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The Software Piracy Decision-Making Process of Chinese Computer Users

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Drawing on Jones's ethical model and Ajzen's theory of planned behavior, this study proposes and tests an integrative model for the decision-making process underlying software piracy. Survey data collected from computer users in Guangzhou, China, in accordance with two software piracy scenarios under study—end user piracy and software counterfeiting—provide general support for the model. Consistent with major propositions of the theory of planned behavior, the findings show that Chinese computer users' perceived moral intensity of software piracy significantly affects their corresponding moral recognition, judgment, and intention in both scenarios. Moreover, a direct influence of moral judgment on attitude toward software piracy is found in both scenarios. With regard to end-user piracy specifically, the findings further echo the theory of planned behavior by demonstrating a direct influence of attitude, subjective norm, and perceived behavioral control on intention to pirate. As in the case of software counterfeiting, the findings, however, show that only attitude and subjective norm but not perceived behavioral control significantly influence this intention. Implications derived from this study suggest the potential to synthesize ethical and general social psychological concepts to explain software piracy behavior, and also furnish insights on how to deter software piracy in China.

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As the Internet and other digital technologies continue to develop at a fast pace, their abuses have also become increasingly rampant (Gan and Koh 2006). Software piracy or the unauthorized copying of software in particular has been a vexing problem that has long confounded software developers who have been struggling to curtail it (Chan and Lai 2011). According to the Business Software Alliance (BSA), the worldwide average piracy rate in 2011 was 42%, which constituted a loss of US$63.4 billion for the software industry (BSA 2012).

Correspondingly, researchers' interest in understanding the decision-making process underlying behavior leading to software piracy has also increased (Mishra, Akman, and Yazici 2006). Despite this interest, Holsapple, Iyengar, Jin, and Rao (2008) have noted several limitations common in existing studies—heavy reliance on student samples, lack of control for respondents' potential social desirability bias, and the assumption that computer users from different sociocultural settings share the American perspective that software piracy is ethically unacceptable. With regard to the third limitation, it is important to note that the research so far has been primarily with subjects from developed countries, especially the United States, and research with emerging economies (e.g., China) where software piracy has been growing far more rapidly remains scant.

Against this background and in response to Bhal and Leekha's (2007) call for better understanding of the cognitive mechanism underlying behavior leading to software piracy, this study examines how ordinary computer users (rather than just students), with control for their potential social desirability bias in their responses, in an emerging economy, China,[1] arrive at their decision to commit software piracy.

Moreover, although several empirical investigations are found in the extant software piracy literature, most of them adopted either an ethical perspective (e.g., Chan and Lai 2011) or a conventional social psychological (e.g., Wang, Zhang, Zhang, and Ouyang 2005) perspective to examine the decision making process of computer pirates. This "single-minded" approach fails to consider the possibility that computer users' software piracy decision may indeed be derived from their moral reasoning as well as other social psychological considerations. This study specifically draws on the ethics and general social psychology literature to propose and test an integrative model that explains the decision-making process of Chinese computer users.

INTEGRATIVE MODEL

In order to understand the context for the proposed integrative model, we first discuss the literature on the ethical perspective and the social psychological perspective. Thereafter we discuss the proposed integrative model and the hypotheses that flow from it.

The Ethical Perspective

This literature treats the decision to pirate software as an ethical one that involves moral considerations. For instance, Thong and Yap (1998) referred to Hunt and Vitell's (1986) general theory of marketing ethics to explain Singaporean college students' intention to pirate software. In another study, Moores and Chang (2006) based their investigation on Rest's (1986) four-component model to examine the ethical decision-making process underlying software piracy. However, despite the apparent plausibility of the ethical perspective, it has been found to be inconsistent with the empirical findings of some studies. For instance, Logsdon, Thompson, and Reid (1994) demonstrated that no strong relationship existed between individuals' level of moral judgment and their attitudes toward software piracy. In view of such findings, some researchers have questioned whether people really perceive software piracy as an ethical issue, and have also speculated that other nonmoral factors may have greater influences on decisions underlying software piracy (e.g., Kini, Ramakrishna, and Vijayaraman 2004).

The Social Psychological Perspective

Instead of applying moral reasoning to explain software piracy, some researchers have relied on general social psychological theories to explain this behavior. In this context, software piracy has often been posited as a rational behavior, and individuals' attitude toward software piracy as the most immediate predictor of their intention to perform this behavior (Ang, Cheng, Lim, and Tambyah 2001; Wang et al. 2005). To undertake their investigations more rigorously, several researchers have adapted some well-established social psychological theories to examine the software piracy decision-making process. For example, Christensen and Eining (1991) drew on Ajzen and Fishbein's (1980) theory of reasoned action (TRA) to examine whether attitude toward software piracy and peer norms (i.e., subjective norm) could explain past software piracy behavior. Likewise, Peace, Galletta, and Thong (2003) based their study on Ajzen's (1991) theory of planned behavior (TPB), an extended version of TRA, to examine intention to pirate software. Overall, while these investigators have found some empirical support for the applicability of these models to explain software piracy, other researchers remain doubtful about whether software piracy is purely a nonethical issue that can be consistently explained by general social psychological theories (Moores and Chang 2006).

THE PROPOSED MODEL AND HYPOTHESES

This study goes beyond previous investigations by treating the software piracy decision-making process as involving both moral and nonmoral considerations. Taking the two perspectives as complementary rather than mutually exclusive, this study proposes an integrated model that synthesizes both perspectives to explain the process. The proposed model, as depicted in Figure 1, builds on the core concepts of both Jones's (1991) issue-contingent model of ethical decision making (ICM) and Ajzen's (1991) TPB. These concepts are first described in the following.

Jones's Issue-Contingent Model of Ethical Decision Making

Although it is apparent that an individual's ethical decision depends much on the moral issue in question, all the ethical decision-making models that appeared prior to 1991 excluded characteristics of the issue itself. This exclusion is problematic, as these models simply assume that the decision making process is identical for all moral issues and that people will decide and behave in the same manner regardless of the issue in question. This research deficiency consequently prompted Jones (1991) to propose his own model, the issue-contingent model (ICM). ICM has two

