

RESEARCH ARTICLE

Resilience to suicide ideation: A cross-cultural test of the buffering hypothesis

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Depression and suicide ideation are common in student populations across the world. The present study investigated factors buffering the association between depression and suicide ideation. A total of 2,687 Chinese students and 601 German students took part in the investigation. Social support, satisfaction with life, self-efficacy, psychosocial stress resistance, and positive mental health were considered as resilience factors moderating the association between depressive symptoms and suicide ideation within both samples. Positive mental health moderated the impact of depressive symptoms on suicide ideation in German and Chinese students. Life satisfaction moderated the impact of depressive symptoms on suicide ideation in German students. Social support moderated the impact of depressive symptoms on suicide ideation in Chinese students. No interaction effects were found for self-efficacy and psychosocial stress resistance. Positive mental health, satisfaction with life, and perceived social support seem to confer resilience and should be taken into account, when assessing individuals for suicide risk.

KEYWORDS

life satisfaction, mental health, resilience, self-efficacy, social support, suicide ideation

1 | INTRODUCTION

Worldwide, about 1 million people die by suicide each year, making it the 15th leading cause of death. It is estimated that for each adult who dies by suicide, there are likely to be more than 20 others with one or more suicide attempts (WHO, 2014). Both suicidal thoughts and behaviours have been found to increase the risk for suicide (Franklin et al., 2017). Furthermore, depression is one of the key risk factors for suicide ideation and behaviour in Western and Eastern cultures (e.g., Brown, Beck, Steer, & Grisham, 2000; Liu et al., 2006). Although substantial efforts have been made to understand which risk factors contribute to suicide ideation and suicidal behaviour, far less attention has been paid to factors that buffer individuals against the development of suicide ideation and behaviour. In general, being married or living with a partner (e.g., Heikkinen, Isometsä, Marttunen, Aro, & Lönnqvist, 1995), having children or being pregnant (e.g., Marzuk et al., 1997; Qin & Mortensen, 2003), life satisfaction (e.g., Koivumaa-Honkanen et al., 2001), social support, social integration, and religious service attendance (e.g., Tsai, Lucas, & Kawachi, 2015; Tsai, Lucas, Sania, Kim, & Kawachi, 2014) have been found to be negatively associated with suicide. Yet it has been questioned whether all these aspects can be understood as resilience factors.

In their work on the buffering hypothesis, Johnson, Wood, Gooding, Taylor, and Tarrier (2011) suggest that to be viewed as conferring resilience, a variable needs to demonstrate three main characteristics: (a) It needs to comprise a separate dimension to risk and moderate the association between risk and outcome. “Thus instead of being investigated as a direct associate of suicidality, resilience needs to be understood as a factor which can attenuate or buffer the strength of the association between risk and the outcome, namely, suicidality” (Johnson et al., 2011, p. 564). Therefore, to ascertain resilience, an assessment of both risk and suicide ideation or suicidal behaviour is necessary. (b) It needs to be viewed as existing on a bipolar continuum, with its inverse amplifying the association between risk and outcome. For example, high levels of social support have a buffering effect on suicidal thoughts, whereas low levels of social support are an amplifying factor, increasing the association between risk and suicide ideation (Panagioti, Gooding, Taylor, & Tarrier, 2014). (c) It needs to be a psychological construct, such as an ability or a perceived ability of the individual to overcome difficulties, or a set of positive beliefs or personal resources (including social support) that buffer individuals against the development of negative outcomes—such as suicide ideation and behaviour—when confronted with risk factors (cf. Keyes, 2005).

In the context of a comprehensive literature review, Johnson et al. (2011) identified various abilities and beliefs with buffering qualities concerning suicide ideation: The most consistent evidence supporting a buffering or attenuating role was found for overall positivity of attributional style and higher levels of agency, with the latter being understood as an individual's sense that they are in control, the initiator of their own actions. Variables such as problem-solving abilities, self-esteem, and various forms of social support (general social support, family support, and significant other support) had a slightly weaker evidence base, nonetheless, seemed to positively moderate the association between risk and suicide ideation or suicidal behaviour. Finally, Johnson et al. (2011) found only weak evidence for the role of life evaluations (such as satisfaction with life) as a moderator of the association between risk and suicide ideation.

In a study of our own research group, we found general social support and positive mental health to be predictive of the remission of suicide ideation in a large sample of young women, whereas severity of psychopathology, life satisfaction, and self-efficacy did not predict the course of suicide ideation (Teismann, Forkmann, Glaesmer, Egeri & Margraf, 2016). However, as has been pointed out by Johnson et al. (2011), factors that are negatively associated with suicide ideation—even over longer time—will not necessarily have a buffering impact on risk, and factors that have no linear association with suicide ideation may still moderate the impact of risk (cf. Gooding et al., 2015). Therefore, a more stringent evaluation of the buffering qualities of the abovementioned constructs is needed—especially because little is known about the relative importance of different resilience constructs, in moderating the association between depression—as a strong and prevalent risk factor—and suicide ideation. Thus, different factors potentially conferring resilience have rarely been investigated and compared within the same study.

Furthermore, it is unclear whether different factors buffer the effects of depression on suicide ideation across different cultures. Because Eastern cultures are regarded to be more collectivistic and less individualistic and self-focused than Western cultures (Bond, 1991; Triandis, 1989), it is of interest to compare buffering effects in China as an Eastern nation and in Germany as a Western nation. It may well be that for individuals who live in collectivistic cultures, such as China, resilience is mainly associated with connectedness among individuals, whereas for individuals who live in individualistic cultures, such as Germany, aspects of autonomy, personal happiness, and self-efficacy are of greater importance (cf. Markus & Kitayama, 1991). However, this is highly speculative, as there are—to our knowledge—no studies that have compared factors associated with resilience to suicide ideation in different cultures.

