Social Media and Digital Collaborations

Norm of Reciprocity, Reciprocal Benefits, and Reciprocal Relationships: A Revisit of the Role of Reciprocity in Knowledge Sharing

Completed Research Paper

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Abstract

Reciprocity has been considered as one of the most important constructs in knowledge sharing literature. However, prior studies have defined and measured this construct in different ways, leading to mixed research findings about its role. To solve the controversy, based on prior reciprocity literature, we differentiate three relevant concepts namely norm of reciprocity, reciprocal benefits, and reciprocal relationships and propose the causal relationships between these constructs according to the norm internalization theory. A field survey with 386 employees in a Chinese organization is conducted to test the proposed hypotheses. The results show that reciprocal benefits and reciprocal relationships fully mediate the impacts of norm of reciprocity on knowledge sharing intention. These findings suggest that the internalization mechanism (e.g., indirect effect) works better than the compliance mechanism (e.g., direct effect) under the voluntary knowledge sharing context. This study enriches the knowledge sharing literature and provides suggestions on organizational knowledge sharing practices.

Keywords: knowledge sharing, reciprocity, social influence, norm internalization, social capital theory, social exchange theory

Introduction

Reciprocity has been regarded as one of the most important factors that determine individuals' knowledge contribution or sharing behaviors in either the offline organizations or the online virtual communities (Bock et al., 2005; Kankanhalli et al., 2005). The fundamental logic based on which the role of reciprocity is highlighted is that knowledge is considered "a public good where members of the community collectively contribute to its provision and all members may access the knowledge provided" (Wasko & Faraj, 2000, p. 161). The public good nature of knowledge enables knowledge exchange to be not driven by self-interest but care for the community (von Krogh, 1998). In this situation, reciprocity which is based on the gift-giving mechanism, whereby a person who has gained something from another individual tends to give something back in return so as to sustain ongoing supportive exchanges, becomes a dominant determinant of knowledge sharing behavior (Cho et al., 2010; Sun, Fang, & Lim, 2012).

Almost all of prior studies on knowledge sharing have included reciprocity as a predictor of knowledge sharing behavior. However, these studies may measure and use reciprocity in different ways. Specifically, three related concepts have been used in the theorization process: reciprocity as a norm, reciprocity as a relationship, and reciprocity as a benefit. Taking reciprocity as a norm, Wasko and Faraj (2005) argue that norm of reciprocity, as a relational social capital (Nahapiet & Ghoshal, 1998), refers to a sense of mutual indebtedness that ensure community members to reciprocate the benefits they receive from others (Wasko & Faraj, 2005). Taking reciprocity as a relationship, Bock et al. (2005) define anticipated reciprocal relationship as "the degree to which one believes one can improve mutual relationships with others through one's knowledge sharing" (p. 107). In contrast, taking reciprocity as a benefit, Kankanhalli et al. (2005) define reciprocity as "the belief that current contribution to EKR [Electronic Knowledge Repository] would lead future request for knowledge being met" (p. 123). Although these three concepts are distinguishable from each other in terms of their definitions, a lot of previous studies tend to treat them as interchangeable and mix them in their arguments (Chai et al., 2011).

Blurring these three concepts may result in two theoretical flaws. First, inconsistency in definition of a construct will damage the accumulation of theory, as the research findings of different studies become incomparable when it is defined and measured in different ways. Further, blurring these three concepts will lead to mixed research findings about the role of reciprocity. For example, when examining the impact of norm of reciprocity on knowledge sharing, some studies confirm the positive effect of norm of reciprocity (Chiu et al., 2006; Cho, et al., 2010) while the others find no significant relationship between norm of reciprocity and knowledge sharing (Chen & Hung, 2010; Lin et al., 2009; Wasko & Faraj, 2005). One possible explanation for the mixed findings is that there may be certain mediators between norm of reciprocity and knowledge sharing, so that when these mediators are not achieved, the knowledge sharing behaviors are not resulted in either (Lin, et al., 2009). Second, previous studies treat these three concepts as the same but pay less attention to the causal relationships between these three concepts. However, these three concepts may have unbalanced effects on knowledge sharing and there may be inter-relationships among these three concepts. For example, Hsu and Lin (2008) have found that reciprocal relationships and reciprocal benefits have different impacts on attitude toward using blog.

To address these shortcomings, we try to differentiate the three twisted reciprocity concepts and propose a research model to theorize the interrelationships between these three concepts and their respective impacts on knowledge sharing. Specifically, we will investigate the following research questions:

Research Question 1: What are the causal relationships between norm of reciprocity, reciprocal relationships and reciprocal benefits?

Research Question 2: How norm of reciprocity, reciprocal relationships, and reciprocal benefits influence knowledge sharing?

Drawing upon social influence theory (Kelman, 1958) and norm internalization theory (Scott, 1971), we propose that under the voluntary participation context, norm of reciprocity can exert its impact on knowledge sharing only when it is internalized into individuals' own perceptions. Specifically, we propose reciprocal relationships and reciprocal benefits as two internalized perceptions derived from the norm of reciprocity and they will mediate the effect of norm of reciprocity on knowledge sharing.

The paper can contribute to literature on knowledge sharing in two ways. First, this study identifies the distinctions between three reciprocity perceptions which have been blurred in previous studies, indicating

that these three reciprocity perceptions have different impacts on knowledge sharing behavior. Second, this study theorizes that norm of reciprocity only can exert its impacts on knowledge sharing behavior when it can be internalized into anticipated reciprocal relationships or benefits, suggesting the mediating effects of anticipated reciprocal relationships and benefits.

The remainder of the paper is organized as follows. Previous literature on reciprocity and knowledge sharing and theoretical underpinnings including social influence theory and norm internalization will be firstly reviewed. Then, the research model and hypotheses are proposed. Further, the method to collect data is described and the data analysis results are reported. Finally, the key findings, theoretical and practical implications of the study are discussed.

Theoretical Background

Knowledge Sharing and Reciprocity

According to the knowledge-based view of firm, organizational knowledge has become a key factor that can help organizations to obtain sustained competitive advantage (Kankanhalli, et al., 2005). Therefore, organizations tend to develop and implement knowledge management systems (KMS) to leverage their knowledge resources. One special KMS titled as electronic knowledge repositories (EKRs) refers to a KMS based on the repository model that emphasizes codification and storage of knowledge (Alavi & Leidner, 2001). Through EKR, knowledge contributors can codify and contribute or share their knowledge to EKRs and knowledge seekers can search for and assimilate the knowledge they need from EKRs. Since the sustainability of EKRs heavily relies on the knowledge contributors who provide content to EKRs (Fang & Neufeld, 2009), knowledge sharing in EKRs becomes the most critical issue for organizational knowledge management.