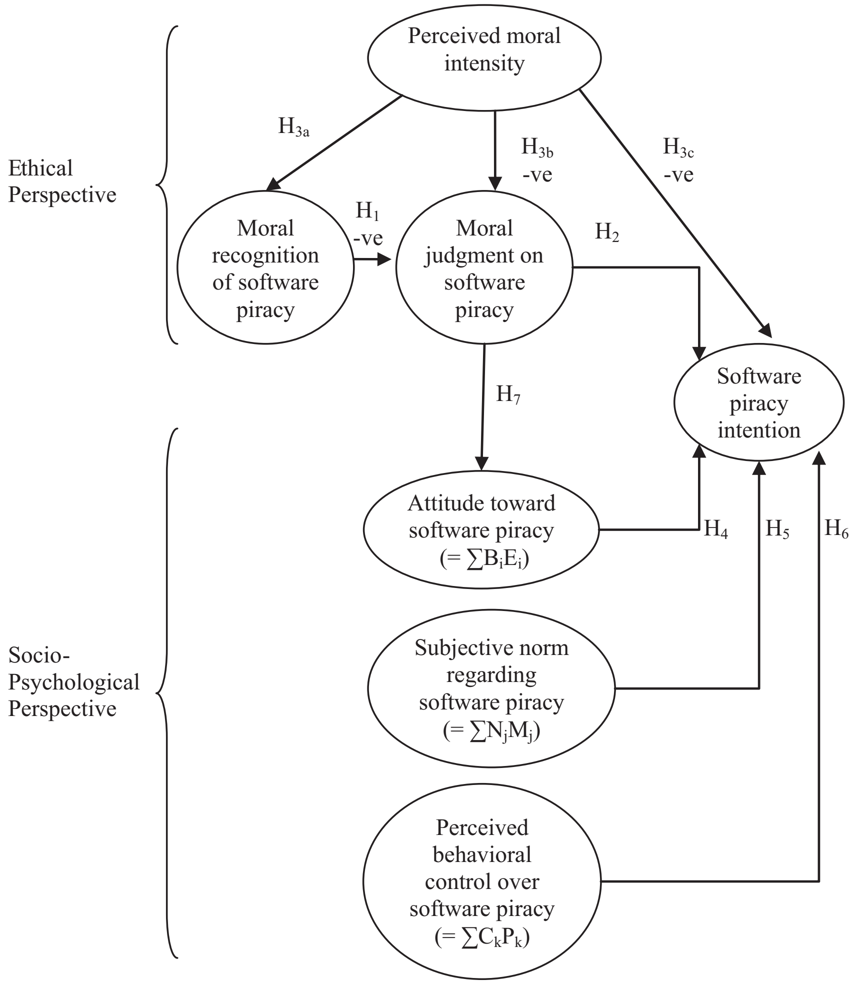

FIG. 1. A proposed model for software piracy decision making. *Note*. B_i = salient attitudinal belief; E_i = outcome evaluation; N_j = normative belief; M_j = motivation to comply; C_k = control belief; P_k = perceived power of the control factor; and i, j, and k represent the number of attitudinal, normative and control beliefs respectively. Except for H_1, and H_{3b} to H_{3c}, all other hypotheses propose a positive direct influence.

unique characteristics. First, it retains the basic premise of Rest's (1986) four-component model that an individual needs to proceed through four stages of moral reasoning to arrive at his or her ethical decision: (1) recognizing that an issue presents an ethical dilemma (moral recognition); (2) making moral judgment on the issue (moral judgment); (3) establishing the corresponding behavioral intention (behavioral intention); and (4) engaging in the corresponding behavior (actual behavior). Second, it incorporates a new construct, moral intensity, which is postulated to exert a direct effect on each of the four moral reasoning stages. Defining moral intensity as "the extent of issue-related moral imperative in a situation," Jones (1991, 372) maintained that an individual must perceive an issue or act (e.g., software piracy) as exceeding certain minimum thresholds of morality before he or she activates his or her ethical decision-making process. Jones further posited that the perceived moral intensity of a potentially immoral act has six components:

1. Magnitude of consequences: The total sum of harm of the act.
2. Social consensus: The degree of social agreement that the act is bad.
3. Probability of effect: The likelihood that the act will actually cause harm.
4. Temporal immediacy: The length of time between the act and the onset of undesirable consequences.
5. Proximity: The feeling of social, cultural, psychological, or physical nearness that an individual holds for those adversely affected by his or her act.

6. Concentration of effect: The impact of a given amount of harm relative to the number of people affected. The effect is considered more concentrated if a given amount of harm affects a smaller number of people.

Following Jones's conceptualization, several researchers subsequently developed instruments to operationalize individuals' perceived moral intensity (Frey 2000; May and Pauli 2002). Overall, empirical research based on these instruments revealed that perceived moral intensity significantly influences moral judgment and intention (Singh, Vitell, Al-Khatib, and Clark 2007). However, this stream of research also suggested that the six moral intensity components may not always load on the same factor and their relative influence may vary across different ethical situations (McMahon and Harvey 2006). Of all the six components, prior research also showed that only the magnitude of consequences and social consensus consistently exhibit significant influences across various ethical scenarios under study (Ng, White, Lee, and Moneta 2009; Tsalikis, Seaton, and Shepherd 2007).

Prior research on moral intensity has relied predominantly on the scenario approach, which involves presenting respondents with an ethically questionable situation and then soliciting their responses on various psychological/ethical measures. As this approach can help standardize the social and information stimuli across respondents (Singhapakdi, Vitell, and Kraft 1996), it is also adopted in the present study. Despite the aforementioned advantage, the scenario approach, by its very nature, prevents the investigator from examining the action actually taken by respondents. For this reason, this study excludes actual behavior but only analyzes moral recognition, moral judgment, and behavioral intention of the moral reasoning process. Given that behavioral intention is the most immediate determinant and valid proxy of actual behavior (Ajzen and Fishbein 1980), this focus is considered appropriate, and was indeed widely adopted in previous ethical research (e.g., Chen, Pan, and Pan 2009; Singh et al. 2007).

In the proposed integrative model, the proposed software piracy decision-making process based on the ethical perspective is depicted in the upper portion of Figure 1. The suggested relationships among constructs involved in this process are further established as the following hypotheses:

H_1: Computer users' moral recognition of software piracy is negatively related to their moral judgment on this act.

H_2: Computer users' moral judgment on software piracy is positively related to their software piracy intention.

H_3: Computer users' perceived moral intensity of software piracy is positively related to their corresponding moral recognition (H_{3a}), but negatively related to their relevant moral judgment (H_{3b}) and intention (H_{3c}).

Ajzen's Theory of Planned Behavior

Ajzen's (1991) TPB postulates that an individual's actual behavior (e.g., software piracy) is determined by his or her intention to perform this behavior. This behavioral intention is, in turn, determined by his or her attitude toward this behavior (ATT), subjective norm (SN), and perceived behavioral control (PBC). ATT refers to the individual's general feeling of favorableness or unfavorableness about performing the behavior, whereas SN reflects how the individual perceives the peer pressure for him or her to perform the behavior. As an extended version of TRA, TPB specifically adds a behavioral control construct termed PBC, defined as the individual's perceived ease or difficulty of performing the behavior. It is affected by both internal factors (e.g., individual skills and abilities) and external factors (e.g., time and opportunity). Overall, TPB has proved successful in its predictive ability, and has become one of the most influential theories for studying behavioral situations where individuals do not have complete volitional control over their performance of the focal behavior. In this context, Armitage and Conner's (2001) meta-analysis revealed that TPB accounted for an average of 39% and 27% of the variance in behavioral intention and actual behavior, respectively. This analysis further revealed that TPB was able to explain significantly more variance for both behavioral intention and actual behavior than was TRA.

Among the various behaviors that have been examined using TPB, some are akin to software piracy in terms of their delinquent character. For instance, Beck and Ajzen (1991) were among the first to employ TPB to examine such socially unacceptable behaviors as lying, cheating, and shoplifting. Relating specifically to abuses of information technologies, TPB has been used to investigate software piracy (Peace et al. 2003) and music piracy (d'Astous, Colbert, and Montpetit 2005). These studies empirically demonstrated that the performance of these abusive acts was not completely volitional, as individuals might perceive the presence of various internal (e.g., individual ability) or external constraints (e.g., legal sanctions).

At the most basic level, ATT, SN, and PBC are each determined by two variables (Ajzen 1991). Specifically, an individual's ATT is a function of his or her "salient attitudinal beliefs" about the outcomes associated with the behavior, and of the individual's "evaluation" of these outcomes (i.e., $\sum B_iE_i$). Likewise, SN is a function of "normative beliefs" and "motivation to comply" (i.e., $\sum N_jM_j$). These two variables respectively refer to the individual's belief that his or her important referents (e.g., family, friends, etc.) want him or her to perform the behavior, and his or her willingness to follow their opinions. Lastly, PBC is a function of "control beliefs" and "perceived power of the control factors" (i.e., $\sum C_k P_k$), which respectively refer to the individual's belief that the factors required to perform the behavior are available, and his or her perceived importance of these factors. Although the use of these six variables or belief-based measures to operationalize ATT, SN, and PBC can help researchers better understand what salient attitudinal beliefs (behavioral outcomes), normative beliefs (important referents), and control beliefs (behavioral constraints) computer users would consider when making their software piracy decision, previous investigations have seldom taken them into consideration. To rectify this omission, this study refers to these measures to operationalize ATT, SN, and PBC, as described further in the following. The proposed software piracy decision-making process based on the social psychological perspective is depicted in the lower portion of Figure 1, for which the suggested relationships among constructs involved in this process are established as the following hypotheses:

H_4: Chinese computer users' attitude toward software piracy is positively related to their software piracy intention.