Therefore, the first aim of this study was to examine the degree to which different resilience factors, namely, positive mental health, self-efficacy, satisfaction with life, social support, and psychosocial stress resistance, buffer the effects of depression on suicide ideation. The second aim was to investigate whether the buffer effects occur in samples of university students from Germany as well as from China. Suicide ideation is especially common in young adults (aged 18–34 years; Nock, Borges, & Ono, 2014; Lee et al., 2007), making students a relevant sample to focus on. Furthermore, based on the supposition that suicidal behaviour lies on a continuum ranging from

Key Practitioner Message

- Positive mental health buffers the effect of depression on suicide ideation in German and Chinese students.
- Social support buffers the effect of depression on suicide ideation in Chinese students.
- Life satisfaction buffers the effect of depression on suicide ideation in German students.
- Clinically, it could be useful to incorporate positive mental health, social support and life satisfaction into the psychosocial risk assessment of persons contemplating suicide.

ideation, through intent and planning to action, the role of suicide ideation as a dependent variable is of interest, particularly because suicide ideation in itself is undesirable and deeply distressing.

2 | METHOD

2.1 | Procedure

Data for the present study were drawn from the ongoing BOOM (Bochum Optimism and Mental Health) study, a large-scale, cross-cultural, longitudinal investigation of risk and protective factors in mental health. The Ethics Committee of the Faculty of Psychology of the Ruhr-Universität Bochum approved the study. All national regulations and laws regarding research on human subjects were followed, and required permission obtained. Data for the present cross-sectional study were collected between October 2015 and December 2015.

2.2 | Participants

All participants were students in Germany and China. The German sample consisted of 601 students ($n = 409$, 68.1% female; age: $M = 24.97$, $SD = 4.84$) at the Ruhr-Universität Bochum, a large state university located in the Ruhr region in Germany. Most German students were either in their third (32.3%) or fifth (20.4%) semester. Students were registered in 20 different faculties. Most German students either lived together with a partner ($n = 320$, 53.2%) or were singles ($n = 230$, 38.3%). All of them had already taken part in an earlier recruitment wave within the BOOM-Project.

The Chinese sample consisted of 2,687 university students ($n = 1,327$, 49.4% female; age: $M = 21.99$, $SD = 1.19$) from three large, urban universities in Eastern China: Capital Normal University Beijing ($n = 321$; 11.9%), Hebei United University ($n = 1,870$; 69.6%), and Nanjing University ($n = 496$; 18.5%). Almost all Chinese students were in their seventh semester (94.9%). Students were registered in 33 different faculties. Most Chinese students were singles ($n = 1,960$, 72.9%). All of them had already taken part in an earlier recruitment wave within the BOOM-Project.

For the current study, participants were recontacted by an emailed invitation with a link leading to an online questionnaire. No financial compensation for study participation was provided.

2.3 | Measures

2.3.1 | Suicidal ideation and behaviour

Twelve-month suicide ideation ("How often have you thought about killing yourself in the past year?") and lifetime suicide attempts ("Have you ever attempted suicide, and really hoped to die?") were assessed using the respective items of the Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001). The SBQ-R has been recommended for screening purposes (Batterham et al., 2015) and has repeatedly been used in clinical and nonclinical samples (Osman et al., 2001).

2.3.2 | Depression

Depression was measured by a subscale of the Depression, Anxiety, and Stress Scales-21 (Henry & Crawford, 2005) that showed excellent psychometric properties in its validation study. Participants are asked to indicate to what extent the seven statements on depressive symptoms (e.g., "I just couldn't seem to get going.") applied to them over the past week (0 = *did not apply to me at all*; 3 = *applied to me very much or most of the time*). Research indicates that this scale is adequate for cross-cultural research, based on analyses indicating partial strong measurement invariance across diverse cultures (Mellor et al., 2014). Internal consistency in the current sample was $\alpha = .89$ in Germany and $.91$ in China.

2.3.3 | Positive mental health

The Positive Mental Health Scale (PMH; Lukat, Margraf, Lutz, van der Veld, & Becker, 2016) assesses emotional, psychological, and social aspects of well-being across nine items (e.g., "In general, I am confident," "All in all, I am satisfied with my life," and "I feel that I am actually well equipped to deal with life and its difficulties"), rated on a scale ranging from 0 (*do not agree*) to 3 (*agree*). The PMH is a person-centred questionnaire that consists of judgments across nonspecific situations, thus constitutes a general measure of psychological functioning. Unidimensional structure and good convergent and discriminant validity are demonstrated in samples composed of students, patients, and the general population (Lukat et al., 2016). Research indicates that this scale is appropriate for cross-cultural research, based on analyses indicating measurement invariance across cultures (Bieda et al., 2016). Cronbach's alpha was $\alpha = .92$ in Germany and $.93$ in China.

2.3.4 | Self-efficacy

The General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) was used to assess a general sense of perceived self-efficacy across 10 items (e.g., "I am confident that I could deal efficiently with unexpected events") rated on a 4-point scale (from *not at all true* to *exactly true*). The General Self-Efficacy Scale comprises judgments concerning the evaluation of one's abilities how to perform in unexpected situations or surprising events. The scale has been shown to possess good psychometric properties and has already been used in cross-cultural

studies (Schönfeld, Brailovskaia, Bieda, Zhang, & Margraf, 2016). Cronbach's alpha was $\alpha = .88$ in Germany and $.93$ in China.

2.3.5 | Life satisfaction

The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Glaesmer, Grande, Braehler, & Roth, 2011) assesses global life satisfaction using five items (e.g., "In most ways, my life is close to my ideal"). Items are rated on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Scores were averaged across items, with higher scores indicating higher life satisfaction. Research indicates that this scale is adequate for cross-cultural research, based on analyses indicating weak to partial strong measurement invariance across German, Russian, and Chinese samples (Bieda et al., 2016). Internal consistency in the current sample was $\alpha = .89$ in Germany and $.91$ in China.