Unlike other organizational technologies such as enterprise resource planning (ERP) whose usage may be mandatory (Venkatesh & Davis, 2000), whether or not organizational members would like to contribute their knowledge to EKRs is voluntary (Bock & Kim, 2002; Chiu, et al., 2006), leading the knowledge sharing behaviors to be not able to be facilitated by mandatory policies but to be motivated by organizational members' own willingness. Further, given the public good nature of knowledge in EKRs, knowledge sharing behaviors are not driven by self-interest through economic exchange mechanism but by concerns for community through gift-giving or social exchange mechanism (Sun, et al., 2012; Wasko & Faraj, 2000). In this case, reciprocity which captures the gift-giving or social exchange mechanism has been emphasized in lots of studies on knowledge sharing.

As stated earlier, prior studies addressing the role of reciprocity have conceptualized reciprocity as a norm, a relationship, or a benefit. Based on different conceptualizations, prior studies have argued different roles of reciprocity according to different theoretical perspectives (see Table 1). In general, there are two key theories that have been used to elaborate the mechanisms underlying the relationship between reciprocity and knowledge sharing behavior: social capital theory (Nahapiet & Ghoshal, 1998) and social exchange theory (Blau, 1964).

Social capital theory defines social capital as the resources embedded in a social structure and proposes that social capital can influence a variety of pro-social behaviors such as knowledge sharing behavior (Wasko & Faraj, 2005). There are three dimensions of social capital namely structural, cognitive and relational social capital. Structural capital is "the overall pattern of connections between actors – that is, who you reach and how you reach them" (Nahapiet & Ghoshal, 1998, p. 244). It is closely related to the structure of the social network and the interactions among actors. Cognitive capital refers to those resources that enable shared representations and interpretations among actors including shared language, shared cognition and shared vision (Nahapiet & Ghoshal, 1998). Relational capital involves assets that are created and leveraged through social relationships, including trust, norms, obligations and identification (Nahapiet & Ghoshal, 1998). Thus, norm of reciprocity which is a special type of norm is considered a relational social capital.

Table 1. Literature Review on Reciprocity in Knowledge Sharing				
Literature	Used Term	Theory	Norm / Relationship / Benefit	Impacts on knowledge sharing intention / behavior
(Wasko & Faraj, 2005)	Reciprocity	Social capital theory	Norm	Insignificant
(Chiu, et al., 2006)	Norm of reciprocity	Social capital theory	Norm	Significant on quantity but insignificant on quality.
(Lin, et al., 2009)	Norm of reciprocity	Social capital theory	Norm	Insignificant
(Chen & Hung, 2010)	Norm of reciprocity	Social capital theory	Norm	Insignificant
(Sun, Fang, Lim, et al., 2012)	Relational capital	Social capital theory	Norm	Significant
(Tiwana & Mclean, 2003)	Relational capital	Social capital theory	Norm	Significant
(Lu & Yang, 2011)	Reciprocity	Social capital theory	Norm	Significant
(Chang & Chuang, 2011)	Reciprocity	Social capital theory	Norm	Significant
(Cho, et al., 2010)	Generalized reciprocity	Social capital theory	Norm	Significant
(Bock, et al., 2005)	Anticipated reciprocal relationships	Social exchange theory	Relationships	Significant
(Bock & Kim, 2002)	Expected associations	Social exchange theory	Relationships	Significant
(Huang et al., 2008)	Anticipated reciprocal relationships	Social exchange theory	Relationships	Insignificant
(Hsu & Lin, 2008)	Expected relationship and reciprocal benefits	Social exchange theory	Relationships and benefits	Insignificant
(Kankanhalli, et al., 2005)	Reciprocity	Social exchange theory	Benefits	Insignificant
(Lin, 2007)	Reciprocal benefits	Social exchange theory	Benefits	Significant
(Chai, et al., 2011)	Reciprocity	Social capital theory	Benefits	Significant
(Oh, 2012)	Reciprocity	Social exchange theory	Benefits	Significant
(Cheung et	Reciprocity	Social exchange	Benefits	Significant

al., 2013)		theory		
(He & Wei, 2009)	Reciprocity	Social exchange theory	Benefits	Significant
(Cheung & Lee, 2012)	Reciprocity	Social exchange theory	Benefits	Significant
(Hau et al., 2013)	Reciprocity	Social exchange theory	Benefits	Significant
(Jin et al., 2013)	Reciprocity	Social exchange theory	Benefits	Significant

Unlike economic exchange theory which is based on the exchange of tangible benefits and costs and clearly specified obligations (Kankanhalli, et al., 2005), social exchange theory posits that the benefits and costs derived from the relationships are taken into account of the benefit – cost analysis (Bock, et al., 2005). In this sense, both anticipated reciprocal relationships and anticipated reciprocal benefits are considered benefits in the social exchange process of knowledge sharing. Specifically, anticipated reciprocal relationships capture "the degree to which a person believes he or she can obtain an improved *mutual relationship* through knowledge sharing", while anticipated reciprocal benefits involve "the degree to which a person believe he or she could obtain *mutual benefits* through knowledge sharing" (Hsu & Lin, 2008, p. 68).

According to social capital theory and social exchange theory, prior studies have proposed the relationship between reciprocity and knowledge sharing behavior. Specifically, the relationship between norm of reciprocity and knowledge sharing is proposed based on social capital theory (Chen & Hung, 2010; Chiu, et al., 2006; Cho, et al., 2010; Lin, et al., 2009; Wasko & Faraj, 2005), while the relationship between anticipated reciprocal relationships and knowledge sharing (Bock, et al., 2005; Bock & Kim, 2002; Hsu & Lin, 2008; Huang, et al., 2008) and the relationship between anticipated reciprocal benefits and knowledge sharing (Chai, et al., 2011; He & Wei, 2009; Hsu & Lin, 2008; Kankanhalli, et al., 2005; Lin, 2007) are proposed in terms of social exchange theory.