H_5: Computer users' perception of peer pressure (subjective norm) regarding their software piracy is positively related to their software piracy intention.

H_6: Computer users' perceived behavioral control over software piracy is positively related to their software piracy intention.

The Possible Link Between Attitude and Moral Judgment

The proposed model also includes a hypothesis concerning the possible relationship between attitude toward software piracy and moral judgment on software piracy. Within the TRA/TPB paradigm, an individual's attitude toward a behavior refers to his or her overall evaluation of the performance of this behavior (Ajzen and Fishbein 1980). Logically, such overall evaluation is shaped by various factors, including one's moral judgment. In the consumer ethics literature, researchers also posit moral judgment on an issue as an important input for individuals to derive their global attitude toward this issue (Bian and Veloutsou 2007). Accordingly, the final hypothesis is:

H_7: Computer users' moral judgment on software piracy is positively related to their attitude toward this act.

METHODOLOGY

The questionnaire used in this survey was first developed based on a thorough literature review. It consisted of a scenario, a number of relevant measures aimed at tapping respondents' responses toward the scenario, and several selected demographic questions. To enhance generalizability of the findings, two scenarios were developed. The group of respondents was randomly split into two halves with each half assigned to read one of these scenarios. The scenarios were adapted from McMahon and Harvey (2006) and aimed at capturing respondents' views on two most prevalent software piracy activities in China, namely, "end-use piracy" (Scenario 1) and "software counterfeiting" (Scenario 2). Although official statistics on the relative prevalence of different software piracy activities in China are lacking, some estimates suggest that Chinese computer users are most heavily engaged in end-user piracy (in terms of installing more copies than permitted under the license agreement) and software counterfeiting (in terms of purchase counterfeit software from illegal vendors) (123HelpMe.com 2012; People.com.cn 2010). The prevalence of end user piracy in China echoes BSA's (2011) official study that this activity constitutes the most common type of software piracy among developing economies. As for the purchase of counterfeit software, its prevalence in China is mainly attributed to the wide availability of this kind of software there (123HelpMe.com 2012).

English was used to develop the questionnaire, which was subsequently translated into Chinese. Linguistic equivalence was ensured by the back-translation technique (Bhalla and Lin 1987). To ensure appropriateness of the questionnaire, the two scenarios and the relevant measures were fine-tuned according to comments from four academics knowledgeable about the topic under investigation and a pretest conducted in Guangzhou, China. The academics' comments led to two modifications of the questionnaire. The first modification was directed at providing respondents with a common definition of software piracy. This was done by incorporating Limayem, Khalifa, and Chin's (2004) definition of software piracy ("the production of unauthorized copies of software by individuals or businesses for resale or for use in the workplace, at school, or at home") into the questionnaire. The second modification slightly rephrased the six items used to measure perceived moral intensity (PMI) so as to minimize ambiguities. The rephrasing involved replacing a more general phrase originally used in these items, "the decision," with a more specific one, "this software piracy behavior" (see appendix).

The pretest was conducted with a total of 100 Guangzhou residents (50 for each scenario) using the mall-intercept technique. It was aimed at checking whether the employed measures were reasonably reliable and whether the respondents would encounter any particular difficulties in understanding their assigned scenario. To this end, the pretest participants were asked to first read their assigned scenario and then respond to all the relevant measures. They were then invited to comment on the suitability of their assigned scenario. To summarize, the pretest revealed that all the employed measures were reliable with Cronbach's alpha values exceeding the threshold of 0.70 ($\alpha_{\text{PMI}} = 0.73$; $\alpha_{\text{REC}} = 0.82$; $\alpha_{\text{JUD}} = 0.90$; $\alpha_{\text{INT}} = 0.96$; $\alpha_{\text{ATT}} = 0.75$; $\alpha_{\text{SN}} = 0.74$; $\alpha_{\text{PBC}} = 0.80$; $\alpha_{\text{SDB}} = 0.78$). Pretest participants did not raise any particular concerns for both scenarios. Despite this, a considerable proportion of pretest participants (16% for Scenario 1 and 12% for Scenario 2) suggested improving the clarify of their assigned scenario by explicitly mentioning in it that the acquisition of the pirated software was for "personal" (rather than for nonpersonal/commercial use). Consequently, such mention was included in the two scenarios, as shown here:

> Scenario I (end-user piracy):
>
> You had decided to buy a new computer. You were able to purchase a state-of the-art computer at a very affordable price, but the trade-off for getting a low price was that it came with a very limited amount of preloaded software. You were wondering if you should install software, licensed exclusively to your workplace/school, onto your newly bought home computer for personal use.
>
> Scenario 2 (software counterfeiting):
>
> You had decided to buy a new computer. You were able to purchase a state-of the-art computer at a very affordable price, but the trade-off for getting a low price was that it came with a very limited amount of preloaded software. You were wondering if you should purchase counterfeit software from a counterfeit software retailer and install it onto your newly bought home computer for personal use.

Measures

After reading the assigned scenario, respondents were asked to respond to a number of measuring items concerning their possible performance of the relevant software piracy behavior. In line with the constructs already proposed in Figure 1, the survey questionnaire included items to measure the constructs of perceived moral intensity (PMI), moral recognition (REC), moral judgment (JUD), software piracy intention (INT), attitude (ATT), subject norm (SN) and perceived behavioral control (PBC) concerning software piracy, and social desirability bias. Details of these items are summarized in the appendix.

Administration of the Survey

To test the hypotheses, a survey was conducted among ordinary computer users in Guangzhou, China, between July 2009 and March 2010. As Guangzhou is one of the most developed cities in mainland China, it is believed that the city can serve as a barometer of changing trends of China (Zhu and He 2002). In their recent investigation on Chinese computer users' software piracy decision, Chan and Lai (2011, 665) also chose Guangzhou as their research setting and believed that findings derived from this city can be "generalizable to the rest of China in the near future."

With the assistance of a research agency, a sampling frame was first compiled according to the telephone directory of Guangzhou. Based on this frame, trained, native research staff members then telephoned 2,000 randomly selected households (1,000 for each scenario) to recruit respondents of the survey. Household members were considered eligible to participate in the survey only if they had regular access to computers and the Internet for at least the past year. To encourage cooperation, potential participants were assured of anonymity and were offered a supermarket gift coupon of approximately US$7 value upon their return of the completed questionnaires. This process resulted in 520 eligible respondents (260 for Scenario 1 and 260 for Scenario 2) willing to take part in the survey. A copy of the survey questionnaire was then e-mailed to each of these respondents. After several rounds of follow-up, 249 and 254 valid responses were received for Scenario 1 and Scenario 2, respectively. This constituted an aggregate sample size of 503 and a response rate of 25%.

