed same directions at similar significant levels. Therefore, the above analyses do not indicate severe common method bias.

Table 1. Inter-Construct Correlation, Square Root of AVE, Composite Reliability, and Cronbach's Alpha of Constructs

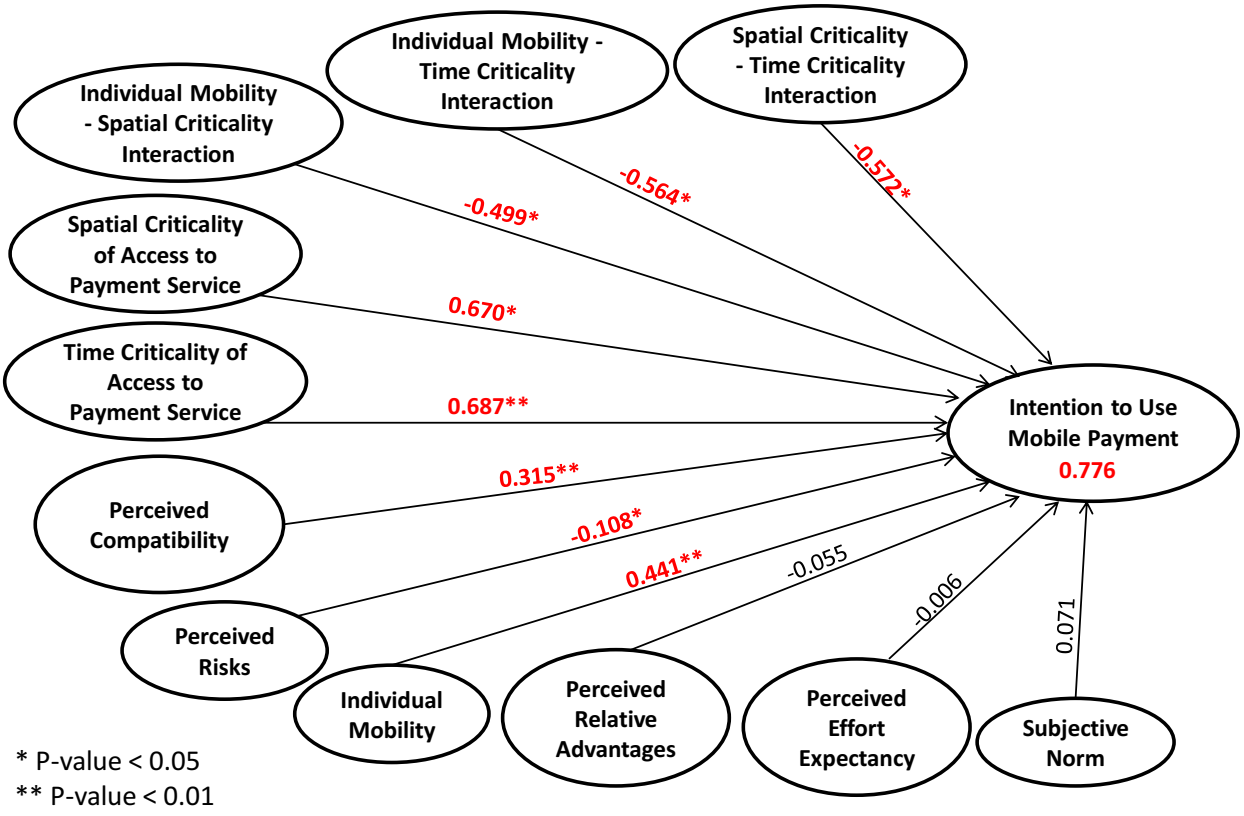
	Composite Reliability	Cronbach's Alpha	RA	CP	EE	IM	PR	SN	SC	TC	BI
RA	0.949	0.937	0.870								
CP	0.970	0.963	0.741	0.918							
EE	0.958	0.945	-0.792	-0.757	0.906						
IM	0.979	0.967	0.179	0.193	-0.211	0.969					
PR	0.897	0.770	-0.712	-0.750	0.700	-0.161	0.902				
SN	0.975	0.962	0.614	0.650	-0.520	0.226	-0.563	0.964			
SC	0.919	0.869	0.054	0.005	-0.028	0.549	0.018	0.070	0.890		
TC	0.939	0.902	0.153	0.144	-0.089	0.640	-0.041	0.213	0.580	0.916	
BI	0.994	0.992	0.333	0.417	-0.326	0.691	-0.339	0.382	0.622	0.691	0.989

RA = Relative Advantage, CP = Compatibility, EE = Effort Expectancy, IM = Individual Mobility, PR = Perceived Risks, SN = Subjective Norm, SC = Spatial Criticality, TC = Time Criticality, BI = Behavioral Intention

PLS Structural Model

The path coefficients and explained variances for the structural model are shown in Figure 2. PLS model does not generate the model fit statistics, but uses the R square values (explained variance) in the dependent constructs to assess the explanatory power of a structural model. Figure 2 shows that all the proposed independent variables and moderating effects accounted for 77.6% of the variance in behavioral intention to use mobile payment.

