

# Integrating Risk Perception Attitude Framework and the Theory of Planned Behavior to Predict Mental Health Promotion Behaviors among Young Adults

Shi, Jingyuan; Kim, Hye Kyung

*Published in:*  
Health Communication

*DOI:*  
[10.1080/10410236.2019.1573298](https://doi.org/10.1080/10410236.2019.1573298)

Published: 15/04/2020

*Document Version:*  
Peer reviewed version

[Link to publication](#)

*Citation for published version (APA):*

Shi, J., & Kim, H. K. (2020). Integrating Risk Perception Attitude Framework and the Theory of Planned Behavior to Predict Mental Health Promotion Behaviors among Young Adults. *Health Communication, 35*(5), 597-606. <https://doi.org/10.1080/10410236.2019.1573298>

**General rights**

Copyright and intellectual property rights for the publications made accessible in HKBU Scholars are retained by the authors and/or other copyright owners. In addition to the restrictions prescribed by the Copyright Ordinance of Hong Kong, all users and readers must also observe the following terms of use:

- Users may download and print one copy of any publication from HKBU Scholars for the purpose of private study or research
- Users cannot further distribute the material or use it for any profit-making activity or commercial gain
- To share publications in HKBU Scholars with others, users are welcome to freely distribute the permanent publication URLs

Integrating Risk Perception Attitude Framework and the Theory of Planned Behavior to Predict  
Mental Health Promotion Behaviors among Young Adults

Jingyuan Shi<sup>1</sup>

Hye Kyung Kim<sup>2</sup>

<sup>1</sup>Department of Communication Studies, School of Communication, Hong Kong Baptist University, 5 Hereford Road, Kowloon, Hong Kong

<sup>2</sup>Wee Kim Wee School of Communication & Information, Nanyang Technological University, 31 Nanyang Link, 637718, Singapore

Correspondent author: Jingyuan Shi, jolieshi@hkbu.edu.hk, Department of Communication Studies, Hong Kong Baptist University, 5 Hereford Road, Kowloon Tong, Kowloon, Hong Kong

Shi, J., & Kim, H. K. (2020). Integrating risk perception attitude framework and the theory of planned behavior to predict mental health promotion behaviors among young adults. *Health Communication*, 35(5), 597–606. <https://doi.org/10.1080/10410236.2019.1573298>

### **Abstract**

Mental disorder is a pressing public health issue in Singapore, especially among young adults. By integrating the risk perception attitude (RPA) framework and the theory of planned behavior (TPB), this study examines psychosocial factors underlying two mental health promotion behaviors – seeking counseling and employing self-help methods – among young Singaporeans. The results of an online survey ( $n = 232$ ) showed that, as predicted by RPA framework, perceived risk interacted with self-efficacy to affect behavioral intention to seek counseling. However, this interaction existed only among individuals with favorable attitudes toward counseling-seeking behavior and not among those with unfavorable attitudes. In addition, the interaction between perceived risk and self-efficacy was not significant for the intention to perform self-help methods. The current findings demonstrated that the nature of focal behavior and attitudes are boundary conditions of the interaction effect between perceived risk and efficacy, which is the core premise of the RPA framework. These findings offer practical implications for developing campaign strategies to promote mental wellbeing among young adults in Singapore.

*Keywords:* risk perception attitude (RPA) framework, the theory of planned behavior (TPB), mental health, seeking counseling, self-help methods

## **Integrating Risk Perception Attitude Framework and the Theory of Planned Behavior to Predict Mental Health Promotion Behaviors among Young Adults**

Singapore is a city-state with 5.2 million people, in which mental disorder is a pressing public health issue. According to a nationwide study on mental health, there is a 6.3% lifetime prevalence of major depressive disorder among Singaporean adults, which includes more than 57,000 men and approximately 102,000 women (Institute of Mental Health, 2016). In particular, young adults, aged 18-29 years, are highly susceptible to mental disorders and social stress (Child Trends, 2015). In Singapore, compared with other population segments, young adults are at greater risk of mental disorder (Ministry of Health, 2011). However, a majority of Singaporeans believe mental health problems are “a sign of personal weakness,” and people with mental disorders can get better without any help (Lai, 2015).

Without proper treatment or care, mental health problems that emerge during adulthood are likely to result in psychological dysfunction, substance abuse, poor interpersonal relationships, and dissatisfaction with life (Van Voorhees et al., 2006). Previous research, however, has shown that compared with older adults, young adults were more likely to tolerate the symptoms, delay treatment, or reject professional help (Van Voorhees et al., 2006). The extant literature has shown that employing self-help methods, such as physical activities (Gomez-Pinilla, 2008), meditation (Lavretsky et al., 2012), good-quality sleep (Pilcher & Ott, 1998), and healthy eating (Gomez-Pinilla, 2008), can reduce stress, anxiety, and depressive symptoms. Additionally, meta-analyses have long confirmed the effectiveness of psychological therapies and counseling for treating mental disorders (e.g., Lipsey & Wilson, 1993; Shadish, Matt, Navarro, & Phillips, 2000). Moreover, there is a strong recommendation to promote preventive interventions and coping strategies before the individual becoming depressed or the

symptoms reaching clinical levels (Barry, Canavan, Clarke, Dempsey, & O'Sullivan, 2009). Therefore, proper interventions are needed to prevent mental health problems by encouraging these mental health promotion behaviors among young adults.

To inform the development of effective interventions, the present study employs the risk perception attitude (RPA) framework and the theory of planned behavior (TPB), the two major theories in behavior prediction, to understand psychosocial factors that guide young adults' two primary mental health promotion behaviors: seeking counseling and employing self-help methods. In doing so, we explore how the RPA framework and TPB could complement each other to better segment target audiences and predict intentions to engage in mental health promotion behaviors. Specifically, we examine potential moderators of the premise of RPA framework, including behavior type and predictors of the TPB, to shed light on somewhat inconsistent findings reported in prior work based on the RPA framework (e.g., Rimal & Juon, 2010; Rimal & Real, 2003, Study 2; Rimal, Böse, Brown, Mkandawire, & Folda, 2009; Rimal, Brown, et al., 2009). Collectively, we intend to provide useful information for developing effective communication programs tailored to audience characteristics and depending on the types of recommended means to improve mental health among young Singaporeans.

### **Risk Perception Attitude (RPA) Framework**

The RPA framework is a widely-adopted behavior prediction model in health communication. Guided by the extended parallel process model (EPPM; Witte, 1992, 1994), Rimal and Real (2003) suggest that an individual's intention of performing preventive behaviors is determined by both threat and efficacy. Whereas the threat and efficacy in the EPPM refer to message elements in a fear appeal message, the RPA framework conceptualize these factors as individuals' psychological perceptions. In detail, the RPA framework conceptualizes perceived

threat as a two-dimensional factor including both perceived susceptibility to a disease and the severity of the disease (Rimal & Real, 2003). Perceived efficacy encompasses an individual's confidence in enacting preventive behaviors to reduce their personal risk, as well as the perceived effectiveness of those measures to reduce their risk (Rimal & Real, 2003; Rimal et al., 2009).