RESULTS

Sample Profile

Overall, 52% of the 503 respondents were male, and 58% of the respondents were unmarried. The median educational level, age, and monthly personal income of the respondents were high school completion, 31–35 years, and RMB 4,001–5,000 (US$1 = RMB6.82), respectively. Approximately 80% of the respondents were working adults, 12% were students, and 8% were either housewives or retirees. While 92% of the respondents reported that they had access to computers and the Internet at home, the others indicated that they had some form of regular access to these facilities at other places (office, school, or Internet cafés). On average, respondents spent 21.8 hours per week on the Internet.

Preliminary Analyses

To check for nonresponse bias, Lambert and Harrington's (1990) checking procedure was employed. That involved administering a condensed questionnaire to a randomly selected number of nonrespondents. In accordance with Lambert and Harrington's recommended method to determine the appropriate sample size, 61 and 59 nonrespondents were successfully solicited to complete a condensed Scenario 1 and Scenario 2 questionnaire, respectively. Questionnaires consisted of the assigned scenario and a number of randomly chosen measuring items. These items included two items to measure perceived moral intensity (PMI1, PMI3), one item each to measure moral recognition (REC1), moral judgment (JUD2), and software piracy intention (INT1), and one measure each to measure attitude ($\sum B_1E_1$,), subjective norm ($\sum N_2M_2$), and perceived behavioral control ($\sum C_3P_3$). For each scenario under study, analysis of variance (ANOVA) was performed to examine whether views provided by the "nonresponding" group (i.e., those who only responded to the condensed but not the original full-length questionnaire) differed significantly from those provided by the three "responding groups" (i.e., those who had responded to the original full-length questionnaire upon the first, second, and third solicitation, respectively). Overall, the test results did not detect any significant difference (p values ranged from .09 to .62), thus suggesting the absence of nonresponse bias.

To assess the potential bias of common method variance (CMV), two measures were also taken. First, Harman's one-factor analysis was performed on responses to all the focal constructs (PMI, REC, JUD, INT, ATT, SN, and PBC) (Podsakoff and Organ 1986) for Scenario 1 and Scenario 2, respectively. Overall, the analysis identified 7 factors with eigenvalue greater than 1, and no single factor was found to account for more than 20% of the variance for both scenarios. These findings suggested the lack of CMV bias. Second, CMV bias was further assessed by the marker variable analysis (Malhotra, Kim, and Patil 2006). To this end, the social desirability bias (SDB) score was employed as a marker variable (Lindell and Whitney 2001). This variable had a mean absolute correlation of only .06 and .08 with all the focal constructs for Scenario 1 and Scenario 2, respectively. For both scenarios, the significance of all the correlations between the focal constructs also remained unchanged after controlling for the effect of SDB. Taken together, the preceding analyses revealed little threat of CMV bias.

Validation of Measures

Confirmatory factor analysis (CFA) was conducted on the responses to Scenario 1 and Scenario 2, respectively, to validate all the focal constructs. To this end, all the focal constructs of each scenario were estimated in one measurement model with each item loaded on its a priori specified factor, and correlation among factors was allowed. The software utilized to perform CFA was EQS6.1.

The analysis suggested that a modification was needed for Scenario 1. Specifically, it highlighted that in this scenario, one of the six constituent items of PMI, "proximity of effect," had a factor loading of only 0.34, and was not significantly correlated with any of the other constructs (r ranged from 0.04 to 0.11). In view of this, this item was deleted from Scenario 1 in the subsequent analysis. For Scenario 2, the analysis revealed satisfactory construct reliability and convergent validity for all the focal constructs. The finalized CFA results for the two scenarios are further discussed next and are presented in Table 1.

For each scenario, the fit index derived from the chi-squared statistic ($\chi^2_{\text{Scenario 1}} = 301.11$, df $= 209$; $\chi^2_{\text{Scenario 2}} = 466.92$; d.f. $= 254$) was significant at $p < .05$, which might indicate an inadequate fit of the measurement model (Hair, Anderson, Tatham, and Black 1995). However, given that this statistic is highly sensitive to sample size (Byrne 1994), other more powerful fit indexes such as the normed fit index ($NFI_{\text{Scenario 1}} = 0.96$; $NFI_{\text{Scenario 2}} = 0.91$), comparative fit index ($CFI_{\text{Scenario 1}} = 0.99$; $CFI_{\text{Scenario 2}} = 0.95$), Tucker–Lewis index ($TLI_{\text{Scenario 1}} = 0.99$; $TLI_{\text{Scenario 2}} = 0.95$), and root mean square error of approximation ($RMSEA_{\text{Scenario 1}} = 0.04$; $RMSEA_{\text{Scenario 2}} = 0.06$) were also computed for the two scenarios. As noted, all these indexes met the recommended thresholds (i.e., CFI, NFI, and GFI ≥ 0.90; RMSEA ≤ 0.08) (Hair et al. 1995). Overall, the results highlighted an acceptable fit of the measurement model for both scenarios.

Table 1 showed that for each scenario all the construct reliabilities lay above the threshold of 0.70, with all the average variances extracted (AVEs) exceeded the threshold of 0.50, and all items loaded significantly onto the relevant constructs as hypothesized at $p < .05$ (Hair et al. 1995). To assess the discriminant validity of the constructs, this study followed Fornell and Larcker's (1981) guideline, which involved a comparison of the shared variance (squared correlation) between any pair of constructs with the AVE by the items measuring the constructs. As noted in Tables 2 and 3, all the shared variances were less than the relevant AVEs, thus demonstrating satisfactory discriminant validity for both scenarios. For reference, Tables 4 and 5 further summarize the relevant descriptive statistics and correlations derived from Scenario 1 and Scenario 2, respectively.

Hypothesis and Model Testing

Structural analysis based on EQS6.1 was performed to test the proposed model and all the hypotheses for Scenario 1 and Scenario 2, respectively. In the analysis, the control variable of SDB was treated as an exogenous variable for all endogenous variables.

For each scenario, initial structural analysis revealed that among all the proposed direct effects exerted by the control variable of SDB, only SDB $\rightarrow$ ATT was found to be significant at $p < .05$. To reduce computational and

TABLE 1
Summarized CFA results for the major constructs under investigation

Constructs/Items	Factor loading (Scenario 1)	Factor loading (Scenario 2)
Perceived moral intensity of software piracy (PMI)		
PMI1—Magnitude of consequences	0.77	0.83
PMI2—Social conscious	0.65	0.91
PMI3—Probability of effect	0.78	0.82
PMI4—Temporal immediacy	0.73	0.84
PMI5—Proximity of effect	Deleted[a]	0.69
PMI6—Concentration of effect	0.63	0.79
Construct reliability/AVE	0.84/0.51	0.92/0.67
Moral recognition of software piracy (REC)		
REC1—I have to consider ethical issues when making a software piracy decision	0.83	0.55
REC2—I am faced with an ethical issue when pirating software	0.90	0.84
REC3—To me, software piracy involves an ethical problem	0.82	0.88
Construct reliability/AVE	0.89/0.72	0.81/0.59
Moral judgment on software piracy (JUD)		
JUD1—Unacceptable/acceptable	0.83	0.70
JUD2—Unethical/ethical	0.86	0.54
JUD3—Wrong/right	0.88	0.91
JUD4—Bad/good	0.88	0.90
Construct reliability/AVE	0.92/0.74	0.86/0.61
Software piracy intention (INT)		
INT1—Unlikely/likely	0.83	0.92
INT2—Improbable/probable	0.87	0.89
Construct reliability/AVE	0.84/0.72	0.90/0.82
Attitude toward software piracy (ATT)		
ATT1—Low price	0.90	0.93
ATT2—Efficiency	0.81	0.88
ATT3—Acceptable quality	0.79	0.60
ATT4—Information sharing	0.83	0.87
Construct reliability/AVE	0.90/0.70	0.90/0.69
Subjective norm regarding software piracy (SN)		
SN1—Friends	0.73	0.94
SN2—Colleagues/classmates	0.77	0.93
SN3—Virtual community	0.64	0.76
Construct reliability/AVE	0.76/0.51	0.91/0.78
Perceived behavioral control (PBC)		
PBC1—Opportunity	0.80	0.87
PBC2—Knowledge	0.75	0.94
PBC3—Sanction[R]	0.66	0.89
PBC4—Availability	n.a.	0.74
Construct reliability/AVE	0.78/0.55	0.92/0.75

Note. All factor loadings are standardized loadings and significant at $p < .05$. R, reverse-scored item; n.a. = not applicable.
[a]Item deleted due to low factor loading revealed in initial CFA.

presentation complexity, all the aforementioned insignificant paths were excluded from the final analysis. After making this modification, the analysis was rerun, and the relevant finalized results for Scenario 1 and Scenario 2 are depicted in Figures 2 and 3, respectively.