However, there are two unsolved issues in prior studies. First, the inter-relationships between these three concepts have not been investigated. One reason for the lack of such a study may be that no prior studies have included all of these three concepts into a unified model. They considered these three concepts as interchangeable rather than distinguishable. Second, prior studies on the role of reciprocity lead to mixed research findings. For example, norm of reciprocity is found to be significant in some studies (e.g., Chiu, et al., 2006) but not in other studies (e.g., Wasko & Faraj, 2005). One possible solution to the mixed findings is to examine the potential mediating effects.

Social Influence and Norm Internalization

Social influence theory (Kelman, 1958) and norm internalization theory (Scott, 1971) are used to further elaborate the causal relationships between the three concepts of reciprocity. Social influence theory proposes three mechanisms to explain social influence namely compliance, internalization, and identification. In the compliance process, "individuals comply with formal rules to gain a reward or to avoid a punishment controlled by others," while internalization refers to "the process by which the individual's own value system becomes congruent with the group's values" (Kim et al., 2012, p. 1235). Both compliance and internalization processes stress on the important role of group norms. However, these two processes may reflect the impacts of group norms in different ways. Compliance suggests a *direct effect* of group norms on behavioral intention such that once the group norms exist, individuals will conduct certain behaviors to conform to these norms (Venkatesh et al., 2003). In contrast, internalization emphasizes on the role of group norms in altering an individual's belief structure which leads to change in behavior in turn (Venkatesh, et al., 2003). Unlike compliance which works in mandatory contexts, internalization applies in voluntary contexts where individuals can behave based on their own evaluations (Venkatesh & Davis, 2000). In our research context, considering the voluntary nature of knowledge sharing behavior (Bock & Kim, 2002; Chiu, et al., 2006), internalization rather than compliance may better capture the role of group norms.

The third mechanism identification refers to "an individual's acceptance of social influence to maintain a positive self-defining relationship with a group" (Kim, et al., 2012, p. 1235). Similar with internalization, identification also involves altering an individual's belief structure (Venkatesh, et al., 2003), but it is induced by individuals' commitment or identification to the organizations rather than by group norms. Thus, identification mechanism is not appropriate for our research objective to test the role of norm of reciprocity. To summarize, although there are three social influence mechanisms, only the internalization mechanism is related to our research context.

Norm internalization theory is addressed to describe the process of acceptance of a set of norms. Internalization is a metaphor in which an idea, concept, and action moves from outside the mind to a place inside of it (Scott, 1971). Norm internalization starts with the awareness of norms (i.e., what the norms are), and then the evaluation of norms (i.e., why they are of value or why they make sense), and finally the acceptance of norms as their own viewpoint (Scott, 1971). During this process, the evaluation of the norm plays a critical role in norm internalization.

Anticipated reciprocal relationships and anticipated reciprocal benefits just reflect the evaluation process of norm of reciprocity. Specifically, these two concepts may capture different aspects of norm evaluation. Anticipated reciprocal relationships describe an individual's perception about the effectiveness of knowledge sharing behavior in enhancing *relationships* between him/her and other organizational members (Hsu & Lin, 2008). The enhanced reciprocal relationships may become a potential source for requesting other members' knowledge sharing behaviors in future. However, whether or not the reciprocal relationships can be transformed into actual reciprocal benefits cannot be ensured. In contrast, anticipated reciprocal benefits directly depict an individual's expectation about whether or not his/her knowledge sharing behavior can lead to others' knowledge sharing behaviors in return (Hsu & Lin, 2008).

Learning from social influence theory and norm internalization theory, we can see that three concepts of reciprocity – norm of reciprocity, anticipated reciprocal relationships and anticipated reciprocal benefits – may not work parallelly. Instead, norm of reciprocity as a special type of norm may influence anticipated reciprocal relationships and anticipated reciprocal benefits which reflect the evaluations on the norm. Both anticipated reciprocal relationships and benefits may directly affect knowledge sharing, while the impact of norm of reciprocity on knowledge sharing only can be exerted through two mediators – reciprocal relationships and reciprocal benefits. Therefore, we propose our research model in Figure 1 and the hypotheses in the model will be elaborated in details in the next section.