### **Interaction between Efficacy and Risk**

The primary proposition of the RPA framework is that protection motivation is guided by the joint influence of risk perceptions and efficacy beliefs (Rimal & Real, 2003). In other words, individuals do not often act on heightened risk unless they perceive themselves as sufficiently efficacious at preventing the risk. To examine this proposition, the RPA framework formulated four segments depending on the individual's motivation (perceived risk) and capability (efficacy). Individuals with high risk and high efficacy are categorized into the *responsive group* and considered most likely to translate motivations into action. Individuals with low risk and low efficacy are categorized into the *indifference group* and considered least likely to engage in preventive actions (Turner, Grube, & Meyers, 2001). The *proactive group* comprises individuals with low risk but high efficacy, and the *avoidance group* comprises individuals who perceive high risk but low efficacy. These two groups are predicted to have an intermediate level of health outcomes.

Although a number of studies have reported overall support for the RPA framework (Rimal, 2002; Rimal & Real, 2003, Study 1), several inconsistent findings have been documented in previous studies, as well (Rimal & Juon, 2010; Rimal & Real, 2003, Study 2; Rimal, Böse, et al., 2009; Rimal, Brown, et al., 2009). Several other studies have found that, regardless of the level of risk, compared to low efficacy groups, groups with high efficacy were

more likely to adopt preventive behaviors to avert risks or engaged in such behaviors more frequently (e.g., condom use and testing for HIV: Rimal, Brown et al., 2009; breast self-exam: Rimal & Juno, 2010). In another study (Rimal & Juon, 2010), the positive relationship between perceived risk and information seeking was significant only in the low efficacy groups but not in the high efficacy groups, which counters the prediction of the RPA framework.

These inconsistent findings indicate that there might be boundary conditions for the interaction effect between perceived risk and efficacy on health outcomes. One possibility is that the interplay between perceived risk and efficacy depends on the type of a focal behavior. For instance, in a study (Rimal, Böse, et al., 2009), when efficacy beliefs were strong, those with higher risk perceptions (i.e., the responsive group) had stronger intentions to remain monogamous than those with lower risk perceptions (i.e., the proactive group), but in this study this same relationship was not found in the intention to use condoms. In another study, the joint effect of risk and efficacy was found only significant for breast self-exam practices, but not for undergoing clinical breast screening (Rimal & Juon, 2010). In fact, Rimal and Turner (2009) have speculated that behavioral attributes, “the constituent characteristics that define a behavioral domain” (pp. 156), could be a critical factor impacting the health behavioral outcomes in the RPA framework. Therefore, the two mental health promotion behaviors, which differ significantly in their behavioral attributes, may be differently influenced by perceived risk and efficacy and their interaction in predicting intentions.

Collectively, we attempt to replicate the primary proposition of the RPA framework in the context of mental health promotion behaviors among young Singaporeans. At the same time, we explore whether the interplay between perceived risk and efficacy on behavioral intention varies depending on the type of a mental health promotion behavior.

H1: Perceived risk and perceived self-efficacy will jointly affect intentions to engage in mental health promotion behaviors, such that the relation between self-efficacy and behavioral intention will become stronger as perceived risk becomes stronger.

### **Bridging the Core Elements of the TPB to the RPA Framework**

We further explore whether the prediction of RPA framework is contingent on other psychosocial factors, including attitudinal and normative predictors in the TPB, that motivate behavioral engagement. The TPB has been suggested as a useful theoretical framework to understand individuals' mental health promotion behaviors (Smith, Tran, & Thompson, 2008). Based on the TPB, individuals' behavioral intentions are determined by their attitudes toward performing the behavior, subjective norms, and perceived behavioral control (Ajzen, 1985). Ajzen (2002, 2006) later revised the normative component in the theory to include both descriptive norms (one's perceived prevalence of the behavior) and injunctive norms (one's perceived approval or sanction of performing the behavior). Theoreticians of the TPB note that the relative strength of TPB predictors differ by the behavior and the population under investigation (Fishbein & Yzer, 2003). Because the effects of TPB predictors depend on the characteristics of individuals (Fishbein & Ajzen, 2010), it is reasonable to expect that the individual differences in both perceived risk and efficacy will interact with attitudes and norms to further determine behavioral intention.

In fact, as major behavior prediction theories, the TPB and the RPA framework have some overlapping concepts and recommendations in developing campaign strategies. For instance, both theoretical frameworks consider self-efficacy and perceived risk as predictors of behavioral intention, although the latter is conceptualized as a distal predictor in the TPB (Fishbein & Ajzen, 2010). Indeed, perceived risk has often been investigated in relation to health



behavior performance and included as an extension to the TPB (e.g., Rich, Mullan, Sainsbury, & Kuczmierczyk, 2014). The TPB theorists have also examined the effect of perceived risk on behavioral intention and found it indirectly affects the intention through the attitudinal and normative factors in the TPB (Stasson & Fishbein, 1990).

In terms of campaign strategies, the RPA framework (Rimal & Real, 2003) suggests improving risk perception or efficacy beliefs according to the segment to which an individual belongs. This is similar to what the TPB suggests in selecting the target beliefs to tackle, having sufficient room for change (Fishbein & Yzer, 2003). However, the TPB recommends selecting those beliefs strongly associated with intentions to ensure that changes in beliefs would actually lead to behavior change (Fishbein & Yzer, 2003). This recommendation is not accounted for in the RPA framework.

Despite the potential for theoretically complementing each other, little research to date has attempted to examine how the two theoretical frameworks can be collectively used to better segment target audiences and improve their health promotion behaviors. Moreover, somewhat inconsistent findings on the RPA framework regarding the interactive effect between risk and efficacy (e.g., Rimal & Juon, 2010; Rimal & Real, 2003, Study 2; Rimal, Böse, et al., 2009) indicate the need for further theoretical refinement. Therefore, we intend to explore the two core elements of TPB, attitudes and descriptive norms, as the boundary conditions for the premise of the RPA framework in forming two different types of mental health promotion behaviors.

### **Attitudes as A Boundary Condition for the RPA Framework**

In this study, attitudes refer to one's cognitive and affective evaluations on the perceived outcomes of engaging in self-help methods and seeking counseling. An individual's negative attitudes have been suggested as a major barrier to both seeking counseling and performing self-

help methods. For instance, studies have found a strong association between attitudes and the willingness to seek counseling services (e.g., Bayer & Peay, 1997; Vogel, Wester, Wei, & Boysen, 2005). Previous research has also shown that among all the TPB predictors, attitudes were the most important predictor of the intention to seek counseling in populations with or without mental illness (e.g., Bayer & Peay, 1997; Schomerus, Matschinger, & Angermeyer, 2009). Similarly, negative attitudes have been reported as a major barrier to exercise (e.g., Deforche, De Bourdeaudhuij, & Tanghe, 2006) and healthy eating (e.g., Hartman, Wadsworth, Penny, van Assema, & Page, 2013) among adolescents and young adults. As well, a study on sleeping behavior among college students found that when measured indirectly through outcome expectancy beliefs, attitudes carried the highest weight among all TPB predictors and was positively related to both intention and sleep behavior (Robbins & Niederdeppe, 2015). Therefore, previous research indicates that attitudes, in addition to perceived risk and efficacy suggested by the RPA framework, are a critical factor in mental health promotion behaviors.

