



Impact of Intrinsic Motivation on Organizational Commitment: Empirical Evidences From China

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Abstract

Background: Intrinsic motivation and organizational commitment are closely related variables in organizational behavior (OB) studies. Literatures in OB have shown strong empirical support on this correlation based on the data from North America. But international empirical evidences are very limited, especially for the eastern cultural countries, such China. **Objective:** This study analyzes and compares the relation between intrinsic motivation and organizational commitment in two countries, the US and China. The three components of organizational commitment proposed by Meyer and Allen are examined separately. **Method:** 330 samples are collected in the US and China, and analyzed using partial least square (PLS) based structural equation modeling (SEM). The results of the SEM analysis are compared between the countries. **Results:** Intrinsic motivation is positively associated with affective commitment and normative commitment in both the US and China. Intrinsic motivation is also positively associated with continuance commitment in the US, but not in China. The PLS best-fitting curve also shows the relation between intrinsic motivation and the three components of organizational commitment are non-linear, and very different between the US and China. **Conclusion:** Employees motivated by the enjoyment of their job will have high levels of commitment to their organization. Unlike employees in the US, employees in China do not regard the loss of enjoyment of their job as a cost associated with leaving an organization.

Key words: Intrinsic motivation; Organizational commitment; Cross-cultural study; China

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INTRODUCTION

Organizational commitment is an important concept in organization behavior (OB) field. It is perceived that a high level of organizational commitment can lead to many desirable outcomes for organizations, such as high productivity, low absenteeism, and low turnover intention (Allen & Weiss, 2002; Finegold, Mohrman, & Spreitzer, 2002; Lee, Allen, Meyer, & Rhee, 2001; McConnell, 2003; Nayak, 2002; Porter, Steers, Mowday, & Boulian, 1974). Because of the desirable outcomes, scholars are searching for variables that can improve employees' commitment level. Intrinsic motivation has been shown by empirical studies conducted in the western culture to have a positive influence on employees' organizational commitment (O'Driscoll & Randall, 1999; Spector, 1997; Springer, 2010; Tietjen & Myers, 1998); however, international empirical evidences are very limited. Especially, evidence from China is missing in OB literature.

The People's Republic of China, often referred to as China or Mainland China, has the largest population (more than 1.3 Billion) and has the second largest economy (in terms of nominal GDP) in the world. China is increasingly playing an important and influential role in the global economy (World Bank, 2013). It is critical for both scholars and business owners to examine the generalizability of OB theories/findings in China. To enrich the literature on cross-cultural organizational behavior, this study is designed to provide empirical evidence on whether or not intrinsic motivation affects organizational commitment differently between the US and China.

According to Meyer and Allen (1997), organizational commitment has three components that reflect different reasons for employees continuing employment in a certain organization. The three components of commitment are: 1) affective commitment, which refers to an employee's emotional attachment to, identification with, and involvement in the organization; 2) continuance commitment, which refers to an employee's awareness of the costs associated with leaving the organization; and 3) normative commitment, which refers to a feeling of obligation to continue employment.

Consequently, intrinsic motivation, may affect different components of organizational commitment in different ways. For example, O'Driscoll and Randall (1999) found that intrinsic motivations are positively associated with affective commitment but not associated with continuance commitment. This study adopts Deci and Ryan's (1985) widely cited definition of intrinsic motivation. Intrinsic motivation is "doing something because it is inherently interesting or enjoyable" (Deci & Ryan, 1985, p. 55).

The results of present study are generally consistent with previous OB literature in which intrinsic motivation positively affects organizational commitment (Judge & Hulin, 1993; Judge & Kammeyer-Mueller, 2012; Latham & Pinder, 2005). At the same time, it also shows the influence of country difference. In detail, intrinsic motivation is not considered to be a potential cost associated with leaving an organization in China. At least, it is not a reason for employees to keep their membership in an organization. For employees in the US, it is a cost that can motivate employees to stay in an organization.

1. LITERATURES AND HYPOTHESIS DEVELOPMENT

Empirical studies generally support the concept that intrinsic motivation is related to organizational commitment, but the information provided by empirical studies is incomplete and lacks details. Only the relation between intrinsic motivation and affective commitment is consistent. The relation between intrinsic motivation and continuance commitment is mixed. Conducting an empirical study on normative commitment has been neglected.

Motivation and organizational commitment are distinct but related concepts (Meyer, Becker, & Vandenberghe, 2004). Motivation theories explain why people do their jobs. Organizational commitment theories explain why people stay in certain organizations to do their jobs. By definition, the two variables are related. Pinder (1998) defines work motivation as a set of energetic forces that lead an individual to initiate work-related behavior. Meyer and Herscovitch (2001) define organizational commitment as a force that binds an individual to a course of action relevant to organizations. Both variables have been described as forces with implications for behavior (Meyer et al., 2004).

Surprisingly, only a small number of OB studies have examined their relation. Motivation theorists have focused more on explaining task performance. Organizational commitment theorists have historically focused more on explaining employee retention or turnover (Meyer et al., 2004). Meyer et al. concluded that "commitment and motivation literatures in organizational psychology have evolved somewhat independently. Commitment researchers seldom address the motivational processes through which commitment affects behavior, and motivation researchers have not recognized important distinctions in the forms, foci, and bases of commitment" (2004, p. 991).

Although the development of motivation and organizational commitment theories are independent, some characteristics of these theories are very similar. For example, Meyer and Allen stated that "positive work attitudes develop when a newcomer's expectations about the job and/or organization are confirmed by his or her experiences. It is not experiences per se that influence affective commitment, but rather the discrepancy between those experiences and what the person expects" (1997, p. 52). This statement about affective commitment is very similar to the way the expectancy theory explains the motivation process.

Also, Becker (1960) argued that commitment to a course of action results from the accumulation of an employee's investment of some of something valuable (e.g. time and effort) that would lose if he or she left the organization. This statement about continuance commitment is very similar to the way the equity theory explains the motivation process. The only difference is that the consequence of organizational commitment theories leads to changes in retention or turnover (or turnover intention), and the consequence of motivation theories leads to changes in effort.

Theoretically, affective commitment is related to intrinsic motivation. Meyer and Herscovitch proposed "that any personal or situational variable that contributes to the likelihood that an individual will become intrinsically motivated in a course of action will contribute to the development of affective commitment" (2001, p. 316). Fornes et al. (2008) proposed a conceptual model of commitment based on a literature review of 567 peer-reviewed articles from 1970 to 2008. They proposed that organizations that ensure interesting work (a high level of intrinsic rewards) can improve organizational commitment.

Using a sample of 350 respondents from two western countries, the empirical results from O'Driscoll and Randall (1999) show that intrinsic motivation is positively associated with affective commitment. Johnson (2011) also found that intrinsic motivation is positively related to organizational commitment, but, they did not differentiate the components of organizational commitment. Similarly, Andressen, Konradt, and Neck

(2012) found that work motivation is positively related to affective commitment.