To summarize, Figure 2 demonstrated an acceptable model fit for Scenario 1 concerning end-user piracy ($\chi^2 = 687.40$ with df = 264 at $p = .00$; NFI = 0.93; CFI = 0.94; GFI = 0.93; RMSEA = 0.07). It also showed that all the paths in the proposed model were significant at

TABLE 2
Assessment of discriminant validity (Scenario 1)

	PMI	REC	JUD	INT	ATT	SN	PBC
PMI	*0.51*						
REC	0.04	*0.72*					
JUD	0.04	0.10	*0.74*				
INT	0.05	0.15	0.17	*0.72*			
ATT	0.08	0.03	0.05	0.10	*0.70*		
SN	0.10	0.01	0.03	0.09	0.03	*0.51*	
PBC	0.01	0.01	0.03	0.08	0.01	0.02	*0.55*

Note. PMI = perceived moral intensity of software piracy; REC = moral recognition of software piracy; JUD = moral judgment on software piracy; INT = software piracy intention; ATT = attitude toward software piracy; SN = subjective norm regarding software piracy; and PBC = perceived behavior control over software piracy. Italicized numbers on the diagonal represent the average variance extracted (AVE); others entries represent the shared variance.

TABLE 3
Assessment of discriminant validity (Scenario 2)

	PMI	REC	JUD	INT	ATT	SN	PBC
PMI	*0.67*						
REC	0.07	*0.59*					
JUD	0.06	0.17	*0.61*				
INT	0.06	0.08	0.09	*0.82*			
ATT	0.05	0.05	0.04	0.10	*0.69*		
SN	0.08	0.02	0.02	0.08	0.02	*0.78*	
PBC	0.00	0.01	0.02	0.01	0.00	0.03	*0.75*

Note. PMI = perceived moral intensity of software piracy; REC = moral recognition of software piracy; JUD = moral judgment on software piracy; INT = software piracy intention; ATT = attitude toward software piracy; SN = subjective norm regarding software piracy; and PBC = perceived behavior control over software piracy. Italicized numbers on the diagonal represent the average variance extracted (AVE); others entries represent the shared variance.

$p < .05$. Overall the results supported the general postulation that software piracy is likely to involve both ethical and nonethical (social psychological) and considerations. From an ethical perspective, the results confirmed Jones' (1991) postulation concerning REC's negative direct effect on JUD ($\beta = -0.29$, $t = -4.75$) and JUD's positive direct effect on INT ($\beta = 0.30$, $t = 5.37$), thereby supporting H_1 and H_2, respectively. The results also supported H_{3a}

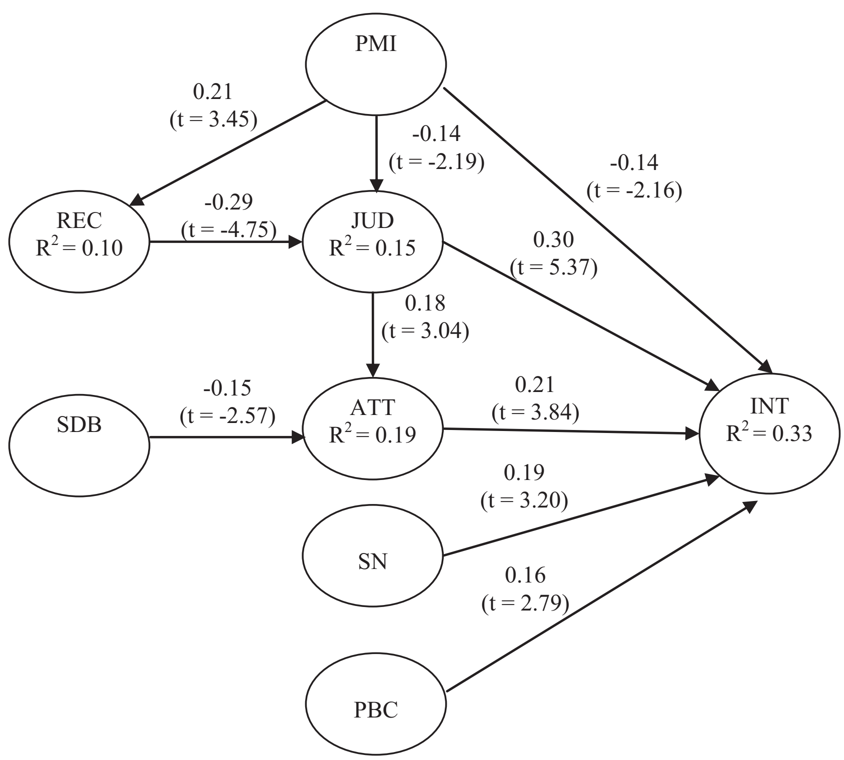

FIG. 2. Standardized path estimates derived from structural analysis (Scenario 1). *Note*. PMI = perceived moral intensity of software piracy; REC = moral recognition of software piracy; JUD = moral judgment on software piracy; INT = software piracy intention; ATT = attitude toward software piracy; SN = subjective norm regarding software piracy; PBC = perceived behavior control over software piracy; and SDB = Social desirability bias score. n.s., Not significant at $p < .05$; *t*-statistics > 1.96 are significant at $p < .05$.

TABLE 4
Descriptive statistics and correlations (Scenario 1)

	Mean	Standard deviation	PMI	REC	JUD	INT	ATT	SN	PBC	SDB
PMI	4.54	1.37	1							
REC	5.40	1.00	0.21**	1						
JUD	4.32	1.05	−0.20**	−0.32**	1					
INT	5.24	1.37	−0.22**	−0.39**	0.41**	1				
ATT	6.01	1.01	−0.29**	−0.18**	0.23**	0.35**	1			
SN	5.41	1.37	−0.31**	−0.08	0.17**	0.32**	0.18**	1		
PBC	4.74	1.12	−0.12	−0.08	0.16*	0.30**	0.08	0.14*	1	
SDB	5.91	3.11	−0.07	0.01	0.02	0.01	−0.15*	−0.10	−0.06	1

Note. PMI = perceived moral intensity of software piracy; REC = moral recognition of software piracy; JUD = moral judgment on software piracy; INT = software piracy intention; ATT = attitude toward software piracy; SN = subjective norm regarding software piracy; PBC = perceived behavior control over software piracy; and SDB = social desirability bias score. Mean scores of PMI, REC, JUD, and INT ranged from 1 to 7.

Original mean scores of ATT and PBC ranged from −9 and 9; whereas that of SN ranged from −18 to 18 (Ajzen 1991). They were subsequently converted to a 7-point scale (1 to 7) to ease interpretation and comparison. Mean score of SDB ranged from 0 to 13 (Reynolds 1982).