Figure 2. PLS Structural Model Results



As indicated by the path coefficients in Figure 2, the PLS results suggest that certain perceived characteristics of mobile payment are significant predictors of the intention to use mobile payment. As expected, perceived compatibility and risks of mobile payment were found to influence the intention to use mobile payment, hence providing support for hypotheses 3 and 4. The results provided support for the hypotheses pertaining to the effects of use context of mobile payment. The results indicated that both spatial criticality (Hypothesis 6) and time criticality (Hypothesis 7) of access to payment service were significant positive predictors of the intention to use mobile

payment. The negative moderating effect of time criticality of access to payment service on the relationship between spatial criticality of access to payment service and mobile payment adoption intention was also supported (Hypothesis 8). The results also revealed the significant positive effect of individual mobility of payment service user on mobile payment adoption intention (Hypothesis 9), as well as the negative moderating effects of individual mobility on the effects of time and spatial criticality of access to payment service on mobile payment adoption intention (Hypotheses 10 and 11). Contrary to our expectation, perceived relative advantages and effort expectancy of mobile payment and subjective norm regarding mobile payment adoption were found to have no impact on the intention to use mobile payment. Thus, hypotheses 1, 2, and 5 were not supported. Table 2 presents a summary of the hypotheses testing results.

Table 2. Summary of Hypotheses Tests

Relationships	Support
H1: Perceived Relative Advantages → Intention to Use Mobile Payment	No
H2: Perceived Effort Expectancy → Intention to Use Mobile Payment	No
H3: Perceived Compatibility → Intention to Use Mobile Payment	Yes
H4: Perceived Risks → Intention to Use Mobile Payment	Yes
H5: Subjective Norm → Intention to Use Mobile Payment	No
H6: Spatial Criticality of Access to Payment Service → Intention to Use Mobile Payment	Yes
H7: Time Criticality of Access to Payment Service → Intention to Use Mobile Payment	Yes
H8: Time Criticality x Spatial Criticality Interaction → Intention to Use Mobile Payment	Yes
H9: Individual Mobility → Intention to Use Mobile Payment	Yes
H10: Individual Mobility x Time Criticality Interaction → Intention to Use Mobile Payment	Yes
H11: Individual Mobility x Spatial Criticality Interaction → Intention to Use Mobile Payment	Yes

DISCUSSION

The purpose of this study was to identify and empirically test the factors affecting the adoption of mobile payment. In total, the high R^2 value (77.6%) of the intention to adopt mobile payment highlights a comprehensive set of important factors that are associated with user adoption of mobile payment. Our results indicate that the intention to adopt mobile payment is determined by the perceived characteristics of mobile payment, the use context of mobile payment, and the individual characteristic of potential users. Among the perceived characteristics of mobile payment under study, only the perceived compatibility and perceived risks of mobile payment have significant effects on the intention to adopt mobile payment. Therefore, individuals who consider mobile payment to be of low risks and compatible with their lifestyles and habits are likely to use mobile payment. The results, however, did not support the impacts of perceived relative advantages and effort expectancy of mobile payment. No support was found for the effect of social influence either.

The time criticality and spatial criticality of access to payment service are identified as critical variables characterizing the use context of mobile payment. The results show that these characteristics of mobile payment use context are more important predictors of mobile payment adoption intention than the perceived characteristics of mobile payment. Individuals would prefer to use mobile payment in situations when payment must be made urgently and/or at a particular location. In addition, the time criticality of access to payment attenuates the relationship between the spatial criticality of access to payment service and the intention to adopt mobile payment. When time is not critical for the access to payment service, the spatial criticality of access to payment service serves as a crucial determinant of the intention to adopt mobile payment. But in situations when time is critical for the access to payment service, the impact of the spatial criticality of access to payment service on mobile payment adoption intention will decrease, because the urgent need for payment service may lead to the use of mobile payment regardless of location.