Therefore, the previous theoretical and empirical findings lead to the first hypothesis:

Hypothesis 1: Intrinsic motivation is positively associated with affective commitment

Both theoretical and empirical findings suggest that intrinsic motivation is positively associated with affective commitment, but the relations between intrinsic motivation and the other two components of organizational commitment are not very clear.

Theoretically, continuance commitment is related to extrinsic motivation rather than intrinsic motivation. Meyer and Herscovitch argued that “continuance commitment is characterized by the perception that it would be costly to discontinue a course of action” (2001, p. 316). The cost mainly refers to the loss of extrinsic rewards, such as money and job security. If change in an organization leads to a loss of a high level extrinsic motivator, the employees will be more likely to maintain their position in the current organization.

Because of the lack of a theoretical link between intrinsic motivation and continuous commitment, very few empirical studies have tested this relationship, and the few empirical studies that have tested it found no relation between the two variables. For example, the work by O’Driscoll and Randall (1999) and George and Sabapathy (2011) found that intrinsic motivation is not associated with continuance commitment. Due to the lack of theoretical and empirical support, intrinsic motivation is proposed to be not associated with continuance commitment:

Hypothesis 2: Intrinsic motivation is not associated with continuance commitment

A thorough search of the existing literature did not uncover any publications on the theoretical link between intrinsic motivation and normative commitment. This may be because motivation theories omit sociological factors. The social value or obligation that keeps an individual working in a certain organization is not a personal need or goal, but the personal need of all social members may shape social values. Since social values vary across countries, intrinsic motivation and normative commitment are potentially associated in certain nations.

Evidence of this relation can be found in a study by George and Sabapathy (2011) who used a sample of 450 respondents from India. The study showed that motivation is positively associated with normative commitment. They did not differentiate between intrinsic and extrinsic motivation. Therefore, it is necessary to specifically examine the impact of intrinsic motivation on normative commitment. Therefore, the third hypothesis is:

Hypothesis 3: Intrinsic motivation is positively associated with normative commitment

Whether or not an OB theory or model developed in one country is applicable to another country depends on a specific cross-national comparison. Many scholars proposed that the national culture is the main differentiator (Dong & Liu, 2010; Gelfand, Erez, & Aycan, 2007; Hofstede, 2001; Kavar, 2012; Tsui, Nifadkar, & Ou, 2007). A widely-adopted definition of culture is “culture is the collective programming of the mind which distinguishes the members of one category of people from another” (Hofstede, 1989, p. 51).

National culture has been researched for more than a quarter of a century (Hofstede, 2001). It is now a very important research focus that affects every management field. The basic argument is simple: people from different cultural backgrounds should behave differently. Therefore, the national culture may potentially affect individuals’ behavior in organizations. The present study proposes that cultural differences between the US and China will change the path coefficient between motivation and organizational commitment. This lead to the fourth hypothesis:

Hypothesis 4: There is a significant difference between the path coefficients of the US sample and the China sample for the motivation-organizational commitment relation

As a two-country study, the present study cannot exclude possible influences from factors other than the national culture. Many of the two-country studies did not measure any culture variables (Tsui et al., 2007). To avoid over-interpretation on the role of national culture, the present study does not measure culture variables but simply compares path coefficients of different samples from the US and China. This is one of the main limitations of the present study.

2. METHODOLOGY

2.1 Research Model

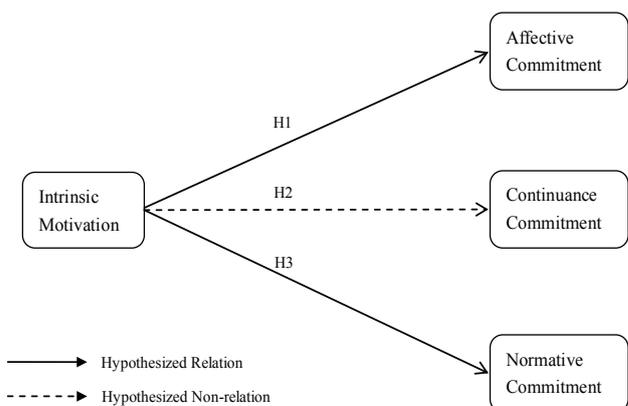


Figure 1
Hypotheses in the Research Model

Table 1
List of Hypotheses

Motivation-Organizational Commitment Relation	
H1	Intrinsic motivation is positively associated with affective commitment.
H2	Intrinsic motivation is not associated with continuance commitment.
H3	Intrinsic motivation is positively associated with normative commitment. Cross-cultural Comparison
H4	There is a significant difference between the path coefficients of the US sample and the China sample for the motivation-organizational commitment relation.

2.2 Measurement Scales

All measurement scales of the latent variables used in the present research are borrowed from the existing literature. All question items of the latent variables used in the present study are scored on a 5-point Likert response scale ranging from strongly disagree (1) to strongly agree (5).

The present research combines Warr, Cook, and Wall's (1979) scale and Kuvaas and Dysvik's (2009) scale. Price (1997) showed that Warr's et al. (1979) scales had good validity and reliability. "The factor structure is remarkably consistent with expectations," and the Cronbach's alpha is also relatively high (0.82) (Price, 1997, p. 137). A measurement scale later developed by Kuvaas and Dysvik (2009) also yields high validity and reliability, with loadings of 0.88, 0.87, 0.79, and 0.86, and Cronbach's alpha is 0.92. This study combines the two groups of scales to guarantee validity and reliability.

The present study adopts Meyer and Allen's (1997) original question items from their book *Commitment in the workplace: Theory, research, and application*. Their measurement scales were widely-adopted and have shown good validity and reliability. The median reliabilities for the affective, continuance, and normative commitment scales, respectively, are 0.85, 0.79, and 0.73 (Meyer & Allen, 1997).

Four commonly-used control variables for organizational commitment are used in this study. They are age, gender, monetary income, and years of service (Bedeian, Ferris, & Kacmar, 1992; Mathieu & Zajac, 1990; Robie, Ryan, Schmieder, Parra, & Smith, 1998).

2.3 Data Collection

All question items were combined into a consolidated questionnaire with clear instructions on the purpose of this research. More than 2000 questionnaires were distributed. A total of 330 anonymous responses were collected for the study (136 responses from the US and 194 responses from China). The question items were originally written in English. Then, the questions were translated into Chinese by a bilingual professional. The Chinese version was then translated back into English by another bilingual professional to check the validity of the translation.