2.3.6 | Social support

Social support was assessed using the 14-item Social Support Scale measuring perceived and/or anticipated social support (F-SozU K-14; Fydrich, Sommer, Tydecks, & Brähler, 2009). Participants indicated agreement with statements such as "I experience a lot of understanding and security from others" on a 5-point Likert scale ranging from 1 (*not true*) to 5 (*true*). In a German sample, this unidimensional measure showed excellent Cronbach's α and good convergent and discriminant validity (Fydrich et al., 2009). Furthermore, measurement invariance was shown for the F-SozU K-14 in samples from Germany, China, and Russia (Bieda et al., 2016). Internal consistency in the current sample was $\alpha = .93$ in Germany and $.95$ in China.

2.3.7 | Psychosocial stress resistance

The Resilience Scale (RS-11; Schumacher, Leppert, Gunzelmann, Strauß, & Brähler, 2005) consists of 11 items assessing psychosocial stress resistance (e.g., "I keep interested in many things") on a 7-point Likert scale from 1 (*I disagree*) to 7 (*I agree*). The RS-11 demonstrated good reliability and convergent validity in a German sample (Schumacher et al., 2005). The scale is appropriate for cross-cultural research, based on analyses indicating configural invariance across cultures (Bieda et al., 2016). Internal consistency in the current sample was $\alpha = .88$ in Germany and $.90$ in China.

In a previous study, positive mental health, social support, satisfaction with life, and resiliency have been shown to be related but distinct constructs (Bieda, Totzeck, Scholten, Zhang, & Margraf, submitted). Therefore, investigating these constructs separately seems justified. All scales were either administered in German or Chinese language. Validated German versions exist for all questionnaires used in this analysis. Chinese versions of the measures were developed by using the translation-backtranslation method recommended by Brislin (1970) and were already validated using previous data from the BOOM-Project (Bieda et al., 2016; Gao, Yang, Margraf, & Zhang, 2013; Maerker et al., 2015).

2.4 | Statistical analyses

All statistical analyses were conducted using the statistical analysis program IBM SPSS Statistics 21 (SPSS Inc., Illinois, Chicago). Initially,

correlation analyses were carried out to explore associations between key variables. Hierarchical regression analyses were conducted to examine, whether each of the potential resilience factors moderated the association between depression and suicide ideation. The different variables were entered in four steps: In the first step of this analysis, age and gender were entered as covariates. In the second step, depression severity was entered. In the third step, life satisfaction, psychosocial stress resistance, self-efficacy, social support, and positive mental health were included. In the final step, the interaction terms of depression and the various resilience factors were entered. Regression analyses were conducted separately for the German and the Chinese sample. In all analyses, z-standardized variables were used (Frazier, Tix, & Barron, 2004). Tolerance in the collinearity statistics was higher than 0.2 for all models, indicating the absence of multicollinearity.

If the interaction term added significant predictive variance to the regression model, it indicated a moderating effect of the respective factor on the association between depression and suicide ideation

(Hayes, 2013). The magnitude of the interaction effect was assessed by the change in R^2 . To further analyse significant interaction effects descriptively, simple slopes analyses were applied to examine the effects of the focal predictor on the dependent variable at 1 SD above and 1 SD below the mean value of the moderator.

3 | RESULTS

3.1 | Descriptive statistics and correlations

Descriptive statistics for each measure are presented in Table 1. In the German sample, 127 participants (21.1%) indicated some degree of suicidal ideation (i.e., SBQ-R Suicide Ideation Item > 0) within the past 12 months. In the Chinese sample, two participants did not respond to the question on suicide ideation. From the remaining sample, 265 participants (9.9%) indicated some degree of suicidal ideation within

TABLE 1 Means, standard deviations, and correlations of study variables

	M (SD)	Germany		M (SD)	China	
		SBQ-SI	DASS-D		SBQ-SI	DASS-D
SBQ-SI	1.39 (0.89)	—		1.14 (0.48)	—	
DASS-D	4.04 (4.57)	.487**	—	2.46 (3.65)	.281**	—
SWLS	24.72 (6.35)	-.408**	-.563**	23.60 (6.63)	-.171**	-.251**
RS-11	59.83 (9.36)	-.333**	-.495**	59.63 (9.48)	-.171**	-.380**
F-SozU	47.11 (9.02)	-.325**	-.404**	57.76 (9.26)	-.164**	-.409**
GSE	29.46 (4.68)	-.324**	-.481**	29.35 (4.99)	-.146**	-.237**
PMH	18.35 (5.92)	-.475**	-.705**	20.53 (4.92)	-.247**	-.438**

Note. DASS-D = Depression Anxiety Stress Scales–Depression Subscale; F-SozU = Social Support Scale; GSE = General Self-Efficacy; PMH = Positive Mental Health; RS-11 = Resiliency Scale; SBQ-SI = Suicide Behaviors Questionnaire-Revised–Suicide Ideation; SWLS = Satisfaction with Life Scale.

