The Role of Hardiness in Decreasing Stress and Suicidal Ideation in a Sample of Undergraduate Students

Abbas Abdollahi¹, Mansor Abu Talib¹, Siti Nor Yaacob², and Zanariah Ismail¹

Abstract
Suicide is a serious and growing public health problem, and it remains a serious cause of death in the world; therefore, it is essential to increase our knowledge concerning the etiology of suicide among undergraduate students. Previous studies have shown that perceived stress increases vulnerability to suicidal ideation. However, factors that may explain the association have not been studied empirically. A cross-sectional study was conducted to examine hardiness as a potential mediator between perceived stress and suicidal ideation among undergraduate students. The participants comprised 500 undergraduate students from Malaysian public universities. They completed the Personal Views Survey, Beck Scale for Suicidal Ideation, and the Perceived Stress Scale. Structural equation modeling estimated that undergraduate students with low levels of hardiness were more likely to report suicidal ideation. As expected, hardiness partially mediated between perceived stress and suicidal ideation. Our findings demonstrated that lower hardiness and greater perceived stress significantly predicted suicidal ideation among undergraduate students. These findings reinforce the importance of

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hardiness as a protective and predictive factor against perceived stress and suicidal ideation among undergraduate students.

**Keywords**  
perceived stress, hardiness, suicidal ideation, adolescents

**Introduction**

Suicide is a serious and growing public health problem in many countries, and it was the third cause of deaths among adolescents between 15 and 24 years worldwide (Habil, 2013). Previous studies have shown that suicidal ideation is most likely to represent the phase before suicide among suicidal individuals (Sokero et al., 2006). Suicidal ideation means thinking about suicide without actually making plans to commit suicide (Crow, Eisenberg, Story, & Neumark-Sztainer, 2008). According to the World Health Organization, every year 800,000 people die by suicide, and every 40 seconds one is committing suicide. It is also predicted that by 2020, one person will die every 20 seconds if urgent action is not taken (World Health Organization, 2012). Based on the figures pertinent to suicide (World Health Organization, 2012), suicidal ideation’s numbers are certainly not documented, and suicidal ideation clearly is one of the important predictors of suicide. A recent study conducted by Nock et al. (2008) indicated that 9.2% adolescents experience suicidal ideation, 3.1% of adolescents plan to commit suicide, and 2.7% attempt suicide. The National Health and Morbidity Survey III reported that young Malaysians in the 16 to 24 year age group had the highest prevalence of acute and chronic suicidal ideation (10.0% and 26.0%, respectively) compared with other age groups (Institute for Public Health, 2008), and Selangor state has the highest rate of suicide in Malaysia (Institute for Public Health, 2008). In addition, recent evidence suggests that suicidal ideation has increased among university students (Garlow et al., 2008). This highlights the idea that undergraduate students constitute the at-risk population. Hence, it is important to identify early signs and have appropriate prevention efforts in order to obtain better outcomes. Therefore, this study was conducted to understand suicidal ideation and the variables associated with suicidal ideation among undergraduate students in Selangor state.

**Stress Associated With Suicidal Ideation**

Considerable studies have investigated the association between stress and suicidal ideation and have consistently specified stress as a risk factor for
such behavior (Grover et al., 2009; Thompson et al., 2012; X. Zhang, Wang, Xia, Liu, & Jung, 2012). For example, studies have demonstrated that adolescents with lack of reason for living and higher level of life stress were more likely to have suicidal ideation. Compared with adolescents who do not have suicidal ideations, the levels of stress in adolescents who are thinking of suicide are higher (X. Zhang et al., 2012). Many important factors for stress in adolescents have been suggested, such as the lack of social support, biological and social changes in puberty, lack of family cohesion, physical illness, and loss of subjects (Kwok, Chai, & He, 2013; X. Zhang et al., 2012; Y. Zhang, Law, & Yip, 2011). According to Lazarus and Folkman (1984), perceived stress is caused by the perceptions of stressful conditions and appraising one’s own ability to cope with the stressors in which the effects on the individuals are more than that of the actual stressors. Transactional theory of stress (Lazarus & Folkman, 1984) proposes that there are differences in everyone’s reaction to the same potential stressors, and these differences affect both the level of appraisal and the ability to solve problems.