The subjects in the US were mainly staffs and students from a university system in the southwest US. About 50% of the subjects in China were members of a research association in the northern part of China. The rest of the subjects in China were employees from a manufacturing

company in the eastern part of China. The distribution of the questionnaire involved multiple channels, including paper-based survey, emails, tweets, and LinkedIn invitations. The US responses were mainly collected via email with the help of the Institutional Review Board (IRB). Table 2 shows more details on data from the two countries:

Table 2
Descriptive Statistics Grouped by Country

Variable	US Sample (136)	China Sample (194)
Gender	Male 31.6%; Female 68.4%	Male 53.6%; Female 46.4%
Age	35.75 (s=14.2)	32.26 (s=7.4)
Full-time work experience	13.8 (s=13.2)	8.2 (s=7.9)
Part-time work experience	4.0 (s=4.9)	1.3 (s=2.7)
Years of service	5.8 (s=6.4)	6.1 (s=6.3)
Less than high school	0.0%	0.0%
High school	2.9%	3.0%
Some college	23.5%	5.2%
4-year college degree	25.7%	32.5%
Graduate or professional training	47.8%	59.3%
Annual Salary	\$44150.5 (s=42449.7)	¥ 78484.7 (\$12845.3) (s=63788.4)

2.4 Statistical Analysis

The data were analyzed using partial least square (PLS) based structural equation modeling (SEM). PLS was developed in 1966 by Herman Wold as an econometric technique (Wold, 1966). PLS is particularly suitable for social science applications in which the researcher is faced with many variables and ill-understood relationships, and the object is merely to construct a good predictive model (Tobias, 1995). One of the main advantages of applying PLS is that PLS does not require distributional assumptions, such as normality distribution (Haenlein & Kaplan, 2004). PLS also does not require as large of a sample size as a co-variance based SEM to generate a stable path coefficient.

3. MODEL ASSESSMENT

The validity and reliability of the latent variables were

assessed using the measurement model. The present study used a confirmatory factor analysis in which the relations between indicators and latent variables are already defined (ex. IM01, IM02...IM09 are indicators defined for intrinsic motivation).

For validity testing, Table 3 and Table 4 present the combined loadings and cross-loadings of all indicators in the US sample and the China sample, respectively. The convergent validity is good if the question items associated with each latent variable are understood by the subjects in the same way as they are designed. To guarantee that the model in the present study had an acceptable convergent validity, the loadings of indicators should be higher than 0.5 and significant at the 0.01 level (Hair, 2009). Thus, the two indicators that do not meet this criterion were removed from the model. They are CC01 and NC01. Since some of the indicators are reversed question items, their scores were adjusted accordingly. Those reversed indicators are AC04, AC05, and CC01.

Formative latent variable indicators did not apply to

this assessment. Those indicators were assessed in part based on p-values associated with indicator weights (Kock, 2013). Therefore, Table 5 and Table 6 show all indicator weights of the US sample and the China sample, respectively. Two criteria were applied to test the acceptability of indicators. The p-values of indicator weights should be equal to or lower than 0.05. The VIF of indicators should be lower than 3.3 (Kock, 2013). One indicator, IM02, did not meet this criteria (p-value=0.098 in the US sample) and was removed from the model.

In Table 3 and Table 4, the numbers in parentheses are loadings, and the other numbers are cross-loadings. They also show the type of the latent variable. According to the nature of the question item, intrinsic motivation is the formative latent variables in which each indicator measures different attributes of this latent variable. Other latent variables are reflective latent variables in which all indicators are associated with the latent variable score. As shown in Tables 6 and 7, all of the loading of indicators were higher than 0.5 and significant at 0.01 levels.

Table 3
Loadings and Cross-loadings of Indicators: The US Sample

	IM	AC	CC	NC	Type	SE	p-value
IM01	(0.688)	0.004	0.005	-0.022	Formative	0.068	<0.001
IM03	(0.683)	0.048	0.19	-0.188	Formative	0.068	<0.001
IM04	(0.499)	-0.151	0.168	0.112	Formative	0.068	<0.001
IM05	(0.68)	-0.059	0.013	-0.02	Formative	0.068	<0.001
IM06	(0.663)	0.164	0.185	-0.324	Formative	0.068	<0.001
IM07	(0.781)	-0.056	-0.129	0.159	Formative	0.068	<0.001
IM08	(0.773)	-0.012	-0.201	0.223	Formative	0.068	<0.001
IM09	(0.742)	0.032	-0.125	0.027	Formative	0.068	<0.001
AC01	-0.084	(0.596)	-0.075	0.138	Reflective	0.068	<0.001
AC02	0.228	(0.757)	0.124	-0.228	Reflective	0.068	<0.001
AC03	0.182	(0.572)	0.07	0.266	Reflective	0.068	<0.001
AC04	-0.16	(0.837)	0.048	-0.109	Reflective	0.068	<0.001
AC05	-0.116	(0.806)	-0.161	0.037	Reflective	0.068	<0.001
CC02	0.049	0.198	(0.771)	0.123	Reflective	0.068	<0.001
CC03	0.025	0.104	(0.831)	0.154	Reflective	0.068	<0.001
CC04	-0.024	-0.113	(0.828)	-0.179	Reflective	0.068	<0.001
CC05	-0.053	-0.199	(0.735)	-0.101	Reflective	0.068	<0.001
NC02	-0.137	-0.16	0.004	(0.818)	Reflective	0.068	<0.001
NC03	0.044	0.072	-0.018	(0.866)	Reflective	0.068	<0.001
NC04	0.093	0.086	0.016	(0.796)	Reflective	0.068	<0.001

Note. IM=intrinsic motivation; AC=affective commitment; CC=continuance commitment; NC=normative commitment.

Table 4
Loadings and Cross-loadings of Indicators: The China Sample

	IM	AC	CC	NC	Type	SE	p-value
IM01	(0.642)	0.335	-0.03	-0.052	Formative	0.059	<0.001
IM03	(0.667)	0.119	0.151	-0.121	Formative	0.059	<0.001
IM04	(0.604)	0.11	0.001	-0.056	Formative	0.059	<0.001
IM05	(0.561)	-0.141	0.052	0.02	Formative	0.059	<0.001
IM06	(0.736)	0.066	-0.278	-0.099	Formative	0.059	<0.001
IM07	(0.687)	-0.193	0.05	0.118	Formative	0.059	<0.001
IM08	(0.553)	-0.295	0.145	0.116	Formative	0.059	<0.001
IM09	(0.633)	-0.055	-0.033	0.101	Formative	0.059	<0.001
AC01	-0.114	(0.765)	0.167	0.12	Reflective	0.059	<0.001
AC02	0.087	(0.699)	0.087	0.042	Reflective	0.059	<0.001
AC03	0.032	(0.619)	0.184	0.337	Reflective	0.059	<0.001
AC04	-0.071	(0.572)	-0.237	-0.412	Reflective	0.059	<0.001
AC05	0.074	(0.631)	-0.264	-0.15	Reflective	0.059	<0.001
CC02	-0.005	-0.008	(0.633)	0.051	Reflective	0.059	<0.001
CC03	-0.061	-0.003	(0.658)	-0.028	Reflective	0.059	<0.001
CC04	0.084	-0.089	(0.827)	0.026	Reflective	0.059	<0.001
CC05	-0.034	0.107	(0.753)	-0.047	Reflective	0.059	<0.001
NC02	-0.148	0.032	-0.066	(0.51)	Reflective	0.059	<0.001
NC03	-0.067	-0.052	0.011	(0.882)	Reflective	0.059	<0.001
NC04	0.153	0.034	0.027	(0.884)	Reflective	0.059	<0.001

Note. IM=intrinsic motivation; AC=affektive commitment; CC=continuance commitment; NC=normative commitment.