The individual mobility of potential users also has a significant effect on mobile payment adoption intention. People with high mobility are more likely to use mobile payment than those with low mobility. Furthermore, the results revealed the negative moderating effects of individual mobility on the effects of the characteristics of mobile payment use context on mobile payment adoption intention. For the individuals with low mobility, the characteristics of mobile payment use context are major determinants driving their intention to adopt mobile payment. However, the effect of use context diminishes for individuals with high mobility. That is, highly mobile individuals tend to use mobile payment regardless of use context.

CONCLUSIONS

The major contributions of this study are as follows. First, it developed a more comprehensive theoretical model of mobile payment adoption by integrating traditional technology adoption theories and findings of more recent studies of mobile payment. The model incorporates not only the perceptions of mobile payment characteristics, but also the characteristics of mobile payment use context and the individual characteristics of mobile payment user, which are usually overlooked in traditional technology adoption research. Compared to the perceived characteristics of mobile payment, the characteristics of mobile payment use context and the individual

characteristics of potential users play more important roles in determining mobile payment adoption intention. Second, this study identified two important characteristics of mobile payment use context – the time criticality and spatial criticality of access to payment service, which are critical predictors of mobile payment adoption intention. In addition to their independent effects, this study also revealed their interaction effect on mobile payment adoption intention. The increased time criticality of access to mobile service will attenuate the relationship between the spatial criticality of access to payment service and mobile payment adoption intention. Third, this study highlighted the critical role of user's individual mobility in the adoption of mobile payment. Individual mobility is not only a significant predictor of mobile payment adoption intention, but it also weakens the impacts of the characteristics of mobile payment use context on mobile payment adoption intention.

The findings of this study provide significant implications for the future development and provision of mobile payment technology. Our findings suggest that developers of mobile payment technology should focus on usage situations, where payments must be made urgently and/or at a particular location, making mobile payment more feasible than other payment methods. At the same time, the technology should also satisfy the requirements related to low risks and compatibility with users' individual behavioral patterns, experiences, and preferences. In addition, individual mobility is a key determinant of mobile payment adoption. Although companies cannot easily change customers' individual characteristics, our finding can help companies to better define target customer profile and promote mobile payment technology to highly mobile individuals who are likely to use mobile payment in every life situation.

Several limitations should be considered when interpreting the results of this study. First, the data were collected from a sample of smartphone users in the USA, which may restrict the applicability of the results to other populations, such as non-smartphone users or smartphone users from other countries, especially the developing countries. Since mobile payment technology replies on modern mobile devices, such as smartphones, people's lack of access to mobile device may hinder their intention to use mobile payment and confound the results of the study. As the access to mobile device is not a variable of interest in this study, the use of smartphone user sample is necessary to eliminate the effect of irrelevant confounding variable and should not present a serious threat to the validity of this study. Future research can address the generalizability issue of this study by replicating the study with samples from other countries and regions in the world. Second, there may be other possible variables affecting mobile payment adoption that were not included in our research model, such as individual innovativeness of potential users, network externalities of mobile payment technology, perceived reputation of technology providers, and so on. This limitation also paves the way to future studies. Despite the above-mentioned limitations, we believe that this paper contributes to a better insight of mobile payment adoption and provides guidelines for the future improvement of mobile payment technology development and provision.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40*, 471-499.

Au, Y. A., & Kauffman, R. J. (2008). The economics of mobile payments: Understanding stakeholder issues for an emerging financial technology application. *Electronic Commerce Research and Applications*, *7*, 141-164.

Borison, R. (2015). Apple Pay Adoption Rates Show It Still Has a Long Way to Go. "While Apple Pay is gaining steam more quickly." Retrieved from https://www.thestreet.com/story/13174236/1/apple-pay-adoption-rates-show-it-still-has-a-long-way-to-go.html

Chandra, S., Srivastava, S. C., & Theng, Y. (2010). Evaluating the role of trust in consumer adoption of mobile payment systems: An empirical analysis. *Communications of the Association for Information Systems*, *27*, 561-588.

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, *14*, 189-217.

Chin, W. (1998a). Issues and opinion on structural equation modeling. *MIS Quarterly*, *22*(1), 7-16.

Chin, W. (1998b). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–358). Mahwah, NJ: Lawrence Erlbaum Associates.

Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology, 28*, 1429-1464.

Cronbach, L. J. (1971). Test validation. In R. L. Thorndike (Ed.), *Education measurement* (pp. 443-507). Washington D.C.: American Council on Education.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 318-330.

Electronic Verification Systems. (2015). The Most Common Fear About Mobile Payments. "The rise of mobile payments is clear with the implementation of Apple Pay." Retrieved from https://www.electronicverificationsystems.com/

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading: Addison-Wesley.