** $p < .01$.

TABLE 2 Multiple linear regression models for the prediction of suicide ideation in German students

	Model 1			Model 2			Model 3			Model 4		
	B	T	p	B	T	p	B	T	p	B	T	p
Age ^a	0.00	-0.10	.919	0.01	0.74	.460	0.00	-0.46	.645	-0.01	-0.83	.407
Gender	0.06	0.78	.434	0.04	0.57	.572	0.04	0.50	.615	0.05	0.69	.491
DASS ^a	—	—	—	0.44	13.58	.000	0.25	5.62	.000	0.12	2.26	.024
SWLS ^a	—	—	—	—	—	—	-0.08	-1.65	.100	-0.08	-1.66	.097
RS-11 ^a	—	—	—	—	—	—	0.01	0.28	.781	0.03	0.56	.578
GSE ^a	—	—	—	—	—	—	0.00	0.07	.947	-0.01	-0.10	.917
F-SozU ^a	—	—	—	—	—	—	-0.07	-1.79	.074	-0.10	-2.26	.024
PMH ^a	—	—	—	—	—	—	-0.16	-2.68	.008	-0.17	-2.77	.006
Interaction DASS ^a × SWLS ^a	—	—	—	—	—	—	—	—	—	-0.12	-2.46	.014
Interaction DASS ^a × RS-11 ^a	—	—	—	—	—	—	—	—	—	0.03	0.69	.488
Interaction DASS ^a × GSE ^a	—	—	—	—	—	—	—	—	—	0.04	0.89	.375
Interaction DASS ^a × F-SozU ^a	—	—	—	—	—	—	—	—	—	0.04	1.08	.279
Interaction DASS ^a × PMH ^a	—	—	—	—	—	—	—	—	—	-0.11	-1.98	.048
Model	Adj. $R^2 = .002$ $F(2, 597) = 0.31$ $p = .731$			Adj. $R^2 = .234$ $F(3, 597) = 61.73$ $p \leq .000$			Adj. $R^2 = .271$ $F(8, 597) = 28.68$ $p \leq .000$			Adj. $R^2 = .297$ $F(13, 597) = 20.38$ $p \leq .000$		

Note. DASS-D = Depression Anxiety Stress Scales–Depression Subscale; F-SozU = Social Support Scale; GSE = General Self-Efficacy; PMH = Positive Mental Health; RS-11 = Resiliency Scale; SBQ-SI = Suicide Behaviors Questionnaire-Revised–Suicide Ideation; SWLS = Satisfaction with Life Scale.

^az-standardized characteristics.

TABLE 3 Multiple linear regression models for the prediction of suicide ideation in Chinese students

	Model 1			Model 2			Model 3			Model 4		
	B	T	p	B	T	p	B	T	p	B	T	p
Age ^a	-0.01	-1.28	.200	-0.01	-1.31	.191	-0.01	-1.01	.315	-0.01	-0.77	.443
Gender	0.01	0.232	.817	-0.04	-2.02	.043	-0.04	-1.82	.070	-0.04	-1.89	.058
DASS ^a	—	—	—	0.14	14.99	.000	0.11	10.25	.000	0.09	7.45	.000
SWLS ^a	—	—	—	—	—	—	-0.03	-2.37	.018	-0.02	-2.03	.043
RS-11 ^a	—	—	—	—	—	—	0.01	0.54	.592	0.01	0.35	.730
GSE ^a	—	—	—	—	—	—	0.01	0.40	.692	0.01	0.71	.479
F-SozU ^a	—	—	—	—	—	—	0.01	0.67	.505	0.00	0.15	.880
PMH ^a	—	—	—	—	—	—	-0.07	-5.17	.000	-0.07	-4.90	.000
Interaction DASS ^a × SWLS ^a	—	—	—	—	—	—	—	—	—	0.00	0.32	.751
Interaction DASS ^a × RS-11 ^a	—	—	—	—	—	—	—	—	—	0.01	1.05	.295
Interaction DASS ^a × GSE ^a	—	—	—	—	—	—	—	—	—	-0.01	-0.65	.516
Interaction DASS ^a × F-SozU ^a	—	—	—	—	—	—	—	—	—	0.03	-3.04	.002
Interaction DASS ^a × PMH ^a	—	—	—	—	—	—	—	—	—	-0.09	-6.32	.000
Model	Adj. R ² = .000 F(2, 2538) = 0.83 p = .438			Adj. R ² = .081 F(3, 2538) = 75.50 p ≤ .000			Adj. R ² = .101 F(8, 2538) = 36.49 p ≤ .000			Adj. R ² = .122 F(13, 2538) = 28.18 p ≤ .000		

Note. DASS-D = Depression Anxiety Stress Scales–Depression Subscale; F-SozU = Social Support Scale; GSE = General Self-Efficacy; PMH = Positive Mental Health; RS-11 = Resiliency Scale; SBQ-SI = Suicide Behaviors Questionnaire-Revised–Suicide Ideation; SWLS = Satisfaction with Life Scale.

^az-standardized characteristics.