Figure 1. Research Model
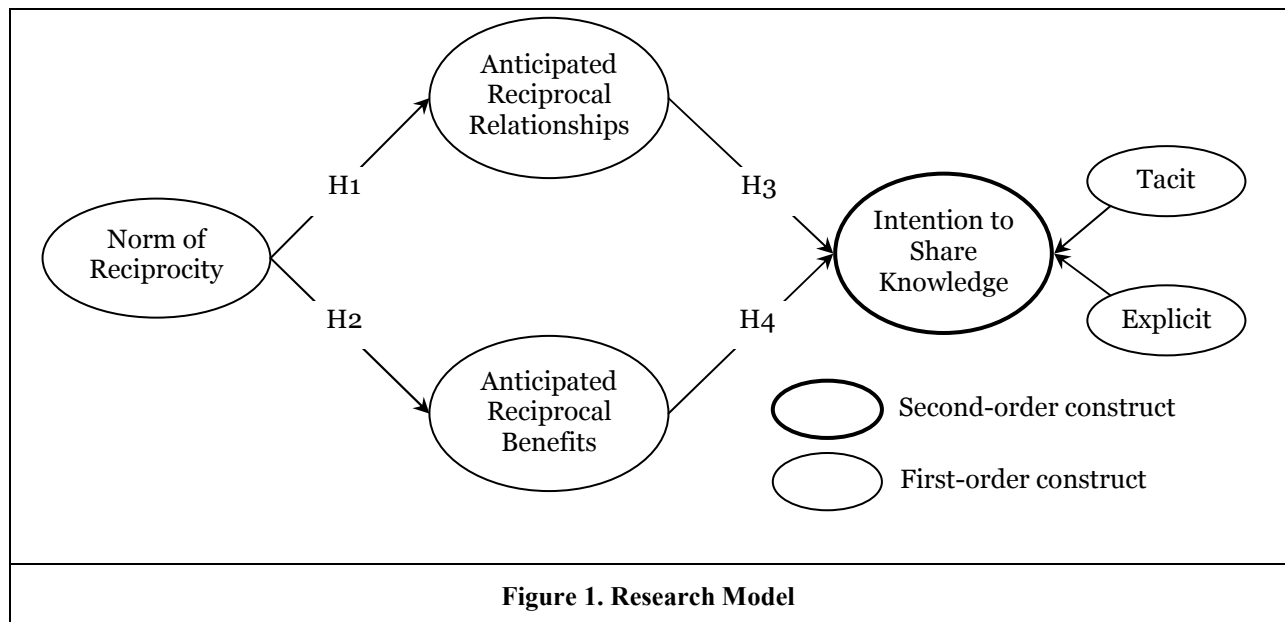
Hypotheses

Relationships between Three Concepts of Reciprocity

The impacts of norm of reciprocity on anticipated reciprocal relationships and anticipated reciprocal benefits can be explained according to the norm internalization theory (Scott, 1971) in general. Anticipated reciprocal relationships and anticipated reciprocal benefits as two constructs reflecting norm evaluations should mediate the impacts of norm of reciprocity on intention to share in terms of the norm internalization theory. This internalization mechanism will become much stronger when the behavior is voluntary rather than mandatory (Venkatesh & Davis, 2000). As knowledge sharing behavior is considered a voluntary behavior (Bock & Kim, 2002; Chiu, et al., 2006), the effects of norm of reciprocity on knowledge sharing intention only can be exerted when the norm is internalized and the values of committing the knowledge sharing behavior is appreciated.

Specifically, norm of reciprocity is regarded as a collective belief shared by organization members about that one should give something in return when s/he gets something (Wasko & Faraj, 2005). It is derived from the relationships between organizational members according to social capital theory which suggests norm of reciprocity as a relational social capital (Nahapiet & Ghoshal, 1998). On the one hand, norm is generated based on the social interactions among organizational members through the social enforcement process (Nahapiet & Ghoshal, 1998). If most of organizational members tend to conform to the norm, the norm will become much stronger and organizational members will be more confident about (i.e., trust) that others will conform the rule (Wasko & Faraj, 2005) and the relationships between organizational members will be enhanced from the relationship marketing perspective (Morgan & Hunt, 1994). In contrast, if one violates the norm or the rule, the relationship quality will be reduced accordingly (Robinson & Rousseau, 1994). Thus, when there is a norm of reciprocity in the organization, one will more likely consider that his/her knowledge sharing behavior can enhance the relationship between him/her and others. Therefore, we propose that

H1: Norm of reciprocity positively affects anticipated reciprocal relationships.

Unlike reciprocal relationships which are based on the relationships between organizational members and the social capital embedded in these relationships, reciprocal benefits directly capture individuals' expectations about whether or not they can get something in return from the social exchange perspective (Kankanhalli, et al., 2005). Following this logic, individuals tend to think about whether or not the exchange is fair (Bock, et al., 2005). However, unlike economic exchange which is based on a specified contract, there is no such an explicit contract in social exchange. In contrast, individuals' knowledge sharing behaviors are guided by certain implicit contracts or psychological contracts (Koh et al., 2004; O'Neill & Adya, 2007). Within our research context, norm of reciprocity, as a psychological contract, will drive organizational members to behave as the norm suggests, providing a guarantee of reciprocal benefits. Thus, compared to the situation when there is no such a norm of reciprocity, in the organization with a norm of reciprocity individuals will consider that they are more likely to get something in return for their knowledge sharing behaviors because others will conform to the norm of reciprocity. Therefore, we propose that

H2: Norm of reciprocity positively affects anticipated reciprocal benefits.

Reciprocity and Knowledge Sharing Intention

Both anticipated reciprocal relationships and anticipated reciprocal benefits can further affect knowledge sharing intention according to social exchange theory (Hsu & Lin, 2008; Kankanhalli, et al., 2005). Specifically, as the knowledge sharing behavior is regarded as a social exchange behavior, the relationship itself rather than extrinsic benefit becomes the primary concern (Blau, 1964; Bock, et al., 2005). Therefore, when organizational members consider that their mutual relationships with others can improve through knowledge sharing behaviors, they are more likely to engage in knowledge sharing (Bock, et al., 2005). Anticipated reciprocal relationships reflect the *relational benefits* of knowledge sharing behavior in terms of relationship marketing theories. The positive relationship between anticipated reciprocal relationships and knowledge sharing behavior has also been empirically examined in other studies (Hsu & Lin, 2008; Huang, et al., 2008). Thus, we propose that

H3: Anticipated reciprocal relationships positively affect knowledge sharing intention.

When making decision on whether or not to contribute their knowledge to EKRs or virtual communities, knowledge contributors not only consider whether the knowledge sharing behavior can enhance their relationships with others, but also whether or not the enhanced relationships can be transformed into actual benefits, i.e., whether or not they can obtain others' help in return when they have questions. Thus, anticipated reciprocal benefits should be another important predictor of knowledge sharing from the *instrumental or utilitarian perspective*. As knowledge contributors tend to achieve the *fairness* in the social exchange (i.e., knowledge sharing here) (Huber, 2001), they are more likely to share their knowledge when they expect that they can get something in return. Some previous studies on knowledge sharing have also confirmed the influence of anticipated reciprocal benefits on knowledge sharing (Chai, et al., 2011; He & Wei, 2009; Lin, 2007). Thus, we propose that

H4: Anticipated reciprocal benefits positively affect knowledge sharing intention.

Further, we propose that the impact of norm of reciprocity on knowledge sharing behavior is mediated by anticipated reciprocal relationships and benefits by considering two competing social influence mechanisms. Norm of reciprocity may directly or indirectly via anticipated reciprocal relationships and benefits influence knowledge sharing behavior but these two mechanisms are different. The direct effect suggests the compliance mechanism indicating that individuals may conducting certain behavior although they do not want to, while the indirect effect reflects that individuals will engage in certain behavior only when they perceive the behavior to be worthy (Kelman, 1958). However, in our research context, because knowledge sharing is a voluntary and pro-social behavior (Wasko & Faraj, 2005), the indirect mechanism works better than the direct mechanism. Thus, we propose that

H5a,b: Anticipated reciprocal relationships (benefits) mediate the relationship between norm of reciprocity and knowledge sharing intention.

Methodology

Consistent with prior literature (Bock, et al., 2005; Kankanhalli, et al., 2005; Wasko & Faraj, 2005), a questionnaire survey was used to collect data for testing the proposed hypotheses in the research model. Specifically, the data was collected from employees who use EKRs in their daily work in a Chinese organization.