At the same time, attitudes toward a behavior have also been documented to interact with perceived risk to affect behavioral intention. In a study, for instance, physicians' attitudes toward performing the clinical examination on HIV seropositive patients moderated the effects of perceived risk of contracting HIV on their intention to perform the clinic examination (Godin, Boyer, Duval, Fortin, & Nadeau, 1992). When the attitudes are neutral or negative, the perceived risk of HIV further impeded their intention to perform the examination on the HIV seropositive patient (Godin et al., 1992). In addition, a meta-analysis on condom use based on theories of reasoned action and planned behavior has revealed that compared with the low HIV risk group, the effect of attitudes toward using condom on the behavioral intention is much larger among the high HIV risk group (Albarracín, Johnson, Fishbein, & Muellerleile, 2001). Collectively,

negative attitudes may be a critical barrier to the performance of mental health promotion behaviors even when one's perceived risk is high.

In light of these, we examine whether attitudes are an important determinant for the interplay between efficacy and perceived threat suggested in the RPA framework. It is possible that individuals are more likely to act on their efficacy beliefs to perform the mental health promotion behaviors, if they perceive they are at the risk of mental disorders, only when they hold a positive attitude toward engaging in self-help methods or seeking counseling. Conversely, young adults with negative attitudes toward mental health promotion behaviors are less likely to act on their efficacy beliefs even with a high perceived risk. Hypothesis 2 (H2) is proposed as follows:

H2: Attitudes moderate the effects of perceived risk and perceived self-efficacy on intentions to engage in mental health promotion behaviors, such that when attitudes are relatively favorable, the difference in the effects of self-efficacy on behavioral intentions as a function of perceived risk is large compared with when attitudes are relatively unfavorable.

### **Descriptive Norms as A Boundary Condition for the RPA Framework**

Although descriptive norms are not included in either the RPA framework or the EPPM, premises in these theories, coupled with previous research, suggest a potential interaction effect between perceived risk and descriptive norms on behavioral intention. According to the RPA framework (Rimal & Turner, 2009) and the EPPM (Witte, 1992, 1994), perceived risk increases the motivation to seek relevant health information. Additionally, information processing theories, such as the elaboration likelihood model (ELM; Petty & Cacioppo, 1986), suggest that people with higher motivation or involvement are more likely to process information in a relatively analytic and critical manner, compared to those with lower motivation who are more prone to

rely on cognitive shortcuts or “heuristics.” Collectively, individuals characterized by lower perceived risk may be more likely to be influenced by heuristic cues, which include perceptions of what others are doing (i.e., descriptive norms).

Previous research has shown that descriptive norms serve as a useful heuristic for individuals with lower involvement in forming their intentions to perform health related behaviors, such as consuming junk food (Lapinski, Zhuang, Koh, & Shi, 2017). With a high level of perceived risk, individuals carefully weigh all the possible outcomes to decide whether to engage in the focal behavior, instead of relying mainly on heuristic cues, such as the information that many others in the social group are enacting the behavior themselves. In contrast, with a low level of perceived risk, individuals are more likely to perform the behavior when the behavior is believed to be prevalent among the important others, compared with when the behavior is believed less prevalent among the others. Collectively, descriptive norm may serve as a heuristic cue to perform mental health behaviors particularly when one considers his/her risk level to be low.

In light of these findings, one possibility is that descriptive norms further moderate the interactive effect between perceived risk and self-efficacy in the RPA framework. We argue that the efficacy and threat interplay may not always hold as predicted by the RPA framework because people are additionally influenced by the level of descriptive norm (particularly when the threat level is low). When the perceived risk is high, the behavioral intention is likely to be determined by the perceived risk and efficacy. However, when the perceived risk is low the behavioral intention is more likely to be jointly affected by perceived risk, efficacy, and descriptive norms, which is proposed in Hypothesis 3 (H3):

H3: Descriptive norms moderate the effects of perceived risk and perceived self-efficacy on intentions to engage in mental health behaviors, such that when the perceived risk is relatively low, the behavioral intentions are jointly affected by perceived risk, perceived self-efficacy, and descriptive norms. When the perceived risk is relatively high, the behavioral intentions are affected by perceived risk and perceived self-efficacy, as predicted by the RPA framework.

## **Method**

### **Participants and Procedures**

We analyzed data from an online survey administered to undergraduate students at a large-sized university in Singapore. Our sampling frame consisted of 4% of total undergraduate students ( $n = 1,000$ ) randomly selected from a list of registered student email addresses.

Participants received an email invitation, which asked them to fill out an online questionnaire in exchange for joining a lucky draw for a gift card valued at 10 Singapore Dollars (approximately 7.21 USD). Out of 354 participants who started the survey, 232 participants completed the entire questionnaire.

Sixty-two percent of the participants were female ( $n = 144$ ), ranging in age from 18 to 28 years ( $M = 21.34$ ,  $SD = 1.75$ ). The majority of the participants were ethnic Chinese ( $n = 213$ , 91.8%), 4.7% Malay ( $n = 11$ ), 0.9% Indian ( $n = 2$ ), and 2.6% Other ( $n = 6$ ). Among all of the participants, 60% were freshmen ( $n = 66$ , 27.6%) and sophomores ( $n = 77$ , 33.2%), and 40% of them were juniors ( $n = 45$ , 19.4%) and seniors ( $n = 46$ , 19.8%). We also asked the participants to rate their general mental health status on a 5-point Likert scale where 1 = *poor* and 5 = *excellent* ( $M = 3.00$ ,  $SD = 0.98$ ). The IRB approved the questionnaire and procedure.

### **Measures**

Following procedures and wordings recommended in assessing TPB (Ajzen, 2002, 2006) and RPA framework (Rimal & Real, 2003) constructs, we measured attitudes, injunctive norms, descriptive norms, and self-efficacy, perceived risk, and behavioral intention in relation to two behaviors: employing self-help methods and seeking counseling. In light of Ajzen's (2002) guideline, the measurements were developed based on an elicitation study with six teams of five university students to identify salient beliefs associated with mental health behaviors to ensure the validity in the Singaporean context.