$^{**}p < 0.01$.

$^{*}p < 0.05$.

to H_{3c} by showing that PMI exerted a positive direct effect on REC ($\beta = 0.21$, $t = 3.45$), and a negative direct effect on JUD ($\beta = –0.14$, $t = –2.19$) and on INT ($\beta = –0.14$, $t = –2.16$). The findings further confirmed all the hypothesized relationships put forward by the well-established social psychological model, TPB. These included a positive direct effect of ATT ($\beta = 0.21$, $t = 3.84$), SN ($\beta = 0.19$, $t = 3.20$), and PBC ($\beta = 0.16$, $t = 2.79$) on INT, and therefore supported hypotheses H_4 to H_6, respectively. Lastly, the structural analysis also revealed a positive direct effect of JUD on ATT ($\beta = 0.18$; $t = 3.04$), thus providing support for H_7.

Figure 3 revealed that the structural analysis results for Scenario 2 (software counterfeiting) were similar to those for Scenario 1 (end-user piracy). Most notably, the proposed structural model for Scenario 2 also exhibited an acceptable model fit ($\chi^2 = 710.90$ with df = 289 at $p = .00$; NFI = 0.91; CFI = 0.94; TLI = 0.93; RMSEA = 0.07). Regarding individual paths, the results depicted a negative influence of REC on JUD ($\beta = –0.33$, $t = 5.46$;

TABLE 5
Descriptive statistics and correlations (Scenario 2)

	Mean	Standard deviation	PMI	REC	JUD	INT	ATT	SN	PBC	SDB
PMI	4.70	1.25	1							
REC	5.88	1.16	0.26**	1						
JUD	4.41	1.10	−0.24**	−0.41**	1					
INT	5.46	1.28	−0.24**	−0.28**	0.30**	1				
ATT	5.71	1.19	−0.22**	−0.22**	0.19**	0.32**	1			
SN	5.60	1.18	−0.28**	−0.13	0.14*	0.28**	0.15*	1		
PBC	5.21	0.98	0.07	−0.12	0.15*	0.12	0.03	0.17**	1	
SDB	5.64	3.38	0.09	0.08	0.09	0.10	−0.20**	−0.02	−0.01	1

Note. PMI = perceived moral intensity of software piracy; REC = moral recognition of software piracy; JUD = moral judgment on software piracy; INT = software piracy intention; ATT = attitude toward software piracy; SN = subjective norm regarding software piracy; PBC = perceived behavior control over software piracy; and SDB = social desirability bias score. Mean scores of PMI, REC, JUD, and INT ranged from 1 to 7.

Original mean scores of ATT and PBC ranged from −9 and 9; whereas that of SN ranged from −18 to 18 (Ajzen 1991). They were subsequently converted to a 7-point scale (1 to 7) to ease interpretation and comparison. Mean score of SDB ranged from 0 to 13 (Reynolds 1982).

$^{**}p < 0.01$.

$^{*}p < 0.05$.

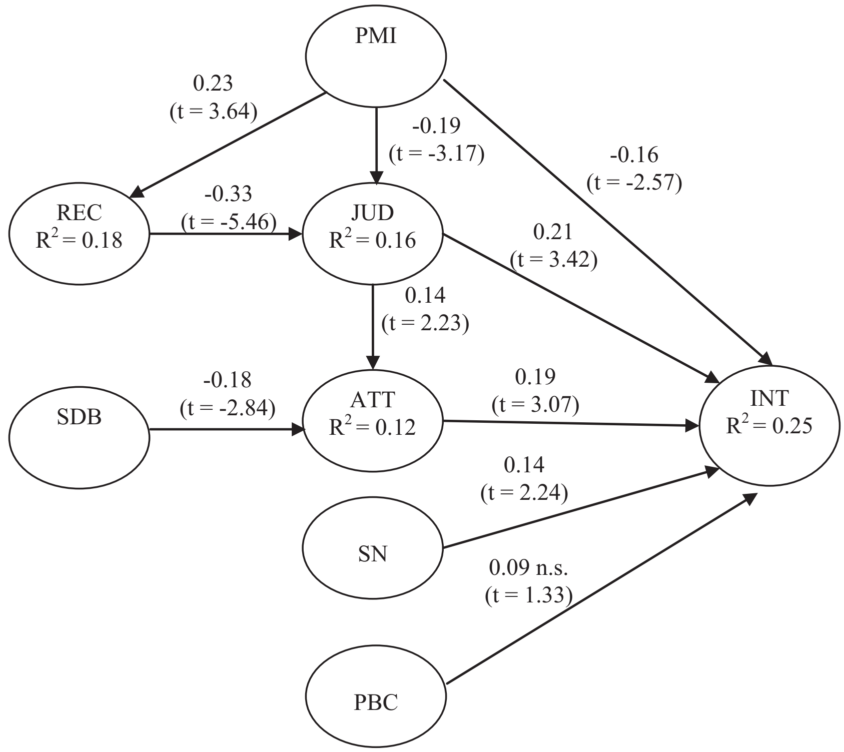

FIG. 3. Standardized path estimates derived from structural analysis (Scenario 2). *Note*. PMI = perceived moral intensity of software piracy; REC = moral recognition of software piracy; JUD = moral judgment on software piracy; INT = software piracy intention; ATT = attitude toward software piracy; SN = subjective norm regarding software piracy; PBC = perceived behavior control over software piracy; and SDB = Social desirability bias score. n.s., Not significant at $p < .05$; t-statistics > 1.96 are significant at $p < .05$.

H_1 supported), as well as a positive influence of JUD on INT ($\beta = 0.21$, $t = 3.42$; H_2 supported). Moreover, PMI was found to exert a significant influence on REC ($\beta = 0.23$, $t = 3.64$; H_{3a} supported), JUD ($\beta = -0.19$, $t = -3.17$; H_{3b} supported), and INT ($\beta = -0.16$, $t = -2.57$; H_{3c} supported) as hypothesized. Both ATT ($\beta = 0.19$, $t = 3.07$; H_4 supported) and SN ($\beta = 0.14$, $t = 2.24$; H_5 supported) were also found to positively influence INT. However, unlike what was already derived from Scenario 1, PBC in this scenario did not exert any significant influence on INT ($\beta = 0.09$, $t = 1.33$; H_6 not supported). Lastly, ATT here was also found to significantly affect ATT ($\beta = 0.14$, $t = 2.23$; H_7 supported). For reference, the structural analysis results for both scenarios are further summarized in Table 6.

DISCUSSION

Based on Chinese computer users' responses toward two fictitious scenarios of software piracy, end-user piracy and software counterfeiting, this study generates several important academic and practical implications. First, it shows the potential to synthesize both ethical and general social psychological concepts in order to explain the software piracy decision-making process. In previous studies aimed at understanding this process, researchers often resorted to either an ethical (Moores and Chang 2006) or a social psychological perspective (Peace et al. 2003) for explanation. This study, on the other hand, suggests that the two perspectives are complementary rather than competitive. Specifically, the present findings reveal direct influences of moral recognition (REC) on moral judgment (JUD), moral judgment (JUD) on software piracy intention (INT), and perceived moral intensity (PMI) on all the three moral reasoning stages under study (REC, JUD, and INT), thus supporting all the hypotheses put forward by the ethical theory of ICM.