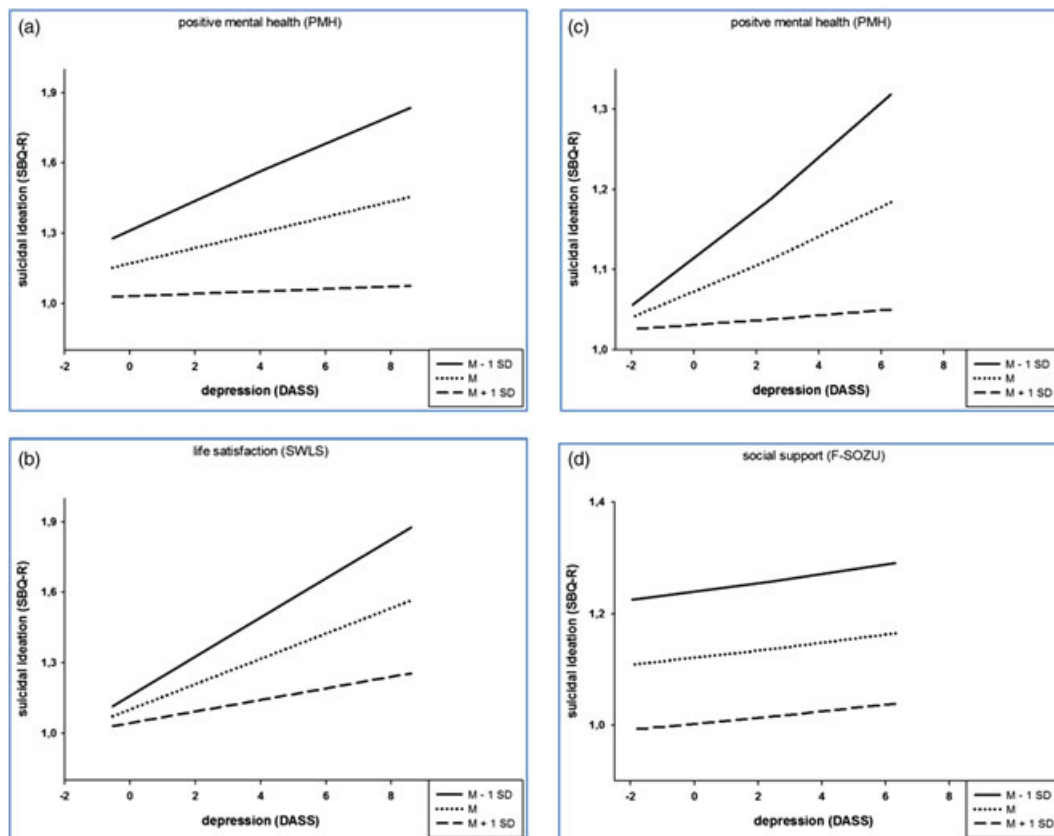


FIGURE 1 Level of positive mental health moderates the relationship between depression and suicide ideation in (a) German students and in (c) Chinese students. (b) Life satisfaction moderates the respective association in German students and (d) social support moderates the association between depression and suicide ideation in Chinese students. PMH = Positive Mental Health; DASS = Depression, Anxiety, and Stress Scales; SBQ-R, Suicidal Behaviors Questionnaire-Revised; SWLS = Satisfaction with Life Scale; F-SozU = Social Support Scale

the past 12 months. Lifetime suicide attempts were reported by 20 participants (3.3%) in the German sample and by 6 participants (0.2%) in the Chinese sample.

Correlations indicated that across both countries, depressive symptoms correlate positively with suicide ideation, and both depressive symptoms and suicide ideation correlate negatively with positive mental health, life satisfaction, social support, psychosocial stress resistance, and self-efficacy (see Table 1).

3.2 | Moderation analysis

In the German and the Chinese sample, positive mental health was found to moderate the effect of depression severity on suicide ideation (see Tables 2 and 3). As presented in Figure 1a,c, in those who reported high levels of positive mental health, increased depression severity was associated with only minimal increases in suicide ideation. Although life satisfaction did not significantly predict suicide ideation above the other studied factors, the interaction term between life satisfaction and depressive symptoms was significant indicating a moderating effect of life satisfaction on depressive symptoms experienced by the responders. However, this interaction was only found in German students (see Table 2). From Figure 1b, it can be seen that for those with high levels of life-satisfaction, elevated levels of depression did not lead to an increase in suicide ideation.

In Chinese students, but not in German students, social support moderated the association of depression severity on suicide ideation (see Table 3). As shown in Figure 1d, for those Chinese individuals who reported increased levels of social support, lowered increases in the levels of suicide ideation at heightened severity of depression were found.

In both samples, self-efficacy and psychosocial stress resistance did neither predict suicide ideation in addition to the other investigated factors, nor did they moderate the association between depressive symptoms and suicide ideation.

4 | DISCUSSION

The goal of the current study was to investigate psychological constructs that buffer the association between depressive symptoms and suicide ideation. There were three main findings: (a) Positive mental health moderated the impact of depressive symptoms on suicide ideation in German and Chinese students. (b) Life satisfaction moderated the impact of depressive symptoms on suicide ideation in German students. (c) Social support moderated the impact of depressive symptoms on suicide ideation in Chinese students.

In multiple hierarchical regression analyses, only positive mental health emerged as a significant moderator in the German and the Chinese sample—after adjusting for all other predictors in the model. For those individuals who reported high levels of positive mental health, their levels of suicide ideation did not increase significantly even when they experienced a heightened level of depressive symptoms. The current finding supports the buffering hypothesis because high positive mental health was found not only to be inversely associated with suicide ideation but also to buffer the negative impact

of depressive symptoms on suicide ideation: Positive mental health may therefore be considered as conferring resilience (Johnson et al., 2011). Regarding positive mental health, it is important to acknowledge that mental health and mental illness are not opposite ends of a single continuum; rather they constitute distinct but correlated axes (e.g., Keyes, 2005; Westerhof & Keyes, 2010). Thus, the absence of psychopathology does not equal the presence of mental health, and the presence of psychopathology does not equal the absence of mental health. For example, Suldo and Shaffer (2008) found that approximately 13% of their adolescent participants had high psychopathology scores as well as average to high subjective well-being; although identified as distressed, these participants “do not appear to suffer to the same extent because of their positive appraisals of life and relatively frequent positive emotions” (Suldo & Shaffer, 2008, p. 53). Similarly, an internal struggle between protective and suicidal thoughts is rather common for suicide ideators (Harris, McLean, Sheffield, & Jobes, 2010). The PMH scale used in the current study assesses different facets of well-being, such as positive emotions, life-satisfaction, and positive functioning in everyday life. Well-being, assessed with the PMH scale, seems to be of special relevance to positive psychological functioning. As such, previous studies found the PMH scale to be among the most important predictors of remission from suicide ideation (Teismann et al., 2016) as well as from specific (Trumpf, Becker, Vriends, Meyer, & Margraf, 2009) and social phobia (Vriends et al., 2007).