**Attitudes.** Using a 5-point semantic-differential scale, we asked whether performing each behavior would be (a) extremely unimportant to extremely important, (b) worthless to valuable, and (c) undesirable to desirable ( $\alpha_{\text{self-help}} = .88$ ,  $\alpha_{\text{counseling}} = .85$ ). We averaged three items to create an index of attitudes separately for the two behaviors ( $M_{\text{self-help}} = 4.05$ ,  $SD = 0.75$ ;  $M_{\text{counseling}} = 3.27$ ,  $SD = 0.88$ ).

**Injunctive norms.** We asked about the perceived level of approval (1 = *strongly disapprove*, 5 = *strongly approve*) for performing self-help behaviors and seeking counseling from (a) family members and (b) close friends ( $r_{\text{self-help}} = .51$ ,  $p < .001$ ;  $r_{\text{counseling}} = .41$ ,  $p < .001$ ). We averaged responses into a scale of injunctive norms for both behaviors ( $M_{\text{self-help}} = 3.91$ ,  $SD = 0.61$ ;  $M_{\text{counseling}} = 3.61$ , and  $SD = 0.69$ ).

**Descriptive norms.** We asked about perceived level of prevalence (1 = *never*, 5 = *all the time*) for performing the two behaviors among (a) the students in the same university and (b) their close friends ( $r_{\text{self-help}} = .63$ ,  $p < .001$ ;  $r_{\text{counseling}} = .40$ ,  $p < .001$ ). We averaged responses into a scale of injunctive norms for both behaviors ( $M_{\text{self-help}} = 3.23$ ,  $SD = 0.83$ ;  $M_{\text{counseling}} = 2.22$ ,  $SD = 0.66$ ).

**Self-efficacy.** On a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*), participants rated their agreement on three statements about their confidence in their ability to perform each behavior in different constraining situations, for instance, due to costs of money and time. Sample items are “I am confident in engaging in self-help methods when I experience mental health issues even if I am busy with my commitments (e.g., school, extra-curricular activities),” and “I am confident in seeking counseling service when I experience mental health issues even if it is expensive” ( $\alpha_{\text{self-help}} = .88$ ,  $\alpha_{\text{counseling}} = .83$ ). We averaged responses into a self-efficacy scale for both behaviors ( $M_{\text{self-help}} = 3.42$ ,  $SD = 0.90$ ;  $M_{\text{counseling}} = 2.45$ , and  $SD = 0.91$ ).

**Perceived risk.** Perceived vulnerability was assessed with two items from 1 = *very unlikely* to 5 = *very likely*: “How likely is it that you personally will experience mental health issues (e.g., anxiety, stress, depression) between now and the end of the academic year?” and “You think your chances of experience mental health issues (e.g., anxiety, stress, depression) between now and the end of the academic year are \_\_\_\_.” We averaged the two responses to create a scale of perceived susceptibility ( $r = .63$ ,  $p < .001$ ;  $M = 2.93$ ,  $SD = 1.02$ ).

Perceived severity was measured on two items from 1 = *not at all serious* to 5 = *extremely serious*: “How serious do you think the illness would be for your academic success?” and “How serious do you think the illness would be for your own health?” We averaged the two responses to measure perceived severity ( $r = .64$ ,  $p < .001$ ;  $M = 3.42$ ,  $SD = 0.99$ ).

Guided by prior research on perceived risk (Griffin et al., 2008), perceived risk of mental health issues was calculated by multiplying measures of perceived susceptibility and perceived severity ( $M = 10.14$ ,  $SD = 4.88$ ).

**Behavioral Intentions.** Participants indicated the likelihood they would (1) seek counseling ( $M = 2.32$ ,  $SD = 1.13$ ) and (2) engage in self-help methods ( $M = 3.56$ ,  $SD = 1.16$ ) the next time they experienced mental health issues.

### **Analytical Methods**

To examine H1 and RQ1, we used hierarchical linear regression with behavioral intention as the dependent variable with two blocks of independent variables. The first block included control variables, namely, gender, age, year and the self-reported mental health status. The second block included the TPB predictors. The third block included perceived risk. The fourth block included perceived risk  $\times$  self-efficacy.

To test the moderating roles of attitudes (H2) and descriptive norms (H3) in the interaction effect of risk and efficacy, we used hierarchical linear regression to test three-way interactions among perceived risk, self-efficacy, and attitudes/descriptive norms on intentions. The first block included the four control variables. The second block included the TPB predictors and perceived risk, and the third block included two-way interaction terms and three-way interactions. All interaction terms were mean centered to reduce potential multicollinearity problems (J. Cohen, P. Cohen, West, & Aiken, 2003). The correlation matrix is presented in Table 1.

## **Results**

### **Motivational Factors for Mental Health Promotion Behaviors**

Although we did not hypothesize, we explored psychosocial factors predicting intentions to seek counseling services and engage in self-help methods. For seeking counseling services, the results showed that attitudes ( $\beta = .45$ ,  $t = 7.34$ ,  $p < .001$ ), descriptive norms ( $\beta = .15$ ,  $t = 2.45$ ,  $p = .015$ ), and self-efficacy ( $\beta = .17$ ,  $t = 2.67$ ,  $p = .008$ ) were significant predictors of the



intention. The adjusted  $R^2$  was 36.6%. The difference between attitudes and other TPB predictors' standardized beta weights reached the significant level. Thus, attitudes are the strongest predictor of counseling seeking.

For performing the self-help methods, attitudes ( $\beta = .23, t = 3.21, p = .002$ ), descriptive norms ( $\beta = .18, t = 2.78, p = .006$ ), and self-efficacy ( $\beta = .20, t = 2.94, p = .004$ ) significantly influenced the intention. The TPB model explained 22.9% of the variance in the intention (see Table 2). Despite the strong standardized beta weights of attitudes and self-efficacy, the standardized beta weights of the three TPB predictors were not statistically different from each other.

### **Boundary Conditions for the RPA Framework**

**Behavior type.** H1 predicted an interaction effect between risk and efficacy on intention and RQ1 further asked whether the interplay differ between the two mental health behaviors. The results showed that perceived risk significantly interacted with self-efficacy to affect the intention to seek counseling,  $\beta = .11, t = 2.06, p = .04$ . To probe the significant interaction, simple slopes were estimated at one standard deviation above and below of the mean of risk. As presented in Figure 1, there was a stronger relationship between self-efficacy and intentions among those with high risk (+1SD),  $\beta = .65, t = 6.60, p < .001$ , whereas a weaker relationship was found among those with low risk (-1SD),  $\beta = .43, t = 4.12, p < .001$ . However, the interaction between risk and efficacy was not significant for engaging in self-help methods,  $\beta = .04, t = 0.69, p = .49$ . Thus, H1 was partially supported (Table 2) because the risk and efficacy interaction was significant only for the intention to seek counseling but not for engaging in self-help methods (RQ1).