**Hardiness and Stress**

The influence of hardiness in suicidal ideation is an interesting subject. Hardiness has been developed into a theoretical framework known as the hardiness construct (Kobasa, Maddi, & Kahn, 1982), which examines the reasons why some individuals, even under stressful conditions, are able to deal with problems, and why some individuals in nonstressful conditions are not able to deal with problems. McVicar (2003) stated that there are individual differences in the perception, response, and ability to cope with stressful conditions. In addition, he suggested that one of the protective factors against stress is “hardiness.” The term hardiness was introduced by Kobasa (1979) as a way of understanding a person’s relation with others, the goals, and problems. Hardiness originates from existential psychology (Maddi, Harvey, Khoshaba, Fazel, & Resurreccion, 2012). In this viewpoint, life is perceived as a stressful phenomenon due to the continuous alterations created by the unavoidable developmental process. Hardiness is considered as the existential courage that is necessary to perceive the stressful changes precisely and be encouraged to deal with them effectively. As such, hardiness assists one to invert stressful occurrences from potential disasters into personally useful growth opportunities and health advantages (Maddi et al., 2012).

Kobasa et al. (1982) defined hardiness as an ability incorporating three components—commitment, control, and challenge—that prepare an
individual to handle problematical life events (Maddi, 2006). Commitment is defined as a person committed to activities, such as work, sport, academic, religion, or hobby. Each activity is meaningful and interesting for him/her. Control is defined as individuals believing that they can control or influence their life experiences. He/she can decide in his/her life and control his or her life experiences. Challenge is defined as a person perceiving the world as an opportunity to develop, as well as being a good learner (Kobasa et al., 1982). Individual with high levels of challenge attempt to extract strength from previous experience and overcome upcoming problems based on the experiences gained rather than withdrawing from stressful situations. According to Ouellette and DiPlacido (2001, p. 187) “hardiness is said to lessen the negative effects of stress.” According to Kobasa’s definition, two mechanisms have been proposed to explain the effect of hardiness: hardy individuals have a more optimistic perception toward the environment (Garrosa, Moreno-Jiménez, Liang, & González, 2008) and appraise stressful conditions as being more challenging and controllable and less threatening. In addition, hardy individuals attempt to gain experience from stressful conditions (Delahaij, Gaillard, & van Dam, 2010; Kobasa et al., 1982). Garrosa et al. (2008) concluded that individuals with high levels of hardiness applied effective managerial strategies to reduce stress. In another study, Rodney (2000) revealed that hardiness had a positive influence on the secondary appraisal of stressful events. As already noted, hardy individuals have a more optimistic viewpoint than individuals who are low in hardiness. They are more flexible in facing problems (Erbes et al., 2011) and prefer to use rational-oriented coping styles rather than emotional-oriented coping styles in managing stressful conditions (Delahaij et al., 2010). Studies have reported that individuals who are high in hardiness are more likely to report happiness, life satisfaction, and mental and physical health (Maddi et al., 2012; Schreurs, van Emmerik, Notelaers, & De Witte, 2010), while other studies have reported that individuals who are low in hardiness are more likely to report mental disorders, such as depression, anger, and stress (Maddi, Brow, Khoshaba, & Vaitkus, 2006). According to the Schematic Appraisals Model of Suicide (Johnson, Gooding, & Tarrier, 2008), positive self-appraisal plays an important role as a buffer against suicidality. The Schematic Appraisals Model of Suicide indicates that two types of appraisals relate to suicidality. First, it shows that situation appraisal is important when this situation is assessed as a threatening and uncontrollable situation. In this situation, the likelihood of suicidal ideation increases. The negative assessment of the situation has a negative impact on other cognitive processes. Second, a positive assessment of the events may be a protective factor against suicidality. The model shows that a positive assessment of a
stressful condition has as positive impact on the cognitive system. Thus, the present study examined the role of hardiness as a mediator between perceived stress and suicidal ideation in undergraduate students. In addition, according to available evidence of the association between stress and suicidal ideation, there is a gap in the literature. The reasons why individual with high levels of stress experience high levels of suicidal ideation is ambiguous, because the results of the studies in this area have only addressed the association between stress and suicidal ideation, without considering other variables influencing the association. Therefore, this study may be useful in clarifying the association between stress and suicidal ideation and the variables influencing the association.