Table 5 and Table 6 show the indicator weights and the variance inflation factor (VIF) associated with the indicator weights for the US sample and the China sample, respectively. After removing indicator IM02, all p-values associated with indicator weights were lower than 0.05. The VIF of all indicators were lower than 3.3. Indicator weight-loading signs (WLS) were applied to verify whether or not an indicator was making a negative contribution to the R-squared of its latent variable, which may be a sign of

Simpson's paradox. It was recommended that all indicator WLS values be positive.

Effect sizes (ES) are also provided in Table 5 and 6. The effect size of an indicator should be higher than 0.02, or it would be considered to be too weak to relate to latent variable regardless of its p-value (Kock, 2013). The convergent validity assessment in Table 6, 7, 8, and 9 show that question items associated with each latent variable were understood by respondents in the same way as they were designed.

Table 5
Indicator Weights and VIFs: The US Sample

	IM	AC	CC	NC	Type	SE	p-value	VIF	WLS	ES
IM01	(0.179)	0.000	0.000	0.000	Formative	0.068	0.005	1.737	1	0.123
IM03	(0.178)	0.000	0.000	0.000	Formative	0.068	0.005	1.565	1	0.121
IM04	(0.130)	0.000	0.000	0.000	Formative	0.068	0.029	1.360	1	0.065
IM05	(0.177)	0.000	0.000	0.000	Formative	0.068	0.005	1.821	1	0.120
IM06	(0.172)	0.000	0.000	0.000	Formative	0.068	0.006	1.555	1	0.114
IM07	(0.203)	0.000	0.000	0.000	Formative	0.068	0.002	2.646	1	0.158
IM08	(0.201)	0.000	0.000	0.000	Formative	0.068	0.002	2.610	1	0.155
IM09	(0.193)	0.000	0.000	0.000	Formative	0.068	0.003	2.156	1	0.143
AC01	0.000	(0.229)	0.000	0.000	Reflective	0.068	<0.001	1.301	1	0.137
AC02	0.000	(0.291)	0.000	0.000	Reflective	0.068	<0.001	1.622	1	0.220
AC03	0.000	(0.220)	0.000	0.000	Reflective	0.068	<0.001	1.198	1	0.126

To be continued

Continued

	IM	AC	CC	NC	Type	SE	p-value	VIF	WLS	ES
AC04	0.000	(0.321)	0.000	0.000	Reflective	0.068	<0.001	2.874	1	0.269
AC05	0.000	(0.309)	0.000	0.000	Reflective	0.068	<0.001	2.594	1	0.249
CC02	0.000	0.000	(0.307)	0.000	Reflective	0.068	<0.001	1.676	1	0.237
CC03	0.000	0.000	(0.331)	0.000	Reflective	0.068	<0.001	1.932	1	0.275
CC04	0.000	0.000	(0.330)	0.000	Reflective	0.068	<0.001	1.871	1	0.273
CC05	0.000	0.000	(0.293)	0.000	Reflective	0.068	<0.001	1.537	1	0.215
NC02	0.000	0.000	0.000	(0.398)	Reflective	0.068	<0.001	1.575	1	0.326
NC03	0.000	0.000	0.000	(0.422)	Reflective	0.068	<0.001	1.794	1	0.365
NC04	0.000	0.000	0.000	(0.388)	Reflective	0.068	<0.001	1.477	1	0.309

Note. IM=intrinsic motivation; AC=affektive commitment; CC=continuance commitment; NC=normative commitment; VIF=variance inflation factor; WLS=weight-loading sign; ES=effect size.

Table 6
Indicator Weights and VIFs: The China Sample

	IM	AC	CC	NC	Type	SE	p-value	VIF	WLS	ES
IM01	(0.197)	0.000	0.000	0.000	Formative	0.059	<0.001	1.616	1	0.126
IM03	(0.205)	0.000	0.000	0.000	Formative	0.059	<0.001	1.671	1	0.137
IM04	(0.186)	0.000	0.000	0.000	Formative	0.059	<0.001	1.645	1	0.112
IM05	(0.172)	0.000	0.000	0.000	Formative	0.059	0.002	1.580	1	0.097
IM06	(0.226)	0.000	0.000	0.000	Formative	0.059	<0.001	1.725	1	0.166
IM07	(0.211)	0.000	0.000	0.000	Formative	0.059	<0.001	2.384	1	0.145
IM08	(0.170)	0.000	0.000	0.000	Formative	0.059	0.002	2.330	1	0.094
IM09	(0.194)	0.000	0.000	0.000	Formative	0.059	<0.001	1.796	1	0.123
AC01	0.000	(0.350)	0.000	0.000	Reflective	0.059	<0.001	1.528	1	0.268
AC02	0.000	(0.320)	0.000	0.000	Reflective	0.059	<0.001	1.476	1	0.224
AC03	0.000	(0.284)	0.000	0.000	Reflective	0.059	<0.001	1.247	1	0.175
AC04	0.000	(0.262)	0.000	0.000	Reflective	0.059	<0.001	1.436	1	0.150
AC05	0.000	(0.290)	0.000	0.000	Reflective	0.059	<0.001	1.482	1	0.183
CC02	0.000	0.000	(0.303)	0.000	Reflective	0.059	<0.001	1.182	1	0.192
CC03	0.000	0.000	(0.316)	0.000	Reflective	0.059	<0.001	1.233	1	0.208
CC04	0.000	0.000	(0.397)	0.000	Reflective	0.059	<0.001	1.628	1	0.328
CC05	0.000	0.000	(0.361)	0.000	Reflective	0.059	<0.001	1.438	1	0.272
NC02	0.000	0.000	0.000	(0.281)	Reflective	0.059	<0.001	1.071	1	0.144
NC03	0.000	0.000	0.000	(0.485)	Reflective	0.059	<0.001	1.891	1	0.427
NC04	0.000	0.000	0.000	(0.486)	Reflective	0.059	<0.001	1.897	1	0.429

Note. IM=intrinsic motivation; AC=affektive commitment; CC=continuance commitment; NC=normative commitment; VIF=variance inflation factor; WLS=weight-loading sign; ES=effect size.

A discriminant validity assessment was conducted and is shown in Table 7 and Table 8 for the US sample and the China sample, respectively. The numbers in parentheses are the square roots of the average variance extracted (AVE). The following criterion was applied to the discriminant validity assessment: “for each latent variable, the square root of the average variance extracted should be higher than any of the correlations involving that latent variable” (Kock, 2013, p. 64).

Table 7
Correlation between Latent Variables and Square Roots of AVEs: The US Sample

	IM	AC	CC	NC
IM	(0.694)			
AC	0.263	(0.722)		
CC	0.072	0.149	(0.792)	
NC	0.316	0.425	0.216	(0.827)

Note. IM=intrinsic motivation; AC=affektive commitment; CC=continuance commitment; NC=normative commitment.