Construct Operationalization

All constructs were measured with the items adapted from prior empirical studies with adjustments to fit with the specific research context. Seven-point Likert scales were used for all measures. Specifically, norm of reciprocity was measured with five items adapted from Burgess (2005). Anticipated reciprocal relationships were measured with four items adapted from Bock et al. (2005) and anticipated reciprocal benefits were measured with four items adapted from Kankanhalli et al. (2005). The dependent variable knowledge sharing intention was taken as a formative second-order construct with two dimensions namely explicit knowledge sharing intention and implicit knowledge sharing intention. Both of these two dimensions were measured using the items adapted from Bock et al. (2005). Considering the importance of subjective norm in knowledge sharing literature (Bock, et al., 2005; Hsu & Lin, 2008), subjective norm was treated as a control variable and its measures were adapted from Bock et al. (2005). The other two control variables evaluation apprehension was adapted from Bordia et al. (2006) and Reinig and Shin (2002), and reputation was adapted from Kankanhalli et al. (2005).

Since the survey was conducted in China, all the instruments were translated into Chinese adopting a translation committee approach (Van de Vijver & Leung, 1997). The measures for the constructs were shown in Appendix A.

Survey Administration

Data was collected in the headquarters of a big software company located in Beijing. This company is a leader local company in China software industry. Its headquarters has adopted a KMS to support knowledge management activities. The KMS is a self-developed EKR with all employees as registered

users. This EKR is mainly deployed for sharing project experiences, solutions, work reports, manuals, and expertise from trainings. The EKR usage in this company is voluntary, with no mandates from management forcing employees to use. Organizational incentives, such as contribution ranking and the best contributor rewards are in place to promote active usage.

The overall data collection process took 2 weeks. Two information system (IS) department staffs helped to manage questionnaire distribution to the main business functional departments of the headquarters. They contacted with KM principles in these main functional departments and asked them to deliver the questionnaires to colleagues who have used the EKR as knowledge contributors. This approach was also adopted in the study of Kankanhalli et al. (2005). It can ensure that all respondents are familiar with EKR usage from contributors' perspective. Small gifts, such as hair shampoo and facial masks etc., were provided as incentives for respondents' participation. Departmental KM principles were also responsible for collecting completed questionnaires from respondents. There were totally 402 copies of questionnaires returned. 16 records were deleted due to inconsistent answers and incomplete inputs. Thus, the remaining 386 responses were used for subsequent analyses. The demographics of the sample were shown in Table 2.

Table 2. Demographics of the Sample			
		Frequency	Percentage (%)
Level	Junior level	341	88.34
	Operation manager	38	9.84
	Department head	7	1.81
Gender	Male	218	56.48
	Female	168	43.52
Age	20-25	127	32.90
	26-30	173	44.82
	31-35	68	17.62
	36-40	16	4.15
	>=41	2	0.52
Tenure	<1 year	148	38.34
	1-3 year	151	39.12
	4-6 year	52	13.47
	7-8 year	23	5.96
	9-10 year	10	2.59
	>=11 year	2	0.52

Data Analysis

Partial least squares (PLS) approach was used to analyze the data. It was selected because, compared to the first generation of statistic techniques, it could simultaneously and systematically test the measurement model and structural model. Compared to other structural equation modeling (SEM) techniques such as co-variance based method, PLS is more appropriate for dealing with the sample with small sample size and abnormal distribution and the formative constructs (e.g., subjective norm and knowledge sharing intention in our study) (Hair et al., 2011). Specifically, SmartPLS was used in the data analysis. Following the recommended two-stage analytical procedures (Hair et al., 1998), the measurement model and structural model were examined respectively.

Measurement Model

Reliability and validity of the constructs were assessed in the measurement model. Reliability can be evaluated by checking the Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) for reflective constructs. As shown in Table 3, the alpha and CR values for all the constructs were above 0.7 and the AVE values for all the constructs were above 0.5, suggesting that these constructs were with good reliabilities (Fornell & Larcker, 1981).

Table 3. Reliabilities of Reflective Constructs			
	AVE	Composite Reliability	Cronbachs Alpha
Evaluation apprehension (EVA)	0.734	0.917	0.881
Explicit knowledge sharing intention (INEX)	0.831	0.908	0.797
Implicit knowledge sharing intention (INIM)	0.825	0.904	0.788
Anticipated reciprocal benefits (RECB)	0.598	0.855	0.775
Anticipated reciprocal relationships (RECR)	0.503	0.834	0.774
Norm of reciprocity (RECN)	0.658	0.885	0.826
Reputation (REPU)	0.621	0.908	0.878

The validity assessment includes convergent and discriminant validity assessments. Convergent validity can be evaluated by checking the loadings of reflective constructs. As shown in Table 4, the loadings for all the items of reflective constructs were high enough and significant, suggesting good convergent validity for these constructs.

Table 4. Loadings of Reflective Constructs							
	EVA	INEX	INIM	RECB	RECN	RECR	REPU
EVA1	**0.824**	-0.032	-0.079	-0.099	0.227	0.073	0.100
EVA2	**0.899**	-0.063	-0.128	-0.087	0.204	0.057	0.093
EVA3	**0.876**	-0.097	-0.091	-0.044	0.187	0.054	0.103
EVA4	**0.827**	-0.065	-0.071	-0.036	0.200	0.029	0.058
INEX1	-0.038	**0.906**	0.626	0.346	0.166	0.304	0.308
INEX2	-0.103	**0.917**	0.707	0.337	0.130	0.289	0.371
INIM1	-0.130	0.707	**0.914**	0.393	0.094	0.266	0.363
INIM2	-0.070	0.620	**0.902**	0.392	0.103	0.177	0.291
RECB1	-0.062	0.250	0.321	**0.640**	0.117	0.156	0.212
RECB2	-0.101	0.264	0.331	**0.817**	0.140	0.305	0.247
RECB3	-0.076	0.213	0.296	**0.829**	0.173	0.328	0.267
RECB4	-0.008	0.403	0.383	**0.792**	0.158	0.313	0.305
RECN1	0.258	0.044	-0.001	0.037	**0.622**	0.108	0.133
RECN2	0.135	0.202	0.133	0.186	**0.812**	0.223	0.192
RECN3	0.191	0.044	-0.032	0.082	**0.713**	0.098	0.097
RECN4	0.188	0.036	0.040	0.074	**0.705**	0.094	0.138
RECN5	0.153	0.126	0.131	0.197	**0.680**	0.109	0.126
RECR1	0.054	0.264	0.199	0.325	0.146	**0.823**	0.281

RECR2	0.045	0.204	0.131	0.313	0.087	**0.823**	0.285
RECR3	0.026	0.314	0.203	0.282	0.145	**0.820**	0.290
RECR4	0.073	0.266	0.257	0.266	0.258	**0.777**	0.306
REPU1	0.076	0.378	0.314	0.324	0.159	0.374	**0.807**
REPU2	-0.003	0.312	0.326	0.368	0.179	0.307	**0.793**
REPU3	0.123	0.251	0.233	0.292	0.136	0.255	**0.795**
REPU4	0.061	0.236	0.269	0.234	0.187	0.238	**0.799**
REPU5	0.127	0.298	0.287	0.186	0.157	0.235	**0.803**
REPU6	0.127	0.257	0.259	0.164	0.133	0.256	**0.729**

Discriminant validity is assessed by checking the correlations and the square root of the AVE. As shown in Table 5, the square root of the AVE for each construct was greater than the levels of correlations involving the construct, suggesting these constructs were with good discriminant validity (Fornell & Larcker, 1981).