Fornell, C., & Bookstein, F. (1982). Two structural equation modeling: Lisrel and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*, *19*, 440-452.

Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*, 39-50.

Heinonen, K., & Pura, M. (2006). *Classifying mobile services*. Paper presented at Helsinki Mobility Roundtable, Helsinki, Finland.

Karahanna, E., Agarwal, R., & Angst, C. (2006). Reconceptualizing compatibility beliefs in technology acceptance research. *MIS Quarterly*, *30*(4), 781-804.

Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior*, *26*, 310-322.

Landridge, D., Sheeran, P., & Connolly, K. J. (2007). Analyzing additional variables in the theory of reasoned action. *Journal of Applied Social Psychology, 37*, 1884-1913.

Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of enterprise systems: The effect of institutional pressures and mediating role of the top management. *MIS Quarterly*, *31*(1), 59-87.

Mallat, 2007. (2004). Theoretical constructs of mobile payment adoption. Paper presented at the 27th Information Systems Research Seminar in Scandinavia (IRIS), Falkenberg, Sweden, August, 14-17.

Mallat, N., Rossi, M., Tuunainen, V. K., & Öörni, A. (2009). The impact of use context on mobile services acceptance: The case of mobile ticketing. *Information & Management*, *46*(3), 190-195.

Mallat, N. (2007). Exploring consumer adoption of mobile payments - a qualitative study. *The Journal of Strategic Information Systems*, *16*(4), 413-432.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, *2*(3), 192-222.

Pavlou, P. A., Liang, H., & Xue, Y. (2007). Understanding and mitigating uncertainty in online exchange relationships: A principal-agent perspective. *MIS Quarterly*, *31*(1), 105-136.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879-903.

Pousttchi, K. (2003). Conditions for Acceptance and Usage of Mobile Payment Procedures. The Second International Conference on Mobile Business. Vienna, 201-210.

Reardon, M. (2012). Mobile payments: A solution in search of a problem? "But to be perfectly honest, it seemed more like a novelty than a necessity". Retrieved from http://www.cnet.com/news/mobile-payments-a-solution-in-search-of-a-problem/

Rhodes, R. E., & Courneya, K. S. (2003). Modelling the theory of planned behavior and past behaviour. *Psychology, Health & Medicine, 8*, 57-69.

Rogers, E. M. (1995). *Diffusion of innovations*. New York: The Free Press.

Schierz, P. G., Schilke, O., & Wirtz, B. W. (2010). Understanding consumer acceptance of mobile payment services: an empirical analysis. *Electronic Commerce Research and Applications*, *9*, 209-216.

Scott, H. (2112). U.S. smartphone adoption is faster than any other major technology shift. Retrieved from http://www.phonearena.com/news/U.S.-smartphone-adoption-is-faster-than-any-other-major-technology-shift_id30062

Sheeran, P., & Orbell, S. (1998). Do intentions predict condom use? Meta-analysis and examination of six moderator variables. *British Journal of Social Psychology, 37,* 231-250.

Sheeran, P., & Taylor, S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *Journal of Applied Social Psychology, 29,* 1624-1675.

Slade, E., Williams, M., & Dwivedi, Y. (2013). Mobile payment adoption: Classification and review of the extant literature. *The Marketing Review*, *13*(2), 167-190.

Smith, A. (2015).U.S. Smartphone Use in 2015. **"**Nearly two-thirds of Americans are now smartphone owners." Retrieved from http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/

Stewart, J. (2015). The Fed Finds Rising Mobile-Payments Adoption, But Big Hurdles Hinder Usage. "Perhaps that most prominent of these results." Retrieved from http://www.digitaltransactions.net/index.php/news/story/the-fed-finds-rising-mobile-payments-adoption_-but-big-hurdles-hinder-usage

Tornatzky, L. G., & Klein, K. J. (1982). Innovation characteristics and innovation adoption implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management*, *29*(1), 28-44.

U.S. Digital Consumer Report (2014). "As a result, consumption habits are changing." Retrieved from http:/www.nielsen.com/us/en/insights/reports/2014/the-us-digital-consumer-report.html

Van der Hejden, H., Ogertschnig, M., & van der Gaast, L. (2005). *Effects of context relevance and perceived risk on user acceptance of mobile information services*. Paper presented at The Thirteenth European Conference on Information Systems (ECIS), Regensburg, Germany.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of it: toward a unified view. *MIS Quarterly*, *27*(3), 425-478.