Table 8
Correlation Between Latent Variables and Square Roots of AVEs: The China Sample

	IM	AC	CC	NC
IM	(0.638)			
AC	0.384	(0.66)		
CC	-0.1	-0.174	(0.722)	
NC	0.412	0.437	-0.039	(0.779)

Note. IM=intrinsic motivation; AC= affective commitment; CC=continuance commitment; NC=normative commitment.

As shown in Table 7 and Table 8, the square roots of the AVE associated with each latent variable were higher than the correlations of that respective latent variable. This

Table 9
Variable Coefficients: The US Sample

	IM	AC	CC	NC	Age	Gender	YS	MI
Composite reliability	0.88	1	0.842	0.871	0.867	1	1	1
Cronbach's alpha	0.843	1	0.763	0.801	0.769	1	1	1
Variance inflation factor	1.322	2.07	1.517	1.227	1.466	1.85	1.051	1.29

Note. IM=intrinsic motivation; AC= affective commitment; CC=continuance commitment; NC=normative commitment; YS=Year of Service; MI=Monetary Income.

Table 10
Variable Coefficients: The China Sample

	IM	AC	CC	NC	Age	Gender	YS	MI
Composite reliability	0.845	0.793	0.812	0.814	1	1	1	1
Cronbach's alpha	0.789	0.673	0.689	0.653	1	1	1	1
Variance inflation factor	1.52	1.693	1.17	1.411	1.166	1.109	1.059	1.182

Note. IM=intrinsic motivation; AC= affective commitment; CC=continuance commitment; NC=normative commitment; YS=Year of Service; MI=Monetary Income.

Table 9 and Table 10 show the composite reliability and the Cronbach's alpha of all latent variables, which are higher than 0.6. This indicates that the responses of all of the question items were stable and consistent for different subjects. The VIF scores are all lower than 5, which indicates that the multicollinearity level in this assessment model is acceptable.

4. RESULTS

The results of the structural equation modeling (SEM) analysis are presented in Figure 2 and Figure 3 for the US sample and the China sample, respectively. The numbers in these figures are the path coefficients (standardized partial regression coefficients), which indicate the strengths of the multivariate associations between variables. The statistical significance level of the path coefficients are also included in the figures, where * refers to $p \leq 0.05$, ** refers to $p \leq 0.01$, and ns refers to non-significant.

In Figure 2 and Figure 3, a solid arrow means that the two variables are hypothesized to be associated. A dashed

indicates that the survey respondents were not confused about the question item of a designed latent variable with other latent variables.

The reliability was examined using composite reliability and Cronbach's alpha and is shown in Table 9 and Table 10 for the US sample and the China sample, respectively. The conservative acceptable criteria are: both the composite reliability and the Cronbach's alpha coefficients should be equal to or greater than 0.7 (Kock, 2013). An even more lenient version sets this threshold at 0.6 (Nunnally & Bernstein, 1994). To check for colinearity issues, Table 9 and Table 10 also include full colinearity checks of each latent variable.

arrow means that the two variables are hypothesized to not be associated. Therefore, if a solid arrow has a significant path coefficient on it, then the corresponding hypothesis is supported. Otherwise, it is rejected. (See Table 16 for the results of hypothesis testing).

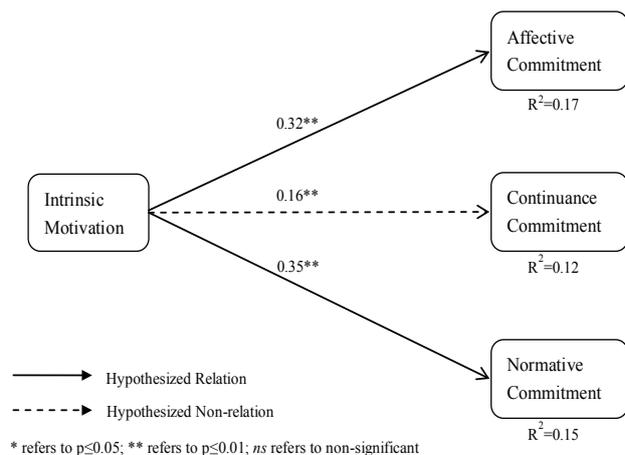


Figure 2
Research Model and Path Coefficient: The US sample

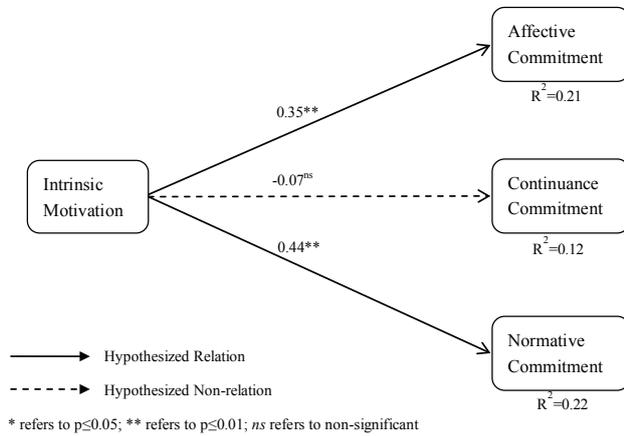


Figure 3
Research Model and Path Coefficient: The China Sample

Table 11 and Table 12 present all of the path coefficients of the variables (including control variables) for the US and the China samples, respectively. Table 13 and Table 14 present the effect sizes for path coefficients of the US sample and the China sample, respectively. The effect sizes are calculated as the absolute values of the contribution to the R-squared coefficient. Even if a path coefficient is statistically significant, effect sizes lower than 0.02 suggest that the path coefficients between variables are too weak to be considered relevant from a practical point of view (Cohen, 2013; Kock, 2013).

Table 11
Path Coefficients of Variables: The US Sample

	Intrinsic M.	Income	Age	Gender	Years of S.
Affective Commitment	0.316**	0.093	0.137*	0.076	0.001
Continuance Commitment	0.159**	-0.011	-0.059	0.127*	0.269**
Normative Commitment	0.346**	0.122*	-0.108	0.002	-0.118*

Note. * refers to $p \leq 0.05$; ** refers to $p \leq 0.01$.

Table 12
Path Coefficients of Variables: The China Sample

	Intrinsic M.	Income	Age	Gender	Years of S.
Affective Commitment	0.351**	0.173**	0.095	-0.04	-0.084
Continuance Commitment	-0.065	-0.281**	0.074	-0.041	0.09
Normative Commitment	0.436**	-0.173**	0.085	-0.022	-0.073

Note. * refers to $p \leq 0.05$; ** refers to $p \leq 0.01$.