**Attitudes.** H2 predicted that the interaction between perceived risk and self-efficacy would be further moderated by attitudes on intentions. For the intention to seek counseling, we found a significant risk  $\times$  self-efficacy  $\times$  attitudes interaction on intentions to seek counseling,  $\beta = .16$ ,  $t = 2.33$ ,  $p = .02$ . To further interpret this interaction effect, we binary-recoded attitudes toward seeking counseling (low vs. high) using a median split. We found a significant risk  $\times$  self-efficacy interaction only among those with more positive (high) attitudes ( $\beta = .17$ ,  $t = 2.28$ ,  $p = .02$ , see Figure 2a), but not among those with less positive (low) attitudes ( $\beta = -.05$ ,  $t = -0.54$ ,  $p = .59$ , see Figure 2b). However, the interaction among risk, self-efficacy, and attitudes was not significant for the intention to engage in self-help method,  $\beta = -.02$ ,  $t = -0.26$ ,  $p = .79$ . Thus, the data were partially consistent with H2.

**Descriptive norms.** H3 predicted that the interaction between perceived risk and self-efficacy would be further moderated by descriptive norms on intentions. However, we found no three-way interaction among risk, self-efficacy, and descriptive norms on intentions to engage neither of the mental health promotion behaviors:  $\beta = .01$ ,  $t = 0.15$ ,  $p = .88$  for seeking counseling; and  $\beta = .06$ ,  $t = 0.75$ ,  $p = .46$  for engaging in self-help methods. Therefore, the data were inconsistent with H3.

## Discussion

This study examined psychosocial factors underlying the two primary mental health promotion behaviors, seeking counseling and employing self-help methods, by jointly adopting the RPA framework and the TPB. As predicted by the RPA framework, perceived risk interacted with self-efficacy to affect the intention to seek counseling. However, this interaction was specific to a particular type of mental health promotion behavior (seeking counseling) and to those with more favorable attitudes toward the behavior. Our findings help address the

inconsistent findings reported on the premise of the RPA framework by identifying potential moderators of the perceived risk and efficacy interaction. The current findings further suggest that the two theoretical frameworks can work complementary to better segment target audiences and predict intentions to engage in mental health promotion behaviors, thus providing useful implications for designing effective campaign strategies to promote mental health among young adults.

### **The Nature of Focal Behavior**

The current study investigated both the seeking of counseling services and the employment of self-help methods simultaneously within the same group of participants comparing the relative strength of psychological factors underlying these two mental health promotion behaviors. Positive attitudes exerted the strongest influence on seeking counseling services but not for engaging in self-help. This difference may be due to the varied nature and characteristics of the two focal behaviors. Scholars have revealed that a negative attitude toward seeking counseling stems from the stigma associated with the behavior (Pattyn, Verhaeghe, Sercu, & Bracke, 2014). People may also internalize the stigma held by society and have negative beliefs about the self, which makes them reluctant to seek professional help for mental health issues (Schomerus et al., 2009). Because seeking counseling services is a behavior that has often been stigmatized, especially in Asian societies (Lauber & Wulfrössler, 2007), attitudes become the most important factor in forming intentions to engage in professional help-seeking behavior. On the other hand, to engage in self-help, such as exercising and healthy eating, self-efficacy also matters along with attitudes because people often require specific skills to perform and strategies to overcome barriers to their execution, such as time and monetary constraints. Compared to the effects of attitudes and self-efficacy, normative factors exerted much weaker

influence on mental health promotion behaviors given that these behaviors are performed in a private setting (Lapinski & Rimal, 2005).

More importantly, the current study revealed a significant interaction between risk and efficacy perceptions on the intention to seek counseling. Conversely, we observed no interaction between perceived risk and efficacy on employing self-help methods. Engaging in self-help, such as eating healthy and exercising, could be regarded as a health maintenance behavior that aiming at maintaining mental health, whereas seeking counseling services is seen more as a treatment with a clear objective to reduce the risk and avert the threat. Due to such differences, people may be less subject to the influence of perceived risk in deciding to engage in self-help methods than in seeking counseling. Alternatively, risk and efficacy may not interplay with each other in predicting health maintenance behaviors when efficacy is the predominant antecedent of the behavioral performance, as we found in the case of self-help methods.

Collectively, our current observations indicate that the relationships between efficacy and risk in predicting intentions vary by the type of behavior as suggested by the theoreticians of RPA framework (Rimal & Turner, 2009). Our finding further suggests the purpose of behavior performance as to whether it is for health maintenance or treatment could be one defining characteristic of the focal behavior that changes the premise of RPA framework. If the behavior can directly reduce the risk as a treatment (e.g., seeking counseling), its intention is more likely to be determined by both risk and efficacy beliefs. Collectively, this study helps better understand the role of behavioral characteristics in the RPA framework, which can be useful for further improving the predictability of the theory. Given that the theoreticians of both RPA framework (Rimal & Turner, 2009) and TPB (Fishbein & Ajzen, 2010) address behavior type as

an important boundary condition for the performance of their theories, more work is warranted to identify the key characteristics of behaviors that change the strength of theoretical predictions.

### **The Role of Attitudes in Risk and Efficacy Interaction**

Our findings suggest that attitudes may be another important boundary condition for the joint impact of perceived risk and efficacy. In our study, a negative attitude toward seeking counseling not only was a major barrier to getting professional help, but also impeded the interplay between perceived risk and efficacy. One possibility is that when a behavior is characterized by negative attitudes due to stigmatization, positive attitudes become a precondition for other perceptual factors' influence on intentions to engage in the behavior. The EPPM (Witte, 1992, 1994) predicts that risk and efficacy will simultaneously affect behavioral intention only if fear is diminished. However, fear has been found to induce a negative attitude towards seeking counseling (e.g., Kushner & Sher, 1989). Therefore, this fear, which includes being anxious about potential stigmatization, could be a possible explanation for why perceived risk and efficacy interacted to affect intention only among individuals with a favorable attitude toward the behavior.

Documenting positive attitudes as a boundary condition for the interplay of risk and efficacy help refine the segmentation recommendations suggested by the RPA framework. The framework formulates four segments depending on the individual's perceived risk and efficacy and proposes that those with high risk and high efficacy (i.e., responsive group) are most likely to translate motivations into health behavioral performance (Turner et al., 2001). However, our findings suggest that the target audience could be further divided into sub-groups according to their attitudes toward the behavior, in addition to perceived risk and efficacy. The responsive group may not act on their motivation unless with a positive attitude toward the behavior,

especially when the behavior is associated with fear of stigmatization. In communication practice, positive attitudes become a precondition for the effectiveness of strategies that jointly highlight risk to mental disorders and self-efficacy to improve mental health. Therefore, an important communication objective should be the reduction of negative attitudes and beliefs associated with seeking counseling even before young adults become depressed or symptomatic.