Table 5. Correlations									
	Mean	SD	EVA	INEX	INIM	RECB	RECN	RECR	REPU	SN
EVA	3.496	1.340	**0.857**							
INEX	5.174	1.125	-0.079	**0.912**						
INIM	5.314	0.959	-0.111	0.732	**0.908**					
RECB	5.620	0.825	-0.075	0.375	0.432	**0.773**				
RECN	4.423	1.082	0.234	0.162	0.109	0.192	**0.709**			
RECR	5.279	1.169	0.061	0.325	0.245	0.366	0.198	**0.811**		
REPU	5.013	1.018	0.104	0.373	0.361	0.338	0.202	0.358	**0.788**	
SN	4.980	1.033	0.020	0.385	0.389	0.353	0.166	0.391	0.303	**NA**

Note: EVA = Evaluation apprehension, INEX = Explicit knowledge sharing intention, INIM = Implicit knowledge sharing intention, RECB = Anticipated reciprocal benefits, RECR = Anticipated reciprocal relationships, RECN = Norm of reciprocity, REPU = Reputation, SN = Subjective norm. The numbers in the diagonal row are square roots of the AVE. AVE is not available for subjective norm because it is a formative construct.
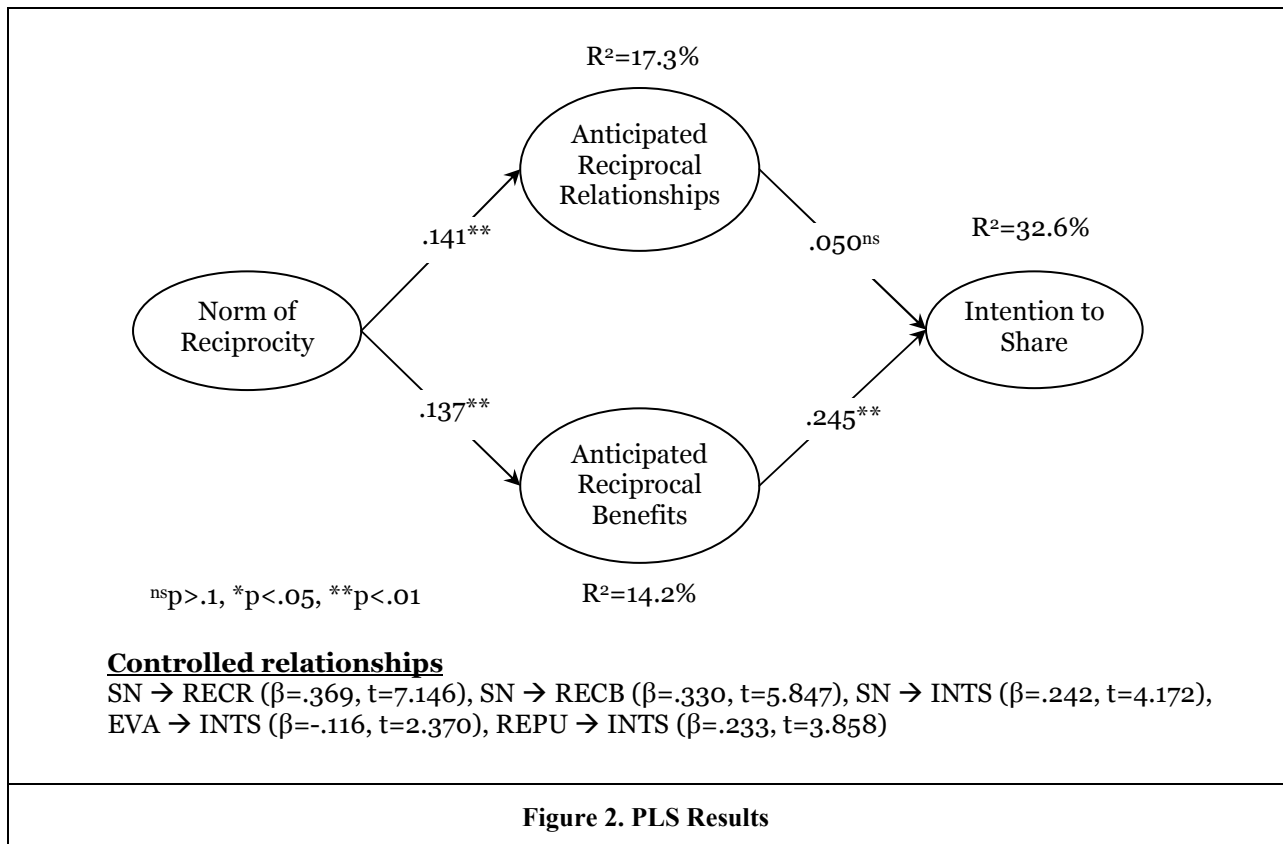
Table 6. Weights of Formative Constructs		
Subjective Norm	Weights	t-statistics
SN1	0.477	4.249
SN2	0.480	3.960
SN3	0.241	2.009
Knowledge Sharing Intention	Weights	t-statistics
INEX	0.540	48.008
INIM	0.535	52.179

For formative constructs, the weights were reported in Table 6. The results showed that the weights of all three items of subjective norm and the weights of two dimensions of the second-order construct knowledge sharing intention were significant, so all of these items were kept in the data analysis.