Table 13
Effect Sizes for Path Coefficients: The US Sample

	Intrinsic M.	Income	Age	Gender	Years of S.
Affective Commitment	0.112	0.017	0.032	0.008	0
Continuance Commitment	0.032	0.002	0.013	0.019	0.084
Normative Commitment	0.116	0.015	0.007	0	0.017

Table 14
Effect Sizes for Path Coefficients: The China Sample

	Intrinsic M.	Income	Age	Gender	Years of S.
Affective Commitment	0.135	0.044	0.02	0.001	0.005
Continuance Commitment	0.007	0.085	0.01	0.001	0.013
Normative Commitment	0.192	0.026	0.011	0.001	0.007

4.1 The Results of the US Sample

Hypothesis 1 proposes a positive association between intrinsic motivation and affective commitment. As expected, the SEM analysis shows that intrinsic motivation is positively associated with affective commitment (path coefficient=0.316, $p \leq 0.01$). This indicates that individuals with a high level of intrinsic motivation tend to have high affective commitment. The effect size of intrinsic motivation on affective commitment is 0.112, which means that 11.2 percent of the variance of affective commitment is explained by intrinsic motivation. Therefore, Hypothesis 1 is supported.

Figure 4 shows more details of the nonlinear relation between intrinsic motivation and affective commitment in the US sample. The numbers on the axes in Figure 4 are the standardized scores of the latent variables. As Figure 4 shows, the relation between intrinsic motivation and affective commitment is not always positive. When the intrinsic motivation level is very high, it begins to decrease the affective commitment. The turning point is approximately 4.5 Likert scale points (the SEM analysis is conducted based on standardized data; unstandardized scores are approximations estimated by average scores of the indicators).

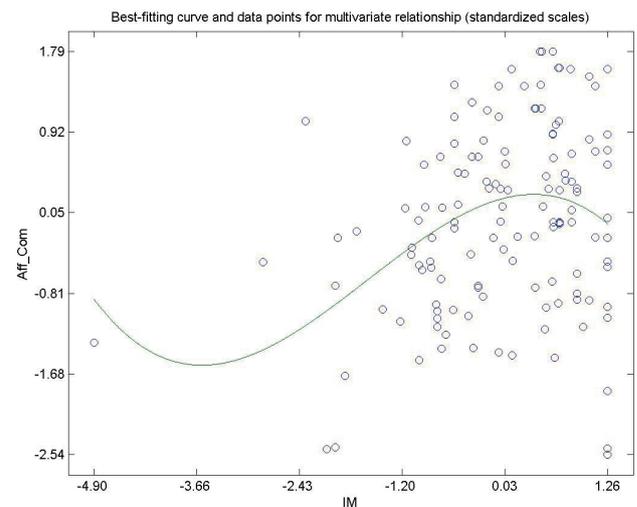


Figure 4
Best-Fitting Curve and Data Points: Intrinsic Motivation and Affective Commitment (the US Sample)

Figure 4 also shows that very few data points are available for individuals with low intrinsic motivation in the US sample. This indicates that the results of this SEM

analysis may not be applicable for employees with low intrinsic motivation in the US.

Hypothesis 2 proposes that intrinsic motivation is not associated with continuance commitment; however, the SEM analysis results show that intrinsic motivation is positively associated with continuance commitment (path coefficient=0.159, $p \leq 0.01$). This indicates that individuals with a high level of intrinsic motivation are more likely to have high continuance commitment. The effect size of intrinsic motivation on continuance commitment is 0.032, which means that 3.2 percent of the variance of continuance commitment is explained by intrinsic motivation. Therefore, Hypothesis 2 is rejected, but the effect size still shows that the impact of intrinsic motivation is not very large on continuance commitment.

Figure 5 shows more details of the nonlinear relation between intrinsic motivation and continuance commitment in the US sample. As the figure shows, continuance commitment increases along with intrinsic motivation, but when intrinsic motivation is high, the relation becomes negative. As mentioned previously, the US sample has few observations with low intrinsic motivation. This indicates that the results of this SEM analysis may not be applicable for employees with low intrinsic motivation in the US.

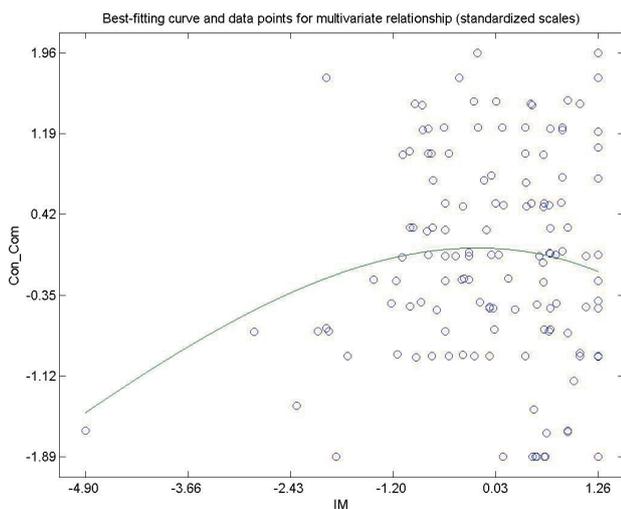


Figure 5
Best-Fitting Curve and Data Points: Intrinsic Motivation and Continuance Commitment (the US Sample)

Hypothesis 3 proposes that intrinsic motivation is positively associated with normative commitment. This hypothesis is supported by the SEM analysis (path coefficient=0.346, $p \leq 0.01$). The results indicate that individuals with high levels of intrinsic motivation are more likely to have high normative commitment. The effect size of intrinsic motivation on normative commitment is 0.116, which means that 11.6 percent of the variance of normative commitment is explained by intrinsic motivation.

Figure 6 shows more details of the nonlinear relation

between intrinsic motivation and normative commitment in the US sample. As Figure 6 shows, intrinsic motivation is positively associated with normative commitment. The relation is almost a linear relation, but the slope of the curve decreases substantially when intrinsic motivation is very high (approximately 4.0 on the unstandardized score), which indicates that the relation between intrinsic motivation and normative commitment becomes very weak when intrinsic motivation levels are very high. As mentioned previously, the US sample lacks observations of low intrinsic motivation (lower than 2.5 on the unstandardized scale). This indicates that the results of this SEM analysis may not be applicable for employees with low intrinsic motivation in the US.

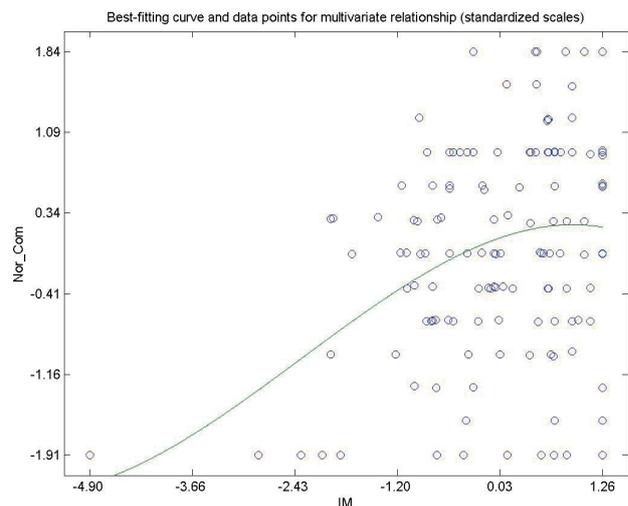


Figure 6
Best-Fitting Curve and Data Points: Intrinsic Motivation and Normative Commitment (the US Sample)

The results of the US sample show that intrinsic motivation is highly associated with all components of organizational commitment. Generally, employees with higher intrinsic motivation levels tended to have higher organizational commitment. This relation is reduced (or even reversed) when the intrinsic motivation level is very high.