Werner, P. (2004). Reasoned action and planned behavior. In S. J. Peterson, and T. S. Bredow (Eds.). *Middle range theories: Application to nursing research* (pp. 125-147). Philadelphia, PA: Lippincott Williams & Wilkins.

Yang, S., Lu, Y., Gupta, S., Cao, Y., & Zhang, R. (2012). Mobile payment services adoption across time: An empirical study of the effects of behavioral beliefs, social influences, and personal traits. *Computers in Human Behavior*, *28*(1), 129-142.

APPENDIX A

		Time Criticality of Access to Payment Service	
		Critical	**Non-Critical**
Spatial Criticality of Access to Payment Service	**Critical**	You want to purchase a ticket for a train leaving in FIVE MINUTES. A train ticket must be purchased before you will be allowed to get on the train. You must buy the ticket at the TICKET OFFICE IN THE TRAIN STATION or you can use your MOBILE PHONE to pay for the ticket without going through the ticket office.	You want to purchase a ticket for a train leaving TOMORROW. The ticket must be purchased before you will be allowed to get on the train. You must buy the ticket at the TICKET OFFICE IN THE TRAIN STATION or you can use your MOBILE PHONE to pay for the ticket without going through the ticket office.
	Non-Critical	You want to purchase a ticket for a train leaving in FIVE MINUTES. The ticket must be purchased before you will be allowed to get on the train. You can purchase it online using your computer AT HOME, or go to the TICKET OFFICE IN THE TRAIN STATION to buy the ticket, or use your MOBILE PHONE to pay for the ticket without using a computer or going through the ticket office.	The ticket must be purchased before you will be allowed to get on the train. You can purchase it online using your computer AT HOME, or go to the TICKET OFFICE IN THE TRAIN STATION to buy the ticket, or use your MOBILE PHONE to pay for the ticket without using a computer or going through the ticket office.

APPENDIX B

Relative Advantages (Moore & Benbasat, 1991; Mallat et al., 2009; Kim et al., 2010)
Using mobile payment enables me to make payments more quickly.
Using mobile payment makes it easier for me to make payments.
Using mobile payment makes it more effective for me to make payments.
Using mobile payment gives me greater control in making payments.
Using mobile payment enables me to make payments anytime when needed.
Using mobile payment enables me to make payments anywhere where needed.

Perceived Effort Expectancy / Perceived Ease of Use (Kim et al., 2010)
My interaction with mobile payment procedure would be clear and understandable.
It would be easy for me to become skillful at using mobile payment.
I would find mobile payment easy to use.
Learning to use mobile payment is easy for me.
I would find mobile payment procedure to be flexible to interact with.

Perceived compatibility (Moore & Benbasat, 1991; Mallat et al., 2009; Schierz et al., 2010)
Using mobile payment fits well with my style and habits.
Using mobile payment fits well with the way I like to purchase products and services.
Using mobile payment is compatible with my current situation.
Using mobile payment is compatible with my other use of mobile phone.
Mobile payment is a suitable method for me to make payments.
I would appreciate using mobile payment instead of alternative modes of payment (e.g., credit card, cash, etc.).

Perceived Risks (Schierz et al., 2010)
I am certain mobile payment will work satisfactorily.
I would find mobile payment risky in conducting my payment transactions.
The risk is low when using mobile payment.

Subjective Norm (Schierz et al., 2010)
People who are important to me would recommend using mobile payment.
People who are important to me would find using mobile payment beneficial.
People who are important to me would find using mobile payment a good idea.

Individual Mobility (Schierz et al., 2010)
I would like to be able to keep in touch everywhere I am.
I would like to be able to coordinate my daily tasks everywhere I am.
I would like to be able to coordinate my daily tasks no matter what time it is.

Behavioral Intention to Use Mobile Payment (Kim et al., 2010; Schierz et al., 2010)
Assuming that I have access to mobile payment, I intend to use it.
I am willing to use mobile payment.
Given that I have access to mobile payment, I predict that I would use it.
I am likely to use mobile payment.

Perceived Time Criticality of Access to Payment Service (New Measure)
I must purchase the train ticket right now.
It is urgent for me to purchase the train ticket now.
There is plenty of time left for me to purchase the ticket.

Perceived Spatial Criticality of Access to Payment Service (New Measure)
If I do not use mobile payment, I can only purchase the train ticket at the ticket office in the train station.
Even if I do not use mobile payment, I can still purchase the train ticket at some place other than the ticket office in the train station.
If I do not use mobile payment, the ticket office in the train station is the only place where I can purchase the train ticket.

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