Structural Model

PLS results of the structural model were shown in Figure 2. The results showed that norm of reciprocity had significant impacts on anticipated reciprocal relationships (β = .141, t = 2.614) and anticipated reciprocal benefits (β = .137, t = 2.642), lending support to H1 and H2. The impact of anticipated reciprocal relationships on intention to share was found to be insignificant (β = .050, t = 0.885), so H3 was not supported. The relationship between anticipated reciprocal benefits and intention to share was significant (β = .245, t = 4.835), suggesting that H4 was supported. Further, the control variable subjective norm was found to have significant effects on anticipated reciprocal relationships (β = .369, t = 7.146), anticipated reciprocal benefits (β = .330, t = 5.847), and intention to share (β = .242, t = 4.172). The other two control variables evaluation apprehension (β=-.116, t=2.370) and reputation (β=.233, t=3.858) were found to have significant effects on intention to share. Further, when including the direct effect of norm of reciprocity on intention to share, this effect was found to be insignificant (β=.036, t=0.701)[1].

R^2=17.3%

Anticipated Reciprocal Relationships

R^2=32.6%

.141**

.050[ns]

Norm of Reciprocity

Intention to Share

.137**

.245**

Anticipated Reciprocal Benefits

[ns]p>.1, *p<.05, **p<.01

R^2=14.2%

Controlled relationships
SN → RECR (β=.369, t=7.146), SN → RECB (β=.330, t=5.847), SN → INTS (β=.242, t=4.172),
EVA → INTS (β=-.116, t=2.370), REPU → INTS (β=.233, t=3.858)

Figure 2. PLS Results

Further, Baron and Kenny's (1986) causal step method was used to examine the mediating effects of anticipated reciprocal relationships and anticipated reciprocal benefits. As shown in Table 7, when only considering the impact of norm of reciprocity on knowledge sharing intention, this effect was found to be significant (β = .181, t = 2.190). Norm of reciprocity was found to have positive impacts on anticipated reciprocal relationships (β = .218, t = 4.188) and anticipated reciprocal benefits (β = .211, t = 4.410) as well. However, when including anticipated reciprocal relationships or anticipated reciprocal benefits into

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[1]No significant difference in path coefficients was found for explicit and implicit knowledge, thus consistent with Wasko et al. (2005), we take intention to share as a second-order construct and pay less attention to the differences between explicit and implicit knowledge.

the model, the direct effect of norm of reciprocity on knowledge sharing intention became insignificant while anticipated reciprocal relationships and anticipated reciprocal benefits had significant impacts on knowledge sharing intention, suggesting that the impact of norm of reciprocity on knowledge sharing intention were fully mediated by anticipated reciprocal relationships and benefits. The Sobel's z-test further confirmed the significant indirect effects of norm of reciprocity on intention via anticipated reciprocal relationships ($\beta = .065$, z = 3.300) and via anticipated reciprocal benefits ($\beta = .089$, z = 3.843), so H5a and H5b were supported.

					IV, M→DV		
IV	DV	M	IV→DV	IV→M	IV→DV	M→DV	Mediating?
RECN	INTS	RECR	.181* (t=2.190)	.218** (t=4.188)	.083 (t=1.254)	.297** (t=5.498)	Full
RECN	INTS	RECB	.181* (t=2.190)	.211** (t=4.410)	.076 (t=1.298)	.422** (t=8.155)	Full

Table 7. Mediating Effects

Note: RECN = Norm of Reciprocity, RECB = Anticipated Reciprocal Benefits, RECR = Anticipated Reciprocal Relationships, INTS = Intention to Share.

Post-hoc Analysis

This post-hoc analysis tends to examine the individual differences in the knowledge sharing behavior shaping process. Specifically, considering the importance of gender difference in prior information systems research (Gefen & Straub, 1997; Venkatesh & Morris, 2000), we will compare the influence strengths of anticipated reciprocal relationships and anticipated reciprocal benefits on knowledge sharing across males and females.

Table 8. Gender Differences

	β (Male)	β (Female)	Δβ	$t_{spooled}$	Conclusion
RECR → INTS	.012	.138*	.126	20.980	Male < Female
RECB → INTS	.305**	.133**	.172	33.983	Male > Female

Note: RECR = Anticipated reciprocal relationships, RECB = Anticipated reciprocal benefits, INTS = Intention to share.

According to Keil et al.'s (2000) approach (see Appendix B for details), we separate the whole sample into male sample and female sample and compare the two path coefficients. As shown in Table 8, anticipated reciprocal relationships are found to have stronger impacts on knowledge sharing intention for females than for males (Δβ = .126, t = 20.980), while anticipated benefits are found to have stronger impacts on knowledge sharing intention for males than for females (Δβ = .172, t = 33.983).

Discussions and Implications

Theoretical Contributions

To solve the controversy on the role of reciprocity in knowledge sharing, this study tries to differentiate three relevant concepts of reciprocity and empirically examine the causal relationships between these concepts. This study can contribute to knowledge sharing literature in several ways.

First, it is the first study, to the best of our knowledge, that identifies norm of reciprocity, anticipated reciprocal relationships, and anticipated reciprocal benefits as three distinct concepts related to reciprocity. Prior studies tend to treat these three concepts as the same and use them interchangeably (Chai, et al., 2011). However, the mixed use of these three concepts may block the theoretical accumulation, generate contradicted findings, and hide the potential theoretical opportunities.

Distinguishing these three concepts can help researchers understand their different roles and appropriately use them in their theoretical arguments.

Second, this study proposes and empirically tests the causal relationships between the three reciprocity concepts and knowledge sharing intention. Rather than taking norm of reciprocity, anticipated reciprocal relationships and anticipated reciprocal benefits as three parallel factors, this study based on the norm internalization theory (Scott, 1971) proposes that anticipated reciprocal relationships and benefits which reflect norm internalization should mediate the impacts of norm of reciprocity on knowledge sharing intention. Further, this study also proposes that although there are two social influence mechanisms associated with group norms (e.g., compliance and internalization mechanisms) (Venkatesh & Davis, 2000) only the internalization mechanism works in the knowledge sharing context considering the voluntary participation nature of knowledge sharing behavior (Chiu, et al., 2006).

Third, this study also suggests that the two internalization mechanisms (through anticipated reciprocal relationships and anticipated reciprocal benefits) may be deployed by different individuals. Specifically, the results show that males stress more on reciprocal benefits than females, while females emphasize more on reciprocal relationships than males, suggesting that males and females rely on different internalization mechanisms when making decision on whether or not to share their knowledge to KMS. Therefore, future research on the internalization process of norm of reciprocity should pay attention to the gender differences or the individual differences.