4.2 Results of the China sample

Hypothesis 1 proposes a positive association between intrinsic motivation and affective commitment. In the China sample, the SEM analysis shows that intrinsic motivation is positively and significantly associated with affective commitment (path coefficient=0.351, $p \leq 0.01$). This indicates that individuals with a high level of intrinsic motivation tended to have a high affective commitment. The effect size of intrinsic motivation on affective commitment is 0.135, which means that 13.5 percent of the variance of affective commitment is explained by intrinsic motivation. Therefore, hypothesis 1 is supported.

Figure 7 shows more details of the nonlinear relation between intrinsic motivation and affective commitment in the China sample. The numbers on the axes in Figure

7 are the standardized scores of the latent variables. As Figure 7 shows, the best-fitting curve is nearly a straight upward line, indicating a positive path coefficient between the two variables.

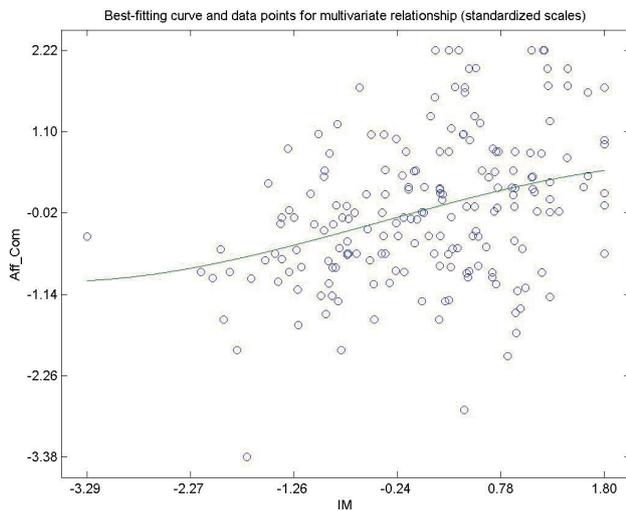


Figure 7
Best-Fitting Curve and Data Points: Intrinsic Motivation and Affective Commitment (the China Sample)

Hypothesis 2 proposes that intrinsic motivation is not associated with continuance commitment. In the China sample, the SEM analysis results show a non-significant path coefficient between intrinsic motivation and continuance commitment (path coefficient=-0.065, $p=0.134$). This indicates that there is no direct effect of intrinsic motivation on continuance commitment. Therefore, hypothesis 2 is supported.

Figure 8 shows more details of the nonlinear relation between intrinsic motivation and continuance commitment in the China sample. As the figure shows, the best-fitting curve of the PLS regression is nearly a flat line, indicating no relation between the two variables.

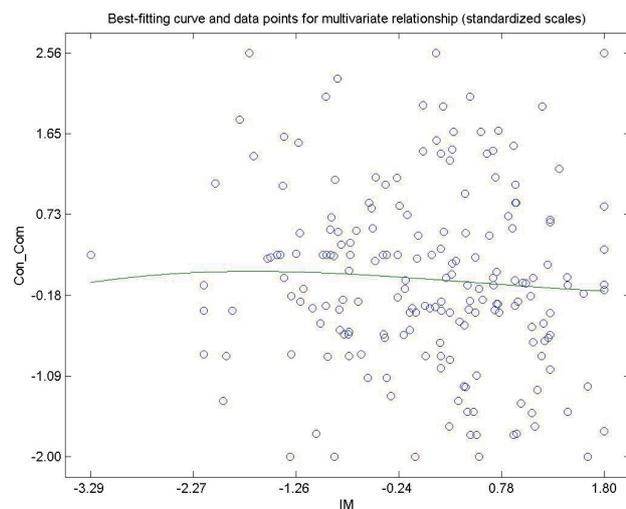


Figure 8
Best-Fitting Curve and Data Points: Intrinsic Motivation and Continuance Commitment (the China Sample)

Hypothesis 3 proposes that intrinsic motivation is positively associated with normative commitment. This hypothesis is supported by the SEM analysis (path coefficient=0.436, $p\leq 0.01$). The results indicate that individuals with high levels of intrinsic motivation are more likely to have high normative commitment. The effect size of intrinsic motivation on normative commitment is 0.192, which means that 19.2 percent of the variance of normative commitment is explained by intrinsic motivation.

Figure 9 shows more details of the nonlinear relation between intrinsic motivation and normative commitment in the China sample. As figure 9 shows, intrinsic motivation is positively associated with normative commitment. The best-fitting curve of the PLS regression shows that the upward slope of the curve is mitigated when the intrinsic motivation standardized score is between -1.2 and 0.7 (approximately 3.5 and 4.4 for the unstandardized Likert scale points). This indicates that the positive path coefficient between intrinsic motivation and normative commitment is more obvious when intrinsic motivation is very low or very high.

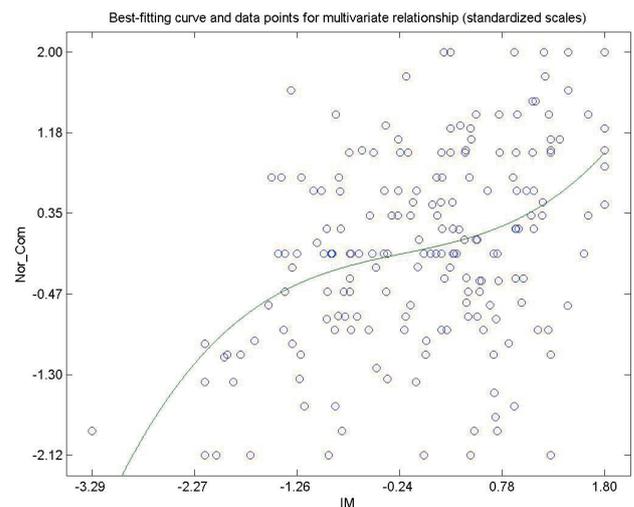


Figure 9
Best-Fitting Curve and Data Points: Intrinsic Motivation and Normative Commitment (the China Sample)

In China sample, hypothesis 1, 2, and 3 are supported by the SEM analysis results. As predicted, intrinsic motivation is positively associated with affective commitment and normative commitment but not associated with continuance commitment.

4.3 Model Comparison Between the US Sample and the China Sample

Figure 10 shows the comparison of the SEM analysis results (path coefficients and R-squared coefficients) between the US sample and the China sample. The numbers in parentheses are for the China sample, and the other numbers are for the US sample. The statistical significance levels of the path coefficients are also included in the figures, where * refers to $p\leq 0.05$, ** refers

to $p \leq 0.01$, and ns refers to non-significant. In Figure 10, a solid arrow means that the two variables are hypothesized to be associated. A dashed arrow means that the two variables are hypothesized to not be associated.