Although we speculated that descriptive norms would moderate the interactive effect of risk and efficacy on behavioral intention, this effect was not found in the current study. According to the RPA framework, perceived risk is a major determinant of an individual's motivation to engage in information processing. As such, individuals with low perceived risk are not motivated to process information about healthy behavior; thus, they engage in a peripheral route, making them more susceptible to heuristic cues, such as descriptive norms. However, those who perceive little risk of mental disorder may see no benefit in getting counseling or engaging in self-help. As a result, they may not be keen to make the behavioral change even if they know that many others are participating, because they are not fearful of missing important behavioral benefits others may have. Therefore, participants' low outcome expectancies could have reduced the impact of descriptive norms (Lapinski & Rimal, 2005), thereby identifying no interaction among descriptive norm, risk, and efficacy. Future research should examine this possibility based on the theory of normative social behavior (TNSB; Rimal, 2005), which theorizes interactive effect between descriptive norm and outcome expectancies on behavior.

### **Practical Implications**

This study offers several practical implications for improving mental health among college students. Normative approach has widely been employed in health campaigns among young adults who are believed to be susceptible to peer influence. However, our findings

indicated that normative approach based on injunctive norm will not be effective in promoting mental health promotion behaviors among young adults, given that this factor was not associated with behavioral intentions. On the other hand, addressing the prevalence of employing self-help methods among other students (descriptive norm) would be as equally effective as forming positive attitudes toward and self-efficacy about performing self-help methods.

Young adults appear to be more likely to employ self-help methods than to seek counseling. However, self-help methods may not be as effective as professional treatments for those who are clinically depressed or suffer severe mental health issues. Therefore, it is crucial to improve young adults' behavioral intentions regarding seeking counseling. To this end, the current findings underline the importance of forming positive attitudes toward counseling by, for example, reducing self-stigma among young adults who may suffer mental health issues in future. Health professionals could provide young adults with educational programs to inform them about the prevalence of mental disorders among their social group or offering them opportunities to directly contact with someone who had experienced a mental health problem (Thornicroft et al., 2016).

Also, consistent with the RPA framework, the effect of perceive risk on intention to seek counseling was conditional on self-efficacy, suggesting the need for improving perceived efficacy to promote counseling seeking behavior. In fact, efficacy is one of the best predictors of health behavior change (Bandura, 1995), and the strategy on improving efficacy beliefs has often been recommended in previous research on the TPB as well as RPA framework. By providing useful information, such as instructions on scheduling a counseling appointment and an introduction about the general steps of counseling, health professionals could boost young

adults' efficacy beliefs on seeking counseling and ultimately increase their intention to seek professional help when they suffer mental disorders.

### **Limitations and Future Research**

This study has several limitations. First, we used a single-item scale for behavioral intention, which may impair the reliability. However, we developed the TPB scales closely following Ajzen's (2002, 2006) recommendations on measuring TPB constructs, and the data had a good amount of variance explaining each behavioral intention. Nonetheless, future work should employ multi-item scales of behavioral intention to reduce the measurement errors. Second, we studied only Singaporean young adults who are culturally distinct from their peers from the Western countries, which may limit the generalizability of the current findings. While the research has long investigated the mental wellbeing of Southeast Asian immigrants or refugees in the Western countries (e.g., Chung & Kagawa-Singer, 1993; Hilario, Vo, Johnson, & Saewyc, 2014), it has understudied those who actually reside in Southeast Asian countries. Southeast Asian countries spent much less of their health budgets on mental health care than other American and European countries (Jacob et al., 2007), despite stronger stigma associated with psychiatric care (Ng, 1997). Thus, we consider it is valuable to examine Southeast Asian's beliefs about mental health promotion behaviors to provide practical insights on promoting their mental health. Future research could replicate our findings in other Asian countries and compare between Asian and Western young adults to investigate whether cultural factors affect the performance of mental health promotion behaviors.

### **Conclusions**

The TPB and the RPA frameworks can complement each other to better understand the roles of psychosocial factors underlying mental health promotion behaviors. Attitudes appear to



be a boundary condition for the premise of the RPA framework in seeking counseling such that the interaction effect of perceived risk and efficacy is conditional on the favorable attitudes toward the behavior. This study thus helps to address the inconsistent findings reported on the premise of RPA framework and provides practical implications for developing communication strategies to promote mental health.

### References

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.). *Action-control: From cognition to behavior* (pp. 11–39). Heidelberg, Germany: Springer.
- Ajzen, I. (2002). Constructing a TPB questionnaire: Conceptual and methodological considerations. Retrieved from:  
<https://pdfs.semanticscholar.org/0574/b20bd58130dd5a961f1a2db10fd1fcbae95d.pdf>
- Ajzen, I. (2006). Constructing a theory of planned behavior questionnaire. Retrieved from  
<https://people.umass.edu/aizen/pdf/tpb.measurement.pdf>
- Albarracin, D., Johnson, B. T., Fishbein, M., & Muellerleile, P. A. (2001). Theories of reasoned action and planned behavior as models of condom use: A meta-analysis. *Psychological Bulletin*, *127*, 142-161.
- Bandura, A. (1995). *Self-efficacy in changing societies*. New York: Cambridge University Press.
- Barry, M.M., Canavan, R., Clarke, A., Dempsey, C. & O'Sullivan, M. (2009). Review of evidence-based mental health promotion and primary/secondary prevention. Health Promotion Research Centre, National University of Ireland, Galway. Retrieved from  
<https://aran.library.nuigalway.ie/handle/10379/2168>

- Bayer, J. K., & Peay, M. Y. (1997). Predicting intentions to seek help from professional mental health services. *Australian & New Zealand Journal of Psychiatry*, 504–513.
- Child Trends (2015). Young adult depression. Retrieved from [https://www.childtrends.org/wp-content/uploads/2015/10/101\\_Young\\_Adult\\_Depression.pdf](https://www.childtrends.org/wp-content/uploads/2015/10/101_Young_Adult_Depression.pdf)
- Chung, R. C. Y., & Kagawa-Singer, M. (1993). Predictors of psychological distress among Southeast Asian refugees. *Social Science & Medicine*, 36, 631-639.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Deforche, B. I., De Bourdeaudhuij, I. M., & Tanghe, A. P. (2006). Attitude toward physical activity in normal-weight, overweight and obese adolescents. *Journal of Adolescent Health*, 38, 560-568.
- Fishbein, M., & Ajzen, I. (2010). *Predicating and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Fishbein, M., & Yzer, M. C. (2003). Using theory to design effective health behavior interventions. *Communication Theory*, 13, 164–183.
- Godin, G., Boyer, R., Duval, B., Fortin, C., & Nadeau, D. (1992). Understanding physicians' decision to perform a clinical examination on an HIV seropositive patient. *Medical Care*, 30, 199-207.
- Gómez-Pinilla, F. (2008). Brain foods: The effects of nutrients on brain function. *Nature Reviews Neuroscience*, 9, 568-578.
- Griffin, R. J., Yang, Z., ter Huurne, E., Boerner, F., Ortiz, S., & Dunwoody, S. (2008). After the flood. *Science Communication*, 29, 285–315.