Perceived social support emerged as a significant moderator of the depression–suicide ideation association in Chinese students. Those Chinese students who reported high levels of perceived social support were a little less likely to experience suicide ideation even at higher levels of depressive symptoms. The importance of social support as a resilience factor for suicide ideation and suicide behaviour has repeatedly been shown in studies using a wide variety of methodological approaches (Johnson et al., 2011). In a recent test of the buffering hypothesis, Panagioti et al. (2014) found perceived social support to moderate the impact of the number and severity of post-traumatic stress disorder symptoms on suicidal behaviour. Social support has also been emphasized in recent theoretical models on suicidal behaviour (Joiner, 2005) and plays a central role in an array of psychosocial interventions (e.g., Teismann, Koban, et al., 2016). Therefore, it is astounding that social support only moderated the association between depression and suicide ideation in Chinese students, but not in German students. However, as can be seen from Figure 1, even in Chinese students, the moderation effect seems rather small. It may therefore be that diverging results are due to varying sample sizes and associated power issues.

In German students, life satisfaction buffered the association of depressive symptoms on suicide ideation. Specifically, for German students scoring high on life satisfaction, depression did not lead to increased levels of suicide ideation. This finding supplements previous studies that found life satisfaction to be negatively associated with suicide ideation (e.g., Heisel & Flett, 2004; Zhang, Zhao, Lester, & Zhou, 2014) as well as with suicide over a 20-year period (Koivumaa-Honkanen et al., 2001). However, in a small sample of psychiatric patients, Heisel and Flett (2004) found no support for the assumption that life satisfaction buffers the impact of depression on suicide

ideation. Accordingly, Johnson et al. (2011) concluded their review, saying that there is only weak support for a role of life evaluations as resilience factors. Future studies—investigating different populations—are needed to further clarify this issue. It may well be that life satisfaction is a buffer against suicide ideation only in persons suffering from low levels of depression (as to be found in student samples), whereas it loses its buffering effect in more severe depression (as to be found in clinical samples). Furthermore, life satisfaction seems to be more important to Western cultures, which are said to be more individualistic and self-focused than to an Eastern culture (Bond, 1991).

In accordance with assumptions by Johnson et al. (2011), the current results show that factors, which are negatively associated with suicide ideation, do not necessarily have a buffering impact. Thus, self-efficacy and psychosocial stress resistance have been found to be negatively correlated with suicide ideation, but they did not appear to be resilience factors, as they did not moderate the association between depression and suicide ideation. These findings may appear counterintuitive, as previous research has suggested that agency—a construct that is expected to be related to psychosocial stress resistance and/or self-efficacy—has a buffering impact on suicide risk (Johnson et al., 2011). However, Johnson et al. (2011) subsumed quite disparate constructs under the term agency, such as social desirability (Holden, Mendonca, & Serin, 1989) or masculine traits, that is, independence, competitiveness, and self-assertion (Hobbs & McLaren, 2009). Therefore, it seems that agency cannot be equated with self-efficacy and psychosocial stress resistance. Future studies have to clarify which facet of agency is of special importance as a resilience factor.

Finally, factors, which have no linear association with suicide ideation, did still moderate the impact of risk. As such, despite having no linear association with suicide ideation (in the regression analyses), life satisfaction was found to dampen the impact of depression on suicide ideation in the German sample. These findings support the view brought up by Johnson et al. (2011, p. 585), “that suicide resilience must be understood and investigated as a moderating variable, and cannot be informed by investigations of linear associations”.

In general, it has to be emphasized that, overall, there were rather few cross-cultural differences regarding the association between depressive symptoms, potential resilience factors, and suicide ideation in the current study. However, there were large differences in the rate of suicide ideation and lifetime suicide attempts between the German and Chinese sample. This finding is in line with a previous study showing that suicide ideation and suicidal behaviours exhibit a low prevalence in metropolitan China (Lee et al., 2007). It may be argued that people in urban China have good mental health. However, there might also be a systematic downward bias toward reporting suicide ideation and suicidal behaviours in China. Suicide is still surrounded by layers of shame, stigma, and secrecy among Chinese people (Lee et al., 2007) and therefore might not be reported—even in an anonymous investigation.

In terms of clinical implications, the results of the current study suggest that it may be important to account for the presence of resilience factors in addition to risk factors, when assessing individuals for suicide risk. In particular, facets of positive mental health, life satisfaction, and social support could be central aspects to focus on. Furthermore, because resilience factors can significantly alter the

impact of depression, they may be an important aspect to incorporate in clinical interventions (cf. Willutzki & Teismann, 2013). Finally, preventive programs for student populations may benefit from a focus on fostering well-being. Finally, looking at the interplay between risk and resilience factors has important theoretical implications regarding the processes that lead to the development and maintenance of suicide ideation. So far, the vast majority of research has emphasized the importance of risk factors. Therefore, an important theoretical contribution of this study is the finding that different protective factors moderated the association between risk and suicide ideation. This suggests a more comprehensive approach, where mental health is the result of a dynamic process determined by the relation between pathogenetic and protective factors. Accordingly, theoretical models of suicide ideation/behaviour should strive to integrate both pathogenetic and protective factors (cf. Cheavens, Cukrowicz, Hansen, & Mitchell, 2016).