**Hardiness, Culture, Race, and Gender**

Now that hardiness is well established as attitudes and coping skills that help one remain resilient under stressful circumstances, it is time to consider the hardiness concept across cultures, race, and gender. It appears that hardiness is beneficial globally, because stresses do occur for everyone, every day, everywhere, in every race, and in every culture. It is conceivable that individuals in individualistic cultures experience higher levels of stress than collectivistic cultures. It seems that the context of stress is different across the two cultures (Maddi & Harvey, 2006). Therefore, it is clear that the level of hardiness is different across the two cultures. For example, tolerance, patience, humility, and flexibility are usual procedures to deal with stresses in collectivistic cultures (Maddi & Harvey, 2006). However, these traits are hardly relevant to coping with stress in individualistic cultures (Maddi & Harvey, 2006). In summary, hardiness should not be interpreted as a naive approach, without consideration of cultures.

In addition, we compare females and males in their need for hardiness. It is not true to say that males need hardiness more than females, since males are usually more engaged in the challenge pertaining to financial, social, and political success compared to females. Females definitely experience the same levels of stresses at developmental stages. For example, as children, they should learn to move around and communicate with others. As adolescents, they should try to find careers and relationships. In adulthood, they should create new decisions or change previous decisions and support others dependent on them to develop. Therefore, it is not reasonable to say that this developmental process is more or less stressful, for females or males, or that hardiness plays a less significant role in managing the stresses, for females than males (Maddi & Harvey, 2006).
Hypotheses

The current study sought to examine a number of hypotheses:

**Hypothesis 1:** A positive relationship can be observed between perceived stress and suicidal ideation among undergraduate students.

**Hypothesis 2:** A negative relationship can be observed between hardiness and suicidal ideation among undergraduate students.

**Hypothesis 3:** Hardiness can mediate between perceived stress and suicidal ideation among undergraduate students.

**Hypothesis 4:** Gender and race are able to moderate the relationship between exogenous variables and suicidal ideation among undergraduate students.

Method

Ethical Considerations

The ethics committee of Universiti Putra Malaysia approved the study (UPM/TNCPI/1.418.1).

Participants

A total of 500 undergraduate students from two Malaysian public universities participated in this study (male = 47%, n = 235, and Female = 53%, n = 265, aged from 16 to 24 years, mean = 19.28, SD = 2.58). For structural equation modeling (SEM) studies, Kline (2005) suggested equal or more than 200 participants would be adequate. With regard to race, participants were Malay (43.7%, n = 218), Chinese (28.2%, n = 141), Indian (20.3%, n = 102), and others (7.8%, n = 39). In addition, in terms of marital status 63% (n = 315) were single, 30% (n = 150) were married, and 7% (n = 35) were separated or widowed. Of the 500 participants, 30% (n = 150) were in the freshman year, 23% (n = 115) were in the sophomore year, 25% (n = 125) were in the junior year, and 22% (n = 110) were in the senior year. In terms of religion, 43% of the participants were Muslim, 21% Hindus, 28% Buddhists, 5% Taoists, and 3% other religious affiliation.

Procedure

The Malaysian Ministry of Education provided permission for gathering data from two public universities, and we followed 250 undergraduate students selected randomly from each university. The ethical issues concerning
human subjects in research were considered in this survey. All participants were informed about the purpose of the research. In addition, they were advised that their participation in this study was voluntary and anonymous and that they could withdraw from the study at any time. The data were collected in one session. The inclusion criteria for the participants were that (a) they should be university students and (b) participants’ age must be between 17 and 24 years. The packages of questionnaires were distributed among undergraduate students. Each package contained an introductory letter about the aims of the study and four questionnaires (one of which was a demographic questionnaire). A total of 576 questionnaires were distributed among undergraduate students, of which 500 (87%) usable questionnaires were returned, 36 students (6%) refused to complete the questionnaires, and 16 (3%) students were removed from analyze due to the age above 24 years old.