Through a social psychological lens, the findings derived from the end-user piracy scenario also support all the three major propositions of TPB by demonstrating that attitude toward (ATT), subjective norm regarding (SN), and perceived behavioral control over (PBC) this piracy activity significantly determine the corresponding intention (INT). Although the findings from the software counterfeiting scenario do not support a significant direct influence of PBC on INT, they replicate those from the

TABLE 6
Summarized structural analysis results for Scenarios 1 and 2

Hypothesis and sign of influence	Scenario 1	Scenario 2	Hypothesis supported in both scenarios?
H_1: REC→JUD (−ve)	$\beta = -0.29, t = -4.75$	$\beta = -0.33, t = -5.46$	Yes
H_2: JUD→INT (+ve)	$\beta = 0.30, t = 5.37$	$\beta = 0.21, t = 3.42$	Yes
H_{3a}: PMI→REC (+ve)	$\beta = 0.21, t = 3.45$	$\beta = 0.23, t = 3.64$	Yes
H_{3b}: PMI→JUD (−ve)	$\beta = -0.14, t = -2.19$	$\beta = -0.19, t = -3.17$	Yes
H_{3c}: PMI→INT (−ve)	$\beta = -0.14, t = -2.16$	$\beta = -0.16, t = -2.57$	Yes
H_4: ATT→INT (+ve)	$\beta = 0.21, t = 3.84$	$\beta = 0.19, t = 3.07$	Yes
H_5: SN→INT (+ve)	$\beta = 0.19, t = 3.20$	$\beta = 0.14, t = 2.24$	Yes
H_6: PBC→INT (+ve)	$\beta = 0.16, t = 2.79$	$\beta = 0.09, t = 1.33$	Supported in scenarios 1 but not 2
H_7: JUD→ATT (+ve)	$\beta = 0.18, t = 3.04$	$\beta = 0.14, t = 2.23$	Yes

Note. PMI = perceived moral intensity of software piracy; REC = moral recognition of software piracy; JUD = moral judgment on software piracy; INT = software piracy intention; ATT = attitude toward software piracy; SN = subjective norm regarding software piracy; and PBC = perceived behavior control over software piracy. β, Standardized path estimates; t-statistics > 1.96 are significant at $p < .05$.

end-user piracy scenario by revealing significant direct influences of ATT and SN on INT. As shown in Table 5, the mean value and standard deviation of PBC for software counterfeiting are 5.21 (out of 7.0) and 0.98, respectively. The relatively large mean value and small standard deviation suggest that most Chinese computer users perceive there is little difficulty in accessing counterfeit software retailers to make their purchase, a phenomenon probably attributed to the wide availability of counterfeit software in China (123HelpMe.com 2012). Given the small variance (standard deviation) of PBC, it is likely that this construct only exerts a negligible influence on the corresponding intention.

Moreover, the empirical results derived from the two scenarios help identify an often neglected link between JUD and ATT (i.e., JUD → ATT). This identification confirms H_7 and advances understanding of how computer users' moral judgment on software piracy (JUD) may affect their overall attitude toward the same behavioral activity (ATT). Overall the present empirical results support the adoption of a "cross-fertilization" approach to explaining software piracy behavior.

Second, as already mentioned, PMI exerts a significant direct effect on REC, JUD, and INT. These findings highlight how Chinese computer users' perception of the morality of software piracy shapes their moral reasoning and, in particular, conative response toward software piracy. This contrasts with some previous analysts who have speculated about Chinese computer users as largely neglecting the moral implications of software piracy (Shore et al. 2001).

Despite the significant influences of the six-item PMI construct adopted in this study, one of its hypothesized constituent items, "proximity of effect," was excluded from the final analysis of the end-user piracy scenario (though not the software counterfeiting scenario) due to its low CFA factor loading and insignificant correlations with other components (REC, JUD, INT, ATT, SN, PBC) of the software piracy decision-making process. This finding is consistent with prior research that reported that PMI items may vary in their degrees of influences across different ethical scenarios (Ng et al. 2009). In practical terms, the finding suggests that Chinese computer users may not perceive the harm caused by end-user piracy as proximate (or that any such harm exists at all). This may be due to their misconception that once they or their firms have legally acquired a software license, they can do whatever they want with it. This analysis suggests the need to emphasize the illegal and unethical nature of end-user piracy in anti–software-piracy communication. In an effort to discourage Chinese computer users from engaging in this pirating activity, the Chinese government also needs to assist them to better recognize how their pirating acts may cause damages closer to themselves. For instance, the government should place more emphasis on how various domestic industries (e.g., software development and production, music, and movie production) and consequently the entire economy may be adversely affected due to this piracy activity. Moreover, it should draw Chinese computer users' attention to the risks that the country may suffer, such as image problems or even political sanctions at the international level if they continue this activity.

Third, the identified influence of JUD on ATT (as mentioned) further highlights how moral considerations may affect Chinese computer users' formation of their global attitude toward software piracy. This finding is consistent with the connotation of attitude within the TRA/TPB paradigm. According to this paradigm, an individual's attitude toward a behavior refers to his or her overall evaluation by various factors (Ajzen and Fishbein 1980). Logically, such overall evaluation is shaped by various factors including one's moral judgment (Bian and Veloutsou 2007). In sum, while Chinese computer users may still not regard software piracy as involving as much "ethical content" as do their Western counterparts, they are by no means completely apathetic about the moral implications of this act. This is probably due to China's continued integration into the international community, and consequently its rising public awareness of intellectual property right issues (Berrell and Wrathall 2007). To further verify this inference, cross-cultural research that compares the influences of JUD between Chinese and Western computer users is worth undertaking in the future. In any event, the present findings provide researchers and practitioners with a clearer picture about how moral judgment of today's Chinese computer users affects their psychological mechanism involved in making a software piracy decision.

Fourth, in practical terms, as attitude toward software piracy mainly concerns individual judgment on the benefits (such as low price, efficiency, acceptable quality, and information sharing as identified in this study) that could be derived from software piracy, the present findings provide Chinese policymakers and authentic software manufacturers with useful insights on how to combat software piracy. For instance, in their educational/communication programs aimed at deterring software piracy activities, they should emphasize the possible "costs" associated with this act. Such "costs" may include the poor quality of pirated software, and consequently the deteriorating utility (e.g., technical problems, damage to hardware, lack of technical support, moral stigma) associated with the use of that software. Relating specifically to authentic software manufacturers, they may also consider reducing their product price to neutralize the perceived financial benefits of using pirated software.

Fifth, in this study, SN is also found to be an important precursor of INT. As identified, the important referents that would influence an individual's software piracy decision are "friends," "colleagues/classmates," and "virtual community." These findings provide Chinese policymakers and authentic software developers with useful insights into choosing an appropriate opinion leader to disseminate the anti–software-piracy message to computer users. For example, they may feature their anti–software-piracy advertisement with a social gathering in which some peer group members (i.e., friends) share with others their bad experience with, and concern about, using pirated software. The use of important referents to convey to computer users the costs (such as those already mentioned) associated with software piracy would further strengthen the persuasiveness of the message.

Sixth, the results derived from the end-user piracy scenario have identified a significant influence of PBC on INT. To deter end-user piracy, the Chinese government and authentic software developers need to lower computer users' relevant PBC. As identified in this study, PBC depends much on whether computer users have ample opportunity ("opportunity") for access to, and knowledge ("knowledge") about, pirated software, and whether they are likely to face sanctions for pirating software ("sanction"). Given that it would be difficult to lower computer users' computing knowledge in this IT era, the Chinese government and authentic software developers should focus on the "opportunity" and "sanction" factors to increase situational constraints on end-user piracy. For example, in order to lower the accessibility of "copyable" licensed software, genuine software developers may invoke an activation procedure to verify users and ensure their compliance with the relevant license agreement (e.g., Microsoft, MATLAB). As for the sanction factor, while China's legislation for protecting intellectual property rights is generally adequate, their enforcement has long been criticized as insufficient (International Intellectual Property Alliance 2009). This is mainly due to the lack of manpower and financial resources at the National Copyright Administration of China (NCAC) and local copyright bureaus. To rectify this, the Chinese government should devote more resources and work more closely with authentic software developers to enhance the quantity and quality of its enforcement officials. In its software piracy communication/educational programs, the government should also clearly define and convey to computer users the legal liabilities faced by software pirates. These strengthened enforcement and assertive communication approaches would increase what Peace et al. (2003) have coined the "punishment certainty" and consequently would lead to individuals' lower perceived ability (PBC) to involve in end user piracy.