- Hartman, H., Wadsworth, D. P., Penny, S., van Assema, P., & Page, R. (2013). Psychosocial determinants of fruit and vegetable consumption among students in a New Zealand university. Results of focus group interviews. *Appetite, 65*, 35-42.
- Hilario, C. T., Vo, D. X., Johnson, J. L., & Saewyc, E. M. (2014). Acculturation, gender, and mental health of Southeast Asian immigrant youth in Canada. *Journal of Immigrant and Minority Health, 16*, 1121-1129.
- Institute of Mental Health. (2016, September 23). *Latest study sheds light on the state of mental health in Singapore*. Retrieved from [https://www.imh.com.sg/uploadedFiles/Newsroom/News\\_Releases/SMHS%20news%20release.pdf](https://www.imh.com.sg/uploadedFiles/Newsroom/News_Releases/SMHS%20news%20release.pdf)
- Jacob, K., Sharan, P., Mirza, I., Garrido-Cumbrera, M., Seedat, S., Mari, J., ... Saxena, S. (2007). Mental health systems in countries: Where are we now? *Lancet, 370*, 1061–1077.
- Kushner, M. G., & Sher, K. J. (1989). Fear of psychological treatment and its relation to mental health service avoidance. *Professional Psychology: Research and Practice, 20*, 251-257.
- Lai, L. (2015, October 8). Mental illnesses “not all in the mind.” *The Straits Times*. Retrieved from <http://www.straitstimes.com/singapore/health/mental-illnesses-not-all-in-the-mind>
- Lapinski, M. K., & Rimal, R. N. (2005). An explication of social norms. *Communication Theory, 15*, 127–147.
- Lapinski, M. K., Zhuang, J., Koh, H., & Shi, J. (2017). Descriptive norms and involvement in health and environmental behaviors. *Communication Research, 44*, 367–387.
- Lauber, C., & Rössler, W. (2007). Stigma towards people with mental illness in developing countries in Asia. *International Review of Psychiatry, 19*, 157–178.
- Lavretsky, H., Epel, E. S., Siddarth, P., Nazarian, N., Cyr, N. S., Khalsa, D. S., ... Irwin, M. R.

- (2012). A pilot study of yogic meditation for family dementia caregivers with depressive symptoms: Effects on mental health, cognition, and telomerase activity. *International Journal of Geriatric Psychiatry*, 28, 57–65.
- Lipsey, M. W., & Wilson, D. B. (1993). The efficacy of psychological, educational, and behavioral treatment: Confirmation from meta-analysis. *American Psychologist*, 48, 1181–1209.
- Ministry of Health, Singapore (2011). Clinical practice guideline: Depression. Retrieved from [https://www.moh.gov.sg/content/dam/moh\\_web/HPP/Doctors/cpg\\_medical/current/2012/depression/Depression%20CPG\\_R11.pdf](https://www.moh.gov.sg/content/dam/moh_web/HPP/Doctors/cpg_medical/current/2012/depression/Depression%20CPG_R11.pdf)
- Ng, C. H. (1997). The stigma of mental illness in Asian cultures. *Australian and New Zealand Journal of Psychiatry*, 31, 382–390.
- Pattyn, E., Verhaeghe, M., Sercu, C., & Bracke, P. (2014). Public stigma and self-stigma: differential association with attitudes toward formal and informal help seeking. *Psychiatric Service*, 65, 232-238.
- Pilcher, J. J., & Ott, E. S. (1998). The relationships between sleep and measures of health and well-being in college students: A repeated measures approach. *Behavioral Medicine*, 23, 170–178.
- Rich, A., Mullan, B. A., Sainsbury, K., & Kuczmierczyk, A. R. (2014). The role of gender and sexual experience in predicting adolescent condom use intentions using the theory of planned behaviour. *The European Journal of Contraception & Reproductive Health Care*, 19, 295-306.
- Rimal, R. N. (2005). How behaviors are influenced by perceived norms: A test of the theory of normative social behavior. *Communication Research*, 32, 389-414.

- Rimal, R. N., Böse, K., Brown, J., Mkandawire, G., & Folda, L. (2009). Extending the purview of the risk perception attitude framework: Findings from HIV/AIDS prevention research in Malawi. *Health Communication, 24*, 210-218.
- Rimal, R. N., Brown, J., Mkandawire, G., Folda, L., Böse, K., & Ceel, A. H. (2009). Audience segmentation as a social-marketing tool in health promotion: Use of the risk perception attitude framework in HIV prevention in Malawi. *American Journal of Public Health, 99*, 2224–2229.
- Rimal, R. N., & Juon, H. S. (2010). Use of the risk perception attitude framework for promoting breast cancer prevention. *Journal of Applied Social Psychology, 40*, 287–310.
- Rimal, R. N., & Real, K. (2003). Perceived risk and efficacy beliefs as motivators of change. *Human Communication Research, 29*, 370–399.
- Rimal, R. N., & Turner, M. M. (2009). Use of the risk perception attitude (RPA) framework for understanding health information seeking. In T. Afifi & W. A. Afifi (Eds.), *Uncertainty, information management, and disclosure decisions Theories and applications* (pp. 145–163). New York, NY: Routledge.
- Robbins, R. & Niederdeppe, J. (2015) Using the Integrative model of behavioral prediction to identify promising message strategies to promote healthy sleep behavior among college students. *Health Communication, 30*, 26-38.
- Schomerus, G., Matschinger, H., & Angermeyer, M. C. (2009). Attitudes that determine willingness to seek psychiatric help for depression: A representative population survey applying the theory of planned behavior. *Psychological Medicine, 39*, 1855–11.
- Shadish, W. R., Navarro, A. M., Matt, G. E., & Phillips, G. (2000). The effects of psychological therapies under clinically representative conditions: A meta-analysis. *Psychological*

*Bulletin*, 126, 512–529.

Smith, J. P., Tran, G. Q., & Thompson, R. D. (2008). Can the theory of planned behavior help explain men's psychological help-seeking? Evidence for a mediation effect and clinical implications. *Psychology of Men & Masculinity*, 9, 179–192.

Stasson, M., & Fishbein, M. (1990). The relation between perceived risk and preventive action: A within-subject analysis of perceived driving risk and intentions to wear seatbelts.

*Journal of Applied Social Psychology*, 20, 1541-1557.

Thornicroft, G., Mehta, N., Clement, S., Evans-Lacko, S., Doherty, M., Rose, D., ... Henderson, C. (2016). Evidence for effective interventions to reduce mental-health-related stigma and discrimination. *The Lancet*, 387, 1123–1132.

Turner, J. W., Grube, J. A., & Meyers, J. (2001). Developing an optimal match within online communities: An exploration of CMC support communities and traditional support. *Journal of Communication*, 51, 231–251.