**Measures**

**Beck Scale for Suicidal Ideation (BSSI; Beck, Steer, & Ranieri, 1988).** This scale is a self-report measure with 19 items that assesses suicidal ideation, planning, and intent to commit suicide in the past week. A 3-point Likert-type scale from 0 to 2 was used for all questions, and the range of score is from 0 to 38. If a participant had a high score in BSSI it meant that he/she has a higher suicide risk and vice versa and that he/she has passive or active thoughts about killing himself/herself. Prior studies found concurrent validity between individuals with the high score in BSSI and experience of suicidal attempts (Beck, Brown, & Steer, 1997). Previous studies showed that BSSI had an acceptable internal consistency and convergent validity (Bryan, Ray-Sannerud, Morrow, & Etienne, 2012; Polanco-Roman & Miranda, 2012). In the current study, the convergent validity (average variance extracted) was .69, and the construct reliability was .81.

**Personal Views Survey, Third Edition Revised (PVS III-R; Maddi, Harvey, et al., 2006).** There are 18 items that measure the three components of hardiness: commitment, control, and challenge. The sum of these three components is hardiness. The scores range from 0 to 54. A 4-point Likert-type scale was used for all questions: 0 (not at all true), 1 (somewhat true), 2 (true), and 3 (very true). Studies have shown an acceptable internal consistency: \( \alpha = .70 \) to .75 for commitment; \( \alpha = .61 \) to .84 for control; \( \alpha = .60 \) to .71 for challenge; and \( \alpha = .80 \) to .88 for total hardiness (Maddi, Harvey, et al., 2006). In addition, the construct validity of PVS III-R was \( \alpha = .70 \) to .84 (Okun, Zautra, & Robinson, 1988). The construct validity of the challenge was \( \alpha = .62 \),
commitment $\alpha = .59$, and control $\alpha = .46$ (Judkins, Arris, & Keener, 2005). In the present study, the convergent validity (average variance extracted) was .60, and the construct reliability was .75. In this study, the sum of three scores was used (Maddi, 2006).

Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). This scale comprises 10 items that measure the degree of stressful conditions and assess the beliefs of nurses about how situations are unpredictable, uncontrollable, and excessive. It does not assess an individual in a specific stressful situation during the last month. Nurses respond to general questions, for instance, “In the last month, how often have you been upset because of something that happened unexpectedly?” All the questions are based on a 4-point Likert-type scale from 0 (never) to 4 (very often). Cohen (1996) reported that the Perceived Stress Scale-10 was a reliable psychological questionnaire for assessing the perception of stress and reported that it had a good reliability, with $\alpha = .84$. Koopman et al. (2000) examined the validity of the Perceived Stress Scale-10 with other stress measurements, such as self-reported health behavior. They reported a good validity with $\alpha = .76$ to .85. In the current study, the convergent validity (average variance extracted) was .69, and the construct reliability was .81.

Demographics. A self-report questionnaire was provided to obtain demographic information, such as gender, age, race, educational levels, religious affiliation, and marital status.

Translation of the Questionnaires

The questionnaires were translated into the Malay language. To ensure that the Malay translation properly reflected the meaning of the English version, back-translation was used with the help of three English language experts; the necessary modifications were made accordingly. In order to assess the face validity and content validity, and to ensure its adaptability to the local cultural context, the instrument was reviewed by three members from the Faculty of Human Ecology, Universiti Putra Malaysia.