CONCLUSION

Drawing on Jones's ethical theory of ICM and Ajzen's social psychological theory of TPB, this study proposes and tests an integrative model depicting the decision-making process underlying software piracy. Unlike most of the previous investigations that have been confined to student samples in developed nations and paid no regard to the potential problem of social desirability bias, this study examines ordinary computer users of an emerging economy, China, and specifically incorporates their social desirability bias into consideration for control purposes. Overall, the findings provide support for the validity of the proposed model and confirm most of the propositions of ICM and TPB in the two software piracy scenarios under study. Taken together, the findings show the potential for synthesizing ethical and general social psychological concepts to explain software piracy behavior, and also provide the Chinese government and authentic software developers with useful insights on how to deter software piracy activities.

Like other investigations, this study has its limitations. In particular, its confinement to computer users in one Chinese city may restrict the applicability of its findings in other contexts. While it is justified to first explore computer users living in the most Internet-advanced Chinese city, future investigations with wider geographical coverage will help further assess the external validity of the proposed model.

NOTE

1. The prevalence of software piracy in China has constantly troubled such multinational software developers as Microsoft and Apple, Inc. (Kane 2009). The BSA (2012) estimates that 77% of the software used in China is pirated, compared with the worldwide average of 42%. Correspondingly, China's illegal software market was worth nearly US$9 billion in 2011, compared with a legal market of less than US$3 billion (BSA 2012). As enforcement of intellectual property rights is still weak in China and most Chinese computer users still perceive genuine software as expensive, it is anticipated that software piracy will continue unabated in the years to come (123HelpMe.com 2012).

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APPENDIX: SUMMARY OF MEASURES

Perceived moral intensity (PMI) (May and Pauli 2002; Singhapakdi et al. 1996) (7-point scale; 1 = strongly disagree and 7 = strongly agree):

PMI1 (magnitude of consequences): The overall harm (if any) as a result of this software piracy behavior will be very serious.

PMI2 (social consensus): Most people would agree that this software piracy behavior is wrong.

PMI3 (probability of effect): There is a very high likelihood that this software piracy behavior will cause at least some harm.

PMI4 (temporal immediacy): This software piracy behavior will cause at least some harm in the immediate future.

PMI5 (proximity of effect): This software piracy behavior will adversely affect people that are close to me.

PMI6 (concentration of effect): This software piracy behavior will harm a small number of people in a major way.

Moral recognition (REC) (Leitsch 2004; Mencl and May 2009) (7-point scale; 1 = strongly disagree and 7 = strongly agree):

REC1: I have to consider ethical issues when deciding if I should perform this software piracy behavior.

REC2: I am faced with an ethical issue when performing this software piracy behavior.

REC3: To me, this software piracy behavior involves an ethical problem.

Moral judgment (JUD) (7-point scale adapted from Mayo and Marks 1990):

JUD1: unacceptable/acceptable.

JUD2: wrong/right.

JUD3: bad/good.

Software piracy intention (INT) (7-point scale adapted from Stevenson et al. 2000):
INT1: unlikely/likely.
INT2: improbable/probable.

Attitude (ATT), subjective norm (SN) and perceived behavioral control (PBC). The belief-based measures (i.e., $\sum B_i E_i$, $\sum N_j M_j$, and $\sum C_k P_k$) were used to operationalize ATT, SN, and PBC (Ajzen 1991). To this end, the salient attitudinal beliefs (B_i's), normative beliefs (N_j's), and control beliefs (C_k's) underlying software piracy were first generated using Ajzen and Fishbein's (1980, 68–77) elicitation approach. For each of the two scenarios under study, the employment of this approach involved asking 50 Guangzhou computer users to read the assigned scenario and then enumerate their perceived salient attitudinal, normative, and control beliefs. The beliefs finally included in this study were determined according to natural breaks in their frequencies of enumeration (Lee and Green 1991).

Overall, the salient attitudinal, normative, and control beliefs so generated were similar across the two scenarios. They were all coded on a 7-point scale anchored with -3 = unlikely and 3 = likely, as described in the following:

Attitudinal beliefs (B_i's):
B1: To me, this software piracy behavior represents an inexpensive means to obtain the needed software (low price).
B2: To me, software piracy behavior represents a quick or efficient means to obtain the needed software (efficiency).
B3: To me, this software piracy behavior results in my possession of software with acceptable quality (acceptable quality).
B4: To me, this software piracy behavior expedites information sharing (information sharing).

Normative beliefs (N_j's):
N1: My colleagues/classmates think I should perform this software piracy behavior (colleagues/classmates).
N2: Those I know from the virtual community think I should perform this software piracy behavior (virtual community).
N3: My friends think I should perform this software piracy behavior (friends).

Control beliefs (C_k's)
C1: I have ample opportunity to perform this software piracy behavior (opportunity).
C2: I am concerned about if I will face sanctions of some kind for performing this software piracy behavior (sanction). [Reverse-coded item]
C3: I have sufficient knowledge to perform this software piracy behavior (knowledge).
C4: There is no difficulty for me to find out where to buy the needed counterfeit software (availability) (*for Scenario 2 only*).

Based on these salient attitudinal, normative, and control beliefs, the corresponding measures for outcome evaluation (E_i's), motivation to comply (M_j's), and perceived power of control (P_k's) items were developed according to Ajzen's (1991) standardized procedure:

Outcome evaluation (E_i's): Respondents were asked to evaluate, on a 7-point scale (-3 = bad and 3 = good), the consequence associated with each of the attitudinal beliefs.
Motivation to comply (M_j's): Respondents were asked to indicate, on a 7-point scale (0 = not at all; 6 = very much), how much they wanted to comply with each of the normative beliefs.
Perceived power of control (P_k's): Respondents were asked to indicate, on a 7-point scale (-3 = not important; 3 = important), the degree of importance of each of the control beliefs.
Social desirability bias (SDB) (Reynolds 1982) (true/false scale; 0 = false and 1 = true):
SDB1: It is sometimes hard for me to go on with my work if I am not encouraged. [Reverse-coded item]
SDB2: I sometimes feel resentful when I don't get my way. [Reverse-coded item]
SDB3: On a few occasions, I have given up doing something because I thought too little of my ability. [Reverse-coded item]
SDB4: There have been times when I felt like rebelling against people in authority even though I knew they were right. [Reverse-coded item]
SDB5: No matter whom I am talking to, I am always a good listener.
SDB6: There have been occasions when I took advantage of someone. [Reverse-coded item]
SDB7: I'm always willing to admit it when I make a mistake.
SDB8: I sometimes try to get even rather than forgive and forget. [Reverse-coded item]
SDB9: I am always courteous, even to people who are disagreeable.
SDB10: I have never been irked when people expressed ideas very different from my own.
SDB11: There have been times when I was quite jealous of the good fortune of others. [Reverse-coded item]
SDB12: I am sometimes irritated by people who ask favors of me. [Reverse-coded item]
SDB13: I have never deliberately said something that hurt someone's feelings.