There are several limitations to the present study. First, given the cross-sectional nature of the data, conclusions about causation are bound to involve some degree of speculation. Second, the data were obtained exclusively by self-report. This method has certain advantages for cross-cultural survey research, for example, the measures are economical and easy to administer. However, self-report measures may fail to capture suicide ideation, depression, or resilience factors in their full complexity. Third, generalization of the results toward other age or societal groups than university students is not possible, because the study focused only on this highly-educated population. Fourth, as a nonclinical sample was studied, levels of depression were rather low. As such, it is unclear to what extent the results would generalize to clinical depressed samples. Fifth, suicide ideation was only assessed with the respective item of the SBQ-R instead of a more comprehensive method to assess suicide ideation. Yet it is rather common to assess suicide ideation with limited items in epidemiological studies (cf. Borges, Angst, Nock, Ruscio, & Kessler, 2008; Gunnell, Harbord, Singleton, Jenkins, & Lewis, 2004), and there is strong evidence for the predictive ability and relevance of single items assessing suicide ideation (Green et al., 2015; Simon et al., 2013). Sixth, the group of predictors used in the study was far from exhaustive. In particular, we did not measure some of the variables that Johnson et al. (2011) identified as important resilience factors, such as a positive attributional style or self-esteem. Finally, the buffering effects described in this study are only related to one specific risk factor, namely, depressive symptoms, and one specific outcome variable, namely, suicide ideation. It is rather unlikely that the same pattern of results emerges when incorporating other risk factors and other suicide-related outcomes. Though the association between depressive symptoms and suicide ideation is an important area to investigate, future studies should expand upon this by investigating resilience factors in relation to a broader range of risk factors and suicide outcomes. Furthermore, as depression itself is a multifaceted risk factor, including factors such as insomnia, hopelessness, and low mood, further research could conduct a more fine-grained analysis of the association between specific symptoms of depression, protective factors, and suicide ideation/behaviour.

To conclude, the present study demonstrated that positive mental health, perceived social support, and life satisfaction buffered the

impact of depressive symptoms on suicide ideation. Accounting for these factors may improve the identification of individuals at risk of suicide ideation and may be an important area to target in the prevention and treatment of suicide ideation—both in Western and Eastern countries.

REFERENCES

- Batterham, P., Ftanou, M., Pirkis, J., Brewer, J., Mackinnon, A., Beautrais, A., ... Christensen, H. (2015). A systematic review and evaluation of measures for suicidal ideation and behaviors in population-based research. *Psychological Assessment*, 27, 501–512.
- Bieda, A., Hirschfeld, G., Schönfeld, P., Brailovskaia, J., Zhang, X. C., & Margraf, J. (2016). Universal happiness? Cross-cultural measurement invariance of scales assessing positive mental health. *Psychological Assessment*. <https://doi.org/10.1037/pas0000353>
- Bieda, A., Totzeck, C., Scholten, S., Zhang, X.C. & Margraf, J. (submitted). Are all happy families really alike? An examination of the structure of well-being.
- Bond, M. H. (1991). *Beyond the Chinese face. Insights from psychology*. Hong Kong: Oxford University Press.
- Borges, G., Angst, J., Nock, M. K., Ruscio, A. M., & Kessler, R. C. (2008). Risk factors for the incidence and persistence of suicide-related outcomes. *Journal of Affective Disorders*, 105, 25–33.
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1, 185–216.
- Brown, G. K., Beck, A. T., Steer, R. A., & Grisham, J. R. (2000). Risk factors for suicide in psychiatric outpatients: A 20-year prospective study. *Journal of Consulting and Clinical Psychology*, 68, 371–377.
- Cheavens, J. S., Cukrowicz, K. C., Hansen, R., & Mitchell, S. M. (2016). Incorporating resilience factors into the interpersonal theory of suicide. *Journal of Clinical Psychology*, 72, 58–69.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49, 71–75.
- Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X., ... Nock, M. K. (2017). Risk factors for suicidal thoughts and behaviors. *Psychological Bulletin*, 143, 187–232.
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, 51, 115–134.
- Fydrich, T., Sommer, G., Tydecks, S., & Brähler, E. (2009). Social Support Questionnaire (F-SozU): Standardization of short form (K-14). *Zeitschrift für Medizinische Psychologie*, 18, 43–48.
- Gao, Z., Yang, S., Margraf, J., & Zhang, X. (2013). Reliability and validity test for Wagnild and Young's Resilience Scale (RS-11) in Chinese. *China Journal of Health Psychology*, 21, 1324–1326.
- Glaesmer, H., Grande, G., Braehler, E., & Roth, M. (2011). The German version of the Satisfaction with Life Scale (SWLS). *European Journal of Psychological Assessment*, 27, 127–132.
- Gooding, P., Tarrier, N., Dunn, G., Shaw, J., Awenat, Y., Ulph, F., & Pratt, D. (2015). The moderating effect of coping and self-esteem on the relationship between defeat, entrapment and suicidality in a sample of prisoners at high risk of suicide. *European Psychiatry*, 30, 988–994.
- Green, K. L., Brown, G. K., Jager-Hyman, S., Cha, J., Steer, R. A., & Beck, A. T. (2015). The predictive validity of the Beck Depression Inventory suicide item. *Journal of Clinical Psychiatry*, 76, 1683–1686.
- Gunnell, D., Harbord, R., Singleton, N., Jenkins, R., & Lewis, G. (2004). Factors influencing the development and amelioration of suicidal thoughts in the general population. *British Journal of Psychiatry*, 185, 385–393.
- Harris, K. M., McLean, J. P., Sheffield, J., & Jobes, D. (2010). The internal suicide debate hypothesis: Exploring the life versus death struggle. *Suicide and Life-threatening Behavior*, 40, 181–192.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York: Guilford Press.
- Heikkinen, M. E., Isometsä, E. T., Marttunen, M. J., Aro, H. M., & Lönnqvist, J. K. (1995). Social factors in suicide. *British Journal of Psychiatry*, 167, 747–753.
- Heisel, M. J., & Flett, G. L. (2004). Purpose in life, satisfaction with life, and suicide ideation in a clinical sample. *Journal of Psychopathology and Behavioral Assessment*, 26, 127–135.
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21). *British Journal of Clinical Psychology*, 44, 227–239.
- Hobbs, M., & McLaren, S. (2009). The interrelations of agency, depression, and suicidal ideation among older adults. *Suicide and Life-threatening Behavior*, 39, 161–171.
- Holden, R. R., Mendonca, J. D., & Serin, R. C. (1989). Suicide, hopelessness and social desirability. *Journal of Consulting and Clinical Psychology*, 57, 500–504.
- Johnson, J., Wood, A. M., Gooding, P., Taylor, P. J., & Tarrier, N. (2011). Resilience to suicidality: The buffering hypothesis. *Clinical Psychology Review*, 31, 563–591.
- Joiner, T. E. (2005). *Why people die by suicide*. Cambridge: Harvard University Press.
- Keyes, C. L. (2005). Mental illness and/or mental health? *Journal of Consulting and Clinical Psychology*, 73, 539–548.
- Koivumaa-Honkanen, H., Honkanen, R., Viinamäki, H., Heikkilä, K., Kaprio, J., & Koskenvuo, M. (2001). Life satisfaction and suicide: A 20-year follow-up study. *American Journal of Psychiatry*, 158, 433–439.
- Lee, S., Fung, S. C., Tsang, A., Liu, Z. R., Huang, Y. Q., He, Y. L., ... Kessler, R. C. (2007). Lifetime prevalence of suicide ideation, plan and attempt in metropolitan China. *Acta Psychiatrica Scandinavica*, 116, 429–437.
- Liu, K. Y., Chen, E. Y. H., Chan, C. L. W., Lee, D. T. S., Law, Y. W., Conwell, Y., & Yip, P. S. F. (2006). Socio-economic and psychological correlates of suicidality among Hong Kong working-age adults: Results from a population-based survey. *Psychological Medicine*, 36, 1759–1767.
- Lukat, J., Margraf, J., Lutz, R., van der Veld, W. M., & Becker, E. S. (2016). Psychometric properties of the Positive Mental Health Scale (PMH-scale). *BMC Psychology*, 4.
- Maerker, A., Zhang, X. C., Gao, Z., Kochetkov, Y., Lu, S., Sang, Z., ... Margraf, J. (2015). Personal value orientations as mediated predictors of mental health. *International Journal of Clinical and Health Psychology*, 15, 8–17.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self. *Psychology Review*, 98, 224–253.
- Marzuk, P., Tardiff, K., Leon, A., Hirsch, J., Portera, L., Hartwell, N., & Iqbal, I. (1997). Lower risk of suicide during pregnancy. *American Journal of Psychiatry*, 154, 122–123.
- Mellor, D., Vinet, E. V., Xu, X., Hidayah Bt Mamat, N., Richardson, B., & Román, F. (2014). Factorial invariance of the DASS-21 among adolescents in four countries. *European Journal of Psychological Assessment*, 31, 138–142.
- Nock, M. K., Borges, G., & Ono, Y. (2014). *Suicide: Global perspectives from the WHO world mental health surveys*. Cambridge: Cambridge University Press.
- Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire-Revised (SBQ-R). *Assessment*, 8, 443–454.
- Panagioti, M., Gooding, P. A., Taylor, P. J., & Tarrier, N. (2014). Perceived social support buffers the impact of PTSD symptoms on suicidal behavior. *Comprehensive Psychiatry*, 55, 104–112.
- Qin, P., & Mortensen, P. (2003). The impact of parental status on the risk of completed suicide. *Archives of General Psychiatry*, 60, 797.
- Schönfeld, P., Brailovskaia, J., Bieda, A., Zhang, X. C., & Margraf, J. (2016). The effects of daily stress on positive and negative mental health. *International Journal of Clinical and Health Psychology*, 16, 1–10.

- Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy Scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology* (pp. 35–37). UK: Windsor.
- Simon, G. S., Rutter, C. M., Peterson, D., Oliver, M., Whiteside, U., Operskalski, B., & Ludman, E. J. (2013). Do PHQ Depression Questionnaires completed during outpatient visits predict subsequent suicide attempt or suicide death? *Psychiatric Services, 64*, 1195–1202.
- Schumacher, J., Leppert, K., Gunzelmann, T., Strauss, B., & Brähler, E. (2005). Life satisfaction and its correlates among college students in China. *Z Klin Psych Psychia, 53*, 16–39.
- Suldo, S. M., & Shaffer, E. J. (2008). Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review, 1*, 52–68.
- Teismann, T., Forkmann, T., Glaesmer, H., Egeri, L., & Margraf, J. (2016). Remission of suicidal thoughts. *Journal of Affective Disorders, 190*, 723–725.
- Teismann, T., Koban, C., Illes, F., & Oermann, A. (2016). *Psychotherapie suizidaler Patienten*. Göttingen: Hogrefe.
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychology Review, 96*, 506–520.
- Trumpf, J., Becker, E. S., Vriends, N., Meyer, A. H., & Margraf, J. (2009). Rates and predictors of remission in young woman with specific phobia: A prospective study. *Journal of Anxiety Disorders, 23*, 958–964.
- Tsai, A. C., Lucas, M., & Kawachi, I. (2015). Association between social integration and suicide among women in the United States. *JAMA, 72*, 987–993.
- Tsai, A. C., Lucas, M., Sania, A., Kim, D., & Kawachi, I. (2014). Social integration and suicide mortality among men. *Annals of Internal Medicine, 161*, 85–95.
- Vriends, N., Becker, E., Meyer, A., Williams, S., Lutz, R., & Margraf, J. (2007). Recovery from social phobia in the community and its predictors. *Journal of Anxiety Disorders, 21*, 320–337.
- Westerhof, G. J., & Keyes, C. L. (2010). Mental illness and mental health: The two continua model across the lifespan. *Journal of Adult Development, 17*, 110–119.
- WHO (2014). *Preventing suicide. A global imperative*. Geneva: WHO Press.
- Willutzki, U., & Teismann, T. (2013). *Ressourcenaktivierung*. Göttingen: Hogrefe.
- Zhang, J., Zhao, S., Lester, D., & Zhou, C. (2014). Life satisfaction and its correlates among college students in China. *Asian Journal of Psychiatry, 10*, 17–20.

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