Pilot Study

A pilot study was conducted on 60 university students to determine the reliability of the tools. Cronbach’s alpha coefficients for the questionnaires in the pilot study were as follows: (a) BSSI, $\alpha = .76$; (b) PVS III-R, $\alpha = .75$; and (c) Perceived Stress Scale, $\alpha = .78$. In addition, after reading a survey letter of
consent and completing the questionnaires, the respondents were asked to indicate any difficulties or ambiguities in the questionnaires. In general, the respondents of the pilot study gave positive feedback toward the general structure and presentation of the questionnaire. To improve the face validity of the scales, the survey questionnaire was further refined based on some comments from the participants. Those university students who participated in the pilot study were excluded from the main study sample.

**Analysis**

We employed SEM analysis. The advantages of employing SEM are that it (a) improves statistical estimation by taking into account the measurement error in the estimation process, (b) enables the testing of multiple relationships simultaneously, (c) tests much more complex models such as testing mediation and provides goodness-of-fit indices for the model tested, and (d) provides better identification for validity and reliability for the instruments. Therefore, the average variance extracted and construct reliability was performed for measuring the validity and reliability of instruments. Convergent validity refers to a set of indicators (items) that presume to measure a construct.

**Data Preparation**

The missing range of items and parcels were from 0.71% to 1.11%; therefore, for addressing missing data a multiple imputation method in AMOS 20 software was applied. Outliers of 4% \( (n = 24) \) were excluded from the analyses (those scoring 3 SDs from the mean). The data were distributed normally, because the skewness values were from .77 to .68, and the kurtosis values were from −1.61 to 1.11 for all variables. Byrne (2010) stated that if the skewness value is between −2 and +2, and the kurtosis value is between −7 and +7, data were appropriate to assume multivariate normality. For model fit, Kline (2010) suggested using model fit indexes, including the chi square/degree of freedom ratio (CMIN/DF), the comparative-fit index (CFI), the goodness-of-fit index (GFI), and the Tucker–Lewis index (TLI). A rule of thumb for the fit indices is that values equal or greater than .90 indicate acceptable fit (Kline, 2010). Furthermore, the model may be classified as acceptable if the root mean squared error of approximation (RMSEA) is between .03 and .08. This model depicted good fit indices: CMIN/DF = 2.39, \( p < .01 \), CFI = .935, GFI = .943, TLI = .922, RMSEA = .057. According to Kline (2010), the model provides an acceptable fit for the model. AMOS 20 software was used for analyzing the data.
Table 1. Correlation Between Study Variables for Male and Female Students, and the Mean, SD, and Actual Range.

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hardiness</td>
<td>I</td>
<td>-.433** (-.354**</td>
<td>-.672** (-.594**</td>
</tr>
<tr>
<td>2. SI</td>
<td>I</td>
<td>I</td>
<td>.488** (.588**</td>
</tr>
<tr>
<td>3. Stress</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Mean</td>
<td>30.00 (28.17)</td>
<td>17.87 (19.38)</td>
<td>16.88 (18.69)</td>
</tr>
<tr>
<td>SD</td>
<td>8.78 (9.19)</td>
<td>4.74 (8.21)</td>
<td>8.88 (9.75)</td>
</tr>
<tr>
<td>Actual range</td>
<td>20-53 (18-51)</td>
<td>0-24 (0-24)</td>
<td>8.33 (4-33)</td>
</tr>
</tbody>
</table>

Note. SI = Suicidal Ideation. Results for males are presented first, and the results for females are presented in parentheses.

Results

Descriptive Statistic

Table 1 shows the intercorrelations between perceived stress, hardiness, and suicidal ideation for male and female students, as well as the standard deviations, actual range, and the means.

Structural Model

This model included hardiness (including the three components of commitment, control, and challenge) and perceived stress as exogenous variables; suicidal ideation was an endogenous variable. As it can be seen from Figure 1, hardiness and perceived stress had a significant relationship with suicidal ideation. It can be seen from the data in Figure 1 that hardiness was negatively associated with suicidal ideation, and a positive association existed between perceived stress and suicidal ideation among undergraduate students. Hardiness and perceived stress explained 56.0% of the variance in suicidal ideation in undergraduate students.