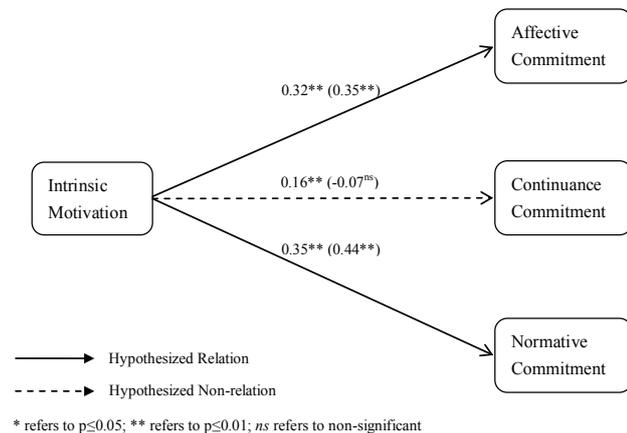


Figure 10
SEM Analysis Results Comparison Between the US Sample and the China Sample

As Figure 10 shows, the relation between intrinsic motivation and affective commitment is consistent in both the US and the China sample. Intrinsic motivation is positively associated with continuance commitment in the US sample, but in the China sample, this relation disappears. The path coefficient between intrinsic motivation and normative commitment is also consistent in both of the two samples.

The difference of the SEM analysis between the two samples may be due to many reasons, such as sample size, scale inequality, or measurement errors. To further examine whether or not the difference between the US sample and the China sample is statistically significant, the present research adopted a comparison procedure developed by Kock (2014). Table 15 presents the path coefficient comparison results between the US sample and the China Sample. As Table 15 shows, the path coefficients for each relation are compared between the US sample and the China sample. The comparison results further confirm that the path coefficient between intrinsic motivation and continuance commitment are statistically different between the US sample and the China sample. Hypothesis 4 proposes that there is a significant difference between the results of the US sample and the China sample for the intrinsic motivation-organizational commitment relation. Therefore, hypothesis 4 is supported. Table 16 presents the results of all hypotheses testing.

Table 15
Comparison of Path Coefficients

Path	U.S. Sample (size: 136)		China Sample (size: 194)		p Value (one-tailed)
	Beta	S. Error	Beta	S. Error	
IM→AC	0.316	0.068	0.351	0.059	0.349
IM→CC	0.159	0.068	0.065	0.059	0.007
IM→NC	0.346	0.068	0.436	0.059	0.160

Note. IM=intrinsic motivation; AC=affective commitment; CC=continuance commitment; NC=normative commitment.

Table 16
Results of Hypothesis Testing

	Motivation-Organizational Commitment Relation	Supported?	
		The US	China
H1	Intrinsic motivation is positively associated with affective ommitment.	Yes	Yes
H2	Intrinsic motivation is not associated with continuance commitment.	No	Yes
H3	Intrinsic motivation is positively associated with normative commitment.	Yes	Yes
Cross-cultural Comparison			
H4	There is a significant difference between the path coefficients of the US sample and the China sample for a motivation-organizational commitment relation.	Yes	

CONCLUSION AND DISCUSSION

For the path coefficient between intrinsic motivation and affective commitment, the results of the SEM analysis in this study are highly consistent with the OB literature (Andressen et al., 2012; Johnson, 2011; O’Driscoll & Randall, 1999). The path coefficients between intrinsic motivation and affective commitment in the two samples are 0.32 and 0.35 for the US and China, respectively (both significant at 0.01 level). This result shows that when an individual is highly-motivated by the enjoyment of doing his/her job, this individual tended to have a high level of emotional attachment to his/her organization, but the PLS best-fitting curve of the US sample shows that when intrinsic motivation is very high, the relation becomes negative.

For the path coefficient between intrinsic motivation and continuance commitment, the SEM analysis shows interesting results. The OB literature contains little discussion of this relation, but, theoretically, the continuance commitment is the awareness of the cost associated with leaving an organization. This cost is usually associated with extrinsic forms, such as a good salary, a good location, or job security, but the results of the US sample shows that American employees regard intrinsic motivation as a form of cost that keeps them from quitting their jobs. In China, the results are completely different. The results of the China sample show that Chinese workers do not commit to their organizations due to the intrinsic motivation provided by their jobs.

It should be noted that the effect size of intrinsic motivation on continuance commitment in the US sample is only 0.032. This indicates that for American employees, the loss of intrinsic motivation is considered to be a cost, albeit a small cost. The SEM analysis shows that for the American employees, the most influential factor on continuance commitment is years of service. This means that the time invested by employees in their organizations is considered to be a more important loss if they resign.

Normative commitment refers to a feeling of obligation to continue employment. Previous work on the relation between intrinsic motivation and normative commitment is very limited. As mentioned, the social

value or obligation that keeps an individual working in a certain organization is not a personal need or goal, but the personal needs of all social members may shape social values. The SEM analysis confirmed this proposition. Both of the two samples show a significant and positive link between intrinsic motivation and normative commitment. This indicates that when an individual has a high level of intrinsic motivation, he/she is more likely to feel an obligation to continue employment. The PLS best-fitting curve shows that in the US sample, the effect of intrinsic motivation on normative commitment decreases when the intrinsic motivation level is high. Conversely, in the China sample, the effect of intrinsic motivation on normative commitment increases when the intrinsic motivation level is high.

In summary, intrinsic motivation has a strong influence on organizational commitment. Both affective commitment and normative commitment are positively and highly associated with intrinsic motivation, but the influence on continuance commitment varies in different countries. In the US, there is a positive path coefficient, but in China, there is no relation between intrinsic motivation and continuance commitment.

Many previous OB studies have focused on similar topics but were not as comprehensive as the present study because: 1) most previous studies were only conducted in western cultures, and cross-cultural studies have been very limited (Boyacigiller & Adler, 1991; Gelfand et al., 2007). No previous research on this topic has conducted a cross-cultural comparison between the US and China.

2) Many studies did not identify the components of organizational commitment, and normative commitment has usually been ignored by previous OB studies (Andressen et al., 2012; George & Sabapathy, 2011; O'Driscoll & Randall, 1999). The present study shows that different components of organizational commitment have very different path coefficients with intrinsic motivation. Therefore, this cross-national study with a clear identification of the types of work motivation and the components of organization commitment is a valuable empirical study that will contribute to future OB studies and business practices.

LIMITATIONS AND FUTURE RESEARCH

The major limitation of this study is the lack of analysis on cultural variables. The US and China have very different cultures in terms of individualism, power distance, and long-term orientation. However, for a two-country study, it is hard to use statistical techniques to examine the role of culture. Potential effects from many other variables, say economy, location, and weather, could also be influential. Simply adding the cultural variables in the research model of this study will not provide any more findings, but over-interpretation of the results.

Therefore, in future research, more countries should be included in the comparison. In this case, culture variables,

such as individualism, can be measured and compared to examine the role of culture. Economic factors, such as gross domestic product (GDP) and consumer price index (CPI), should also be included as control variables. Furthermore, cultural manipulation checks should be conducted to examine whether or not the subjects of the questionnaire are representatives of their national culture.

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