Practical Implications

Two practical implications can be derived from the study. First, as the impact of norm of reciprocity on knowledge sharing behavior is mediated by anticipated reciprocal relationships and benefits, organization managers who are responsible for knowledge management should recognize that only setting the norm of reciprocity is not adequate. If the norm of reciprocity cannot be transformed into anticipated reciprocal relationships and benefits, norm per se cannot lead to knowledge sharing behaviors. Thus, organizations should pay attention to both the norm building process and the norm internalization process. Second, anticipated reciprocal benefits and relationships (only for females) were found to have significant impacts on knowledge sharing behavior, suggesting that organizations should provide some tools to improve the visibility of relationships (e.g., social media tools) and offer certain mechanisms to highlight what an employee gives and gets from KMS to help him/her evaluate the fairness of social exchange. Specifically, the KMS should build a profile for each user to describe his/her expertise, the answers s/he has provided and the questions s/he has asked. The transparency of prior knowledge contribution can encourage previous knowledge contributors and exert pressures on those free-riders.

Limitations

There are several limitations of the study. First, this study is conducted in China which has a collectivistic culture (Hofstede, 1980). Because reciprocity which is closely related with the relationships between organizational members, whether or not the conclusions can be extended to individualistic culture still requires cross-culture studies in future research. Second, because our research focus is to understand the causal relationships between three reciprocity concepts, several other factors such as structural and cognitive social capital (Kankanhalli, et al., 2005; Wasko & Faraj, 2005) are not included in our research model. These factors may be further included in future research to increase the R-squares of knowledge sharing intention.

Conclusion

Reciprocity should not be regarded as a single factor but a series of factors with casual relationships. Specifically, norm of reciprocity, anticipated reciprocal relationships and anticipated reciprocal benefits as three relevant reciprocity concepts work differently when shaping individual knowledge sharing behaviors, where the impacts of norm of reciprocity on knowledge sharing are mediated by anticipated reciprocal relationships and anticipated reciprocal benefits. Whether the impacts of norm of reciprocity on knowledge sharing are mediated by anticipated reciprocal relationships or anticipated reciprocal benefits may vary across individuals. This study enriches the knowledge sharing literature by articulating the relationships between the aforementioned three factors and figures out the boundary conditions

under which these factors apply. The findings can advance theoretical understanding on the role of reciprocity in knowledge sharing and provide some practical suggestions on how to motivate employees' knowledge sharing.

Acknowledgement

Appendix A. Measures

Norm of Reciprocity: Adapted from (Burgess, 2005)

RECN1: People who share their knowledge are entitled to ask for favors from the receivers in return.

RECN2: People who receive knowledge should show their appreciation to the contributor in a concrete way.

RECN3: Knowledge should be shared with people who have shared their knowledge with me.

RECN4: People who share their knowledge should get back knowledge from the receivers when they need it.

RECN5: People who share their knowledge should get responding from the receivers when they are in need.

Anticipated Reciprocal Relationships: Adapted from (Bock, et al., 2005)

RECR1: I consider sharing my knowledge with others as a good approach to strengthen the ties between existing members in the organization & myself.

RECR2: I consider sharing my knowledge with others as a good approach to expand the scope of my association with other members in the organization.

RECR3: I consider sharing my knowledge with others as a good approach to draw smooth cooperation from outstanding members in the future.

RECR4: I consider sharing my knowledge with others as a good approach to create strong relationships with members who have common interests in the organization.

Anticipated Reciprocal Benefits: Adapted from (Kankanhalli, et al., 2005)

RECB1: When I share my knowledge through KMS, I believe that I will get an answer for giving an answer.

RECB2: When I share my knowledge through KMS, I expect somebody to respond when I'm in need

RECB3: When I contribute knowledge to KMS, I expect to get back knowledge when I need it.

RECB4: When I share my knowledge through KMS, I believe that my queries for knowledge will be answered in future.

Intention to Share: Adapted from (Bock, et al., 2005)

INEX1: I will share my work reports and official documents through KMS with members of my organization more frequently in the future.

INEX2: I will always contribute my manuals, methodologies and models to KMS for members of my organization.

INIM1: I intend to share my experience or know-how from work through KMS with other organizational members more frequently in the future.

INIM2: I will try to share my expertise from my education or training through KMS with other organizational members.

Subjective Norm: Adapted from (Bock, et al., 2005)

SN1: My CEO thinks that 1 should share my knowledge with other members in the organization.

SN2: My boss thinks that 1 should share my knowledge with other members in the organization.

SN3: My colleagues think 1 should share my knowledge with other members in the organization.

Evaluation Apprehension: Adapted from (Bordia et al. 2006; Reinig and Shin 2002)

EVA1: I am afraid that my submission to KMS will evoke negative evaluation.

EVA2: There were times when I refrained from contributing to KMS because I felt others might not accept my ideas.

EVA3: I am worried about being ridiculed if sharing knowledge through KMS.

EVA4: I am worried if I share my knowledge through KMS, my contribution may be perceived as unconstructive.

Reputation: Adapted from (Kankanhalli et al. 2005)

REPU1: I am strongly motivated by my image improvement within the organization for contributing my knowledge to KMS.

REPU2: I am strongly motivated by the prestige I can gain for contributing my knowledge to KMS.

REUT3: I am strongly motivated by the recognition I can earn from other people for contributing my knowledge to KMS.

REPU4: I am strongly motivated by my superiors' praise if I contribute my knowledge to KMS.

REPU5: I am strongly motivated by getting a higher rank in the knowledge contribution ranking list for contributing my knowledge to KMS.

REPU6: I am strongly motivated by the "best contributor award" for contributing my knowledge to KMS.

Appendix B. Path Coefficient Comparison (Keil et al. 2000)

$$S_{pooled} = \sqrt{\{[(N_1-1)/(N_1+N_2-2)]\times SE_1^{\,2} + [(N_2-1)/(N_1+N_2-2)]\times SE_2^{\,2}\}}$$

$$t = (PC_1 - PC_2)/[S_{pooled} \times \sqrt{(1/N_1 + 1/N_2)}]$$

Where $S_{pooled} =$ pooled estimator for the variance

$t =$ t-statistic with $N_1 + N_2 - 2$ degrees of freedom

$N_i =$ sample size of dataset for group i

$SE_i =$ standard error of path in structural model of group i

$PC_i =$ path coefficient in structural model of group i

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