Mediation Test of Hardiness

The model included perceived stress as an exogenous variable and hardiness and suicidal ideation as endogenous variables. Hair, Black, Babin, Anderson, and Tatham (2010) indicated that “a mediation effect is created when a third variable/construct intervenes between two other related constructs” (p. 866). The normal theory method of testing mediation effects (Baron & Kenny,
was used for testing mediation effects. There are three steps to show that a mediator (hardiness) mediates the relationship between the exogenous variable (perceived stress) and the endogenous variable (suicidal ideation). First, one must demonstrate that the exogenous variable (perceived stress) was significantly related to the mediator (hardiness). Second, the exogenous variable (perceived stress) must be significantly related to the endogenous variable (suicidal ideation). Third, the mediator (hardiness) must be significantly related to the endogenous variable (suicidal ideation). If the relationship between the exogenous variable and the endogenous variable was zero when the mediator was included, full mediation was established. However, if the relationship between the exogenous variable (perceived stress) and the endogenous variable (suicidal ideation) was reduced when the mediator was included, partial mediation was established. Hardiness partially mediated between perceived stress and suicidal ideation, because, according to Kline (2010), the full mediation model ($\chi^2 = 2.21, p > .05$, AIC [Akaike Information Correction] = 717.87) was smaller than the indirect model ($\chi^2 = 3.71, p > .05$, AIC = 819.23), and the PNFI (parsimony normed fit index) of the full mediation model was .746, larger than the PNFI (.741) of the indirect model.

According to the above-mentioned condition indicated by Hair et al. (2010), hardiness mediates the relationship between perceived stress with suicidal ideation. The results, as shown in Table 2, show that in the direct model the relationship between perceived stress and suicidal ideation was
significant ($\beta = -0.481$). In addition, the results based on the mediation model show significant relationship between perceived stress and hardiness ($\beta = -0.385$) and hardiness with suicidal ideation ($\beta = -0.361$). However, although the size of the standard regression weight for the direct relationship between perceived stress and suicidal ideation reduced when hardiness was added as a mediator variable in the mediation model, it was still significant. Therefore, the partial mediation of hardiness on the relationship between perceived stress and suicidal ideation was supported.

### Moderation Test of Gender

A comparison between “the unconstrained model” and “the measurement residuals model” showed that the unconstrained model ($\Delta \chi^2 = 329.13$, $df = 166$, $p < 0.01$, RMSEA = .060, CFI = .903, GFI = .891, NFI = .901) and the measurement residuals model ($\Delta \chi^2 = 368.82$, $df = 203$, $p < 0.01$, RMSEA = .058, CFI = .891, GFI = .863, NFI = .785) were significant; however, the unconstrained model was better than the measurement residuals model, because the chi-square was smaller (Davis, 2008; Hair et al., 2006). According to the measurement residual’s model ($\chi^2 = 546.81$, $df = 37$, $p < 0.05$) in “assuming that the unconstrained model is correct,” the findings showed that the impact of likely differences across gender was significant.

The results revealed that there was no significant relationship between perceived stress and suicidal ideation for male students ($\beta = 0.488$; Table 3), while the path hypothesis for female students was significant ($\beta = 0.588$; Table 3). Therefore, the moderating effect of gender on the path relationship between perceived stress and suicidal ideation was supported. Our finding supports previous studies representing that female students scored higher on the stress (Eaton et al., 2006; Iacovides, Fountoulakis, Kaprinis, & Kaprinis, 2003). In addition, the results revealed that there was significant relationship between hardiness and suicidal ideation for female

### Table 2. Standard Regression Weight in the Full Mediation, Direct, and Indirect Model.

<table>
<thead>
<tr>
<th>DV</th>
<th>IV</th>
<th>Mediation model</th>
<th>Direct model</th>
<th>Indirect model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardiness</td>
<td>Stress</td>
<td>$-0.385^{**}$</td>
<td>$-0.526^{**}$</td>
<td></td>
</tr>
<tr>
<td>Suicidal Ideation</td>
<td>Hardiness</td>
<td>$-0.361^{***}$</td>
<td>$-0.423^{**}$</td>
<td></td>
</tr>
<tr>
<td>Suicidal Ideation</td>
<td>Stress</td>
<td>$0.312^{**}$</td>
<td>$0.481^{**}$</td>
<td></td>
</tr>
</tbody>
</table>

$^{**}p < .01$. $^{***}p < .001$. 