Van Voorhees, B. W., Fogel, J., Houston, T.K., Cooper, L. A., Wang, N., & Ford, D. E. (2006). Attitudes and illness factors associated with low perceived need for depression treatment among young adults. *Social Psychiatry and Psychiatric Epidemiology*, 41, 746–54.

Vogel, D. L., Wester, S. R., Wei, M., & Boysen, G. A. (2005). The role of outcome expectations and attitudes on decisions to seek professional help. *Journal of Counseling Psychology*, 52, 459–470.

Table 1

*Pearson Correlations among All Study Variables (n = 232).*

	Seeking Counseling Service					Engaging in Self-help				
	AT-c	IN-c	DN-c	SE-c	BI-c	AT-s	IN-s	DN-s	SE-s	BI-s
AT-c	-									
IN-c	.290**	-								
DN-c	.279**	.257**	-							
SE-c	.480**	.285**	.357**	-						
BI-c	.574**	.239**	.333**	.443**	-					
AT-s	.167**	.313**	-.001	.059	.045	-				
IN-s	.128	.544**	-.017	.107	.068	.497**	-			
DN-s	-.059	.119	.260**	-.102	-.057	.308**	.267**	-		
SE-s	.218**	.269**	.214**	.387**	.167*	.401**	.343**	.345**	-	
BI-s	.089	.204**	.128	.056	.265**	.389**	.295**	.343**	.345**	-
Risk	-.141*	-.067	-.163*	-.140*	-.073	-.022	.061	.011	-.148*	-.048

*Note:* AT-c = attitudes toward seeking counseling, IN-c = injunctive norms of counseling, DN-c = descriptive norms of counseling, SE-c = self-efficacy of counseling, BI-c = behavioral intention of seeking counseling, AT-s = attitudes toward employing self-help methods, IN-s = injunctive norms of self-help, DN-s = descriptive norms of self-help, SE-s = self-efficacy of self-help, BI-s = behavioral intention of self-help, and Risk = perceived risk of mental health problems. \* $p < .05$ , \*\* $p < .01$ .

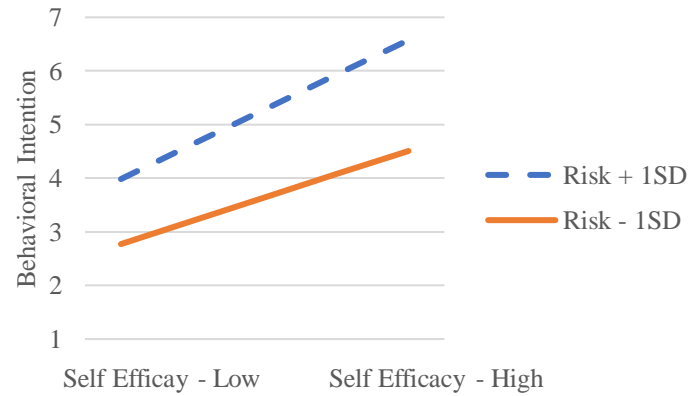
Table 2

*Testing the Premises of the TPB and RPA Framework in Intentions to Preform Mental Health**Promotion Behaviors.*

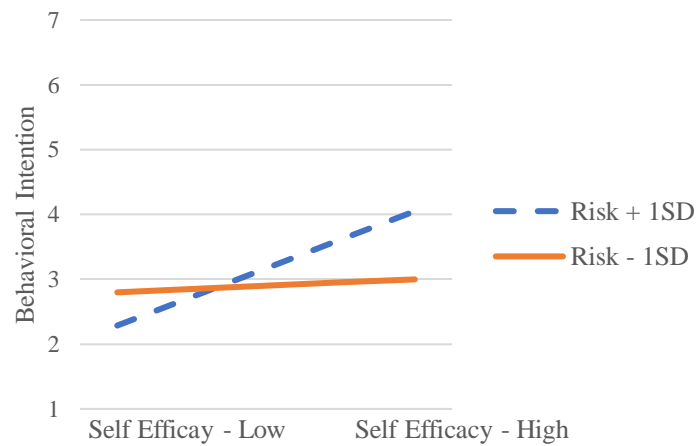
	Seeking Counseling Service		Engaging in Self-Help Methods	
	$\beta$	$t$	$\beta$	$t$
Block 1				
Age	.05	0.59	.04	0.41
Year	-.07	-1.00	-.07	-0.82
Gender (Male = 1)	-.02	-0.27	.05	0.71
Mental Health Status	-.02	-0.35	.15*	2.24
	$R^2_{\text{change}} = .023, p = .26$		$R^2_{\text{change}} = .043, p = .04$	
Block 2				
Attitudes	.45**	7.34	.23**	3.21
Descriptive Norms	.15*	2.45	.18**	2.78
Injunctive Norms	.03	0.44	.05	0.76
Self-Efficacy	.17**	2.67	.20**	2.94
	$R^2_{\text{change}} = .366, p < .001$		$R^2_{\text{change}} = .229, p < .001$	
Block 3				
Risk	.05	0.77	.05	0.72
	$R^2_{\text{change}} = .001, p = .51$		$R^2_{\text{change}} = .002, p = .49$	
Block 4				
Risk $\times$ Self-Efficacy	.11*	2.06	.41	0.69
	$R^2_{\text{change}} = .011, p = .04$		$R^2_{\text{change}} = .002, p = .49$	
	total adjusted $R^2 = .374, p < .001$		total adjusted $R^2 = .242, p < .001$	

*Note:* The independent variables are compatible with the behavioral outcome.  $\beta$  is the final standardized beta. \* $p < .05$ , \*\* $p \leq .01$

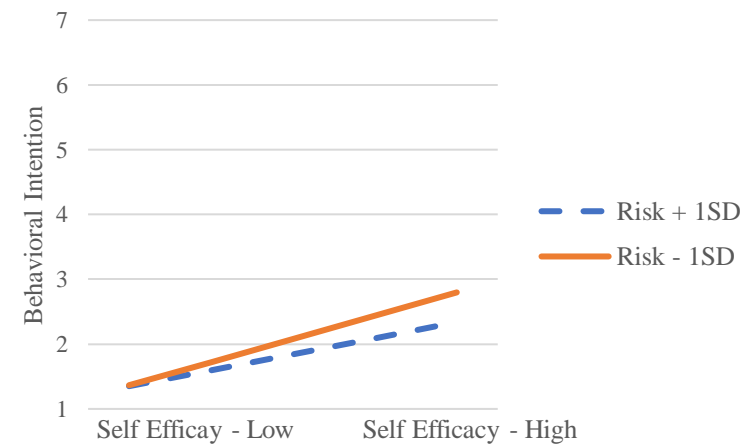




*Figure 1.* Behavioral intention by perceived risk and self-efficacy. Y-axis presents the estimated values of intention to seek counseling.



(a)



(b)

*Figure 2.* Behavioral intention by perceived risk, self-efficacy among (a) high level of attitudes and (b) low level of attitudes. Y-axis presents the estimated values of intention to seek counseling.