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students (β = −.274; Table 3), and the path hypothesis for male students was significant (β = −.313; Table 3). Therefore, the moderating effect of gender on the path relationship between hardiness and suicidal ideation was not supported, while there were differences in the value of standard regression weight for male and female students. Our finding supports a previous study representing that male students scored higher on hardiness (Nezhad & Besharat, 2010).

**Table 3. Standardized Regression Weights (Gender Variant Model).**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>SE</th>
<th>CR</th>
<th>Standard estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI ← Stress</td>
<td>1.412 (1.388)</td>
<td>1.045 (1.499)</td>
<td>0.488 (0.588***)</td>
</tr>
<tr>
<td>SI ← Hardiness</td>
<td>0.084 (0.215)</td>
<td>−7.434 (−5.569)</td>
<td>−0.313*** (−0.274***)</td>
</tr>
</tbody>
</table>

*Note. SI = Suicidal Ideation; SE = standard error; CR = critical ratio. Results for males are presented first, and the results for females are presented in parentheses. **p < .01.*

**Table 4. Standardized Regression Weights (Race Variant Model).**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Malay</th>
<th>Chinese</th>
<th>Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI ← Stress</td>
<td>0.352**</td>
<td>0.373**</td>
<td>0.412**</td>
</tr>
<tr>
<td>SI ← Hardiness</td>
<td>−0.454***</td>
<td>−0.303***</td>
<td>−0.294***</td>
</tr>
</tbody>
</table>

*Note. SI = Suicidal Ideation. **p < .01. ***p < .001.

**Moderation Test of Race**

As depicted in Table 4, the moderating effect of race on the path relationship between perceived stress and suicidal ideation was not supported. While there were differences in the value of the standard regression weight between perceived stress and suicidal ideation, this path was significant for the Malay, Chinese, and Indian groups (see Table 4). In addition, the results indicated that the relationship between hardiness and suicidal ideation for Malay, Chinese, and Indian groups was significant (see Table 4). Therefore, the moderating effect of race on this path was not supported, while there were differences in the value of the standard regression weight between hardiness and suicidal ideation for the Malay, Chinese, and Indian groups (see Table 4).
Discussion

The findings of this study demonstrated that perceived stress and hardiness are valuable predictors of suicidal ideation. Perceived stress and hardiness explained 56.0% of the variance in suicidal ideation in undergraduate students. In particular, our findings demonstrated that lower hardiness and greater perceived stress significantly predicted suicidal ideation in undergraduate students. The empirical findings showed that hardiness partially mediated between perceived stress and suicidal ideation. It means that hardy individuals were less likely to experience suicidal ideation even at the highest levels of perceived stress (Bahamin, Taheri, Moghaddas, Sohrabi, & Dortaj, 2012; Delahaij et al., 2010). The results of this study support previous research that showed that positive self-appraisals may decrease the risk of suicidal thoughts (Johnson, Gooding, Wood, & Tarrier, 2010). Recently, interest in the concept of resilience in the face of suicidal ideation has increased, albeit most of the studies only examined resilience factors as a linear relationship with suicidal ideation/behavior (Rutter, Freedenthal, & Osman, 2008), and hardiness has not been studied as buffering or mediator role for these variables. Therefore, hardiness needs to be understood as a protective factor that can decrease the likelihood of suicidal ideation. By finding a relationship between hardiness and perceived stress in a sample of undergraduate students, the present findings confirmed the previous results and improved them in three main ways.

First, the present findings showed that hardiness may constitute a resilience factor for adolescent samples, especially for individuals with suicidal ideation (Erbes et al., 2011). The studies have indicated several risk factors for suicidal ideation, and these factors increased the likelihood of suicide (Becker-Weidman, Jacobs, Reinecke, Silva, & March, 2010). Perceived stress is one of the psychological risk factors for suicidal ideation (Y. Zhang et al., 2011). Although an understanding of suicidal factors can improve the prediction of suicidality and develop clinical interventions, it is still not comprehensive. Results of this study indicated that hardiness (as existential courage and motivation) acts as a protective factor and that when studied in relationship with risk, it can enhance predictive validity. Furthermore, it can be helpful in identifying individuals who are at risk of suicide and in reducing the risk of suicidal thinking.

Second, in previous studies, hardiness was studied in relation to depression (Maddi, Brow, et al., 2006), but depression may not be an exact predictor of suicidality. This study focuses on one of the protective factors of suicidal ideation in a normal population. The finding that hardiness as a protective factor against perceived stress indicates that the effect of hardiness is not
limited to stressful life events and suggests that hardiness may be a significant protective factor for suicidality. Although further investigation is needed, the present study suggests that hardiness plays an important role as a protective factor against suicidal ideation.

Third, the current study used suicidal resilience based on the Schematic Appraisal Model of Suicide (SAMS; Johnson et al., 2008) and indicated that positive appraisal of events may provide a source of resilience. The findings showed that hardiness could be useful and protective against perceived stress. Johnson, Gooding, Wood, Taylor, et al. (2010) also found that positive self-appraisal was a protective factor against suicidal behavior in a sample of students, and the present research expands this by finding hardiness as a protective factor among Malaysian university students. The findings of this study suggest that the processes explained by SAMS may be relevant to the normal sample, and SAMS provides a beneficial framework for better understanding on suicidality among adolescents. Hardy individuals tend to believe that the outcomes are promising and positive (Maddi, Harvey, Khoshaba, Fazel, & Resurreccion, 2009) and may provide a sense of resilience during difficult situations and decreased symptoms of suicidal ideation. Therefore, hardy individuals are less likely to think of suicide (Bahamin, et al., 2012).

**Implications for Practice**

There are two significant implications for clinical treatment in the present study. First, when assessing the risk of suicide in individuals, it is important to account for the presence of hardiness in addition to other risk factors. Previous studies indicated hardiness is an ability that prepares an individual to cope with problems (Klag & Bradley, 2004). Hardy individuals have a more optimistic viewpoint than individuals who are low in hardiness. They are more flexible in facing problems (Erbes et al., 2011) and prefer to use rational-oriented coping styles rather than emotional-oriented coping styles in managing stressful conditions (Delahaij et al., 2010). Second, hardiness can alter the effect of suicide risk factors; it may be a significant factor to incorporate into suicide treatment programs. Reducing suicidal risk in individuals is a main part of any clinical intervention. The present findings suggest that developing hardiness may reduce the likelihood of suicidal ideation. Hardiness training focuses on developing coping effectively with stresses; interacting effectively with others by giving and taking assistance, support, and encouragement; and learning how to use the feedback obtained from these factors to improve hardy attitudes (Khoshaba & Maddi, 2008). Previous studies showed that hardiness training increases performance effectively and
decreases illness symptoms among working adults and undergraduate students (Maddi et al., 2002; Maddi, Kahn, & Maddi, 1998).

**Strengths and Limitations**

The primary strength of this study is the role of hardiness as a mediator between perceived stress and suicidal ideation in undergraduate students. The results highlight the role of hardiness as a lowering of perceived stress and suicidal ideation in undergraduate students. One important limitation of this study is its reliance on self-report questionnaires. Although the measures used in the study are psychometrically adequate, a multi-method approach would be superior and lend incremental validity to the current study. Consequently, it is plausible that clinical interviews would enable us to overcome the aforementioned limitation. Another limitation of this study is related to the undergraduate student sample, and the findings are not generalizable to other groups. Future research could investigate other groups. In addition, future research could investigate the role of hardiness training in the process of suicidal patients’ treatment.

**Conclusions**

The present study found support for the SAMS (Johnson et al., 2008), which showed that a positive appraisal plays an important role against suicidal ideation. It also showed that hardiness as a protective factor assists individuals against stressful life situations and suicidal ideation.

**Declaration of Conflicting Interests**

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