

# A Cross-Cultural Study in Germany, Russia, and China: Are Resilient and Social Supported Students Protected Against Depression, Anxiety, and Stress?

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## Abstract

This study cross-culturally investigated resilience and social support as possible protective factors for mental health. The values of depression, anxiety, and stress symptoms, resilience and social support were collected from German ( $N = 4433$ ), Russian ( $N = 3774$ ), and Chinese students ( $N = 4982$ ). The samples were split (two-thirds vs. one-third) to cross-validate the results. In all samples, resilience and social support were significantly negatively associated with depression, anxiety, and stress symptoms. While in Germany those associations were stronger for social support, in Russia and in China stronger associations were found for resilience. Furthermore, in all samples, resilience was found to mediate the association between social support and the negative mental health variables significantly. In conclusion, resilience and social support are universal interrelated protective factors for mental health independently of historical, cultural, social, and geographical conditions of a country.

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**Keywords**

Resilience, social support, negative mental health, Germany, Russia, China

**Introduction**

Across different countries chronic stress is one of the major causes of mental disorders (World Health Organization, 2001). Therefore, depression and anxiety disorders belong to the most prevalent diagnoses (Trumpf et al., 2010; Wittchen & Jacobi, 2005). They affect and restrict individual well-being, quality of life, and social relationships (Rapaport, Clary, Fayyad, & Endicott, 2005) and they cause high economic burden and substantial financial costs to the community (Greenberg, Stiglin, Finkelstein, & Berndt, 1993). Direct therapy costs and indirect costs, for example, productivity loss through absence from workplace and mortality are the consequences (Hoffman, Dukes, & Wittchen, 2008).

In the last decades, various variables which have the potential to protect mental health have been investigated. Two of these variables are resilience and social support.

Earlier studies suggest that resilience moderates the negative effects of stress (Caplan, 1990; Ungar, 2008; Wagnild & Young, 1990, 1993). Resilience (“psychosocial stress-resistance”) is defined as the ability to master stressful situations by involving individual resources. Experiences gathered in these situations support personal development (Leppert, Koch, Brähler, & Strauß, 2008). Resilient persons have high self-esteem, social competence, and problem-solving abilities. They are self-confident, optimistic, and emotionally stable. Close and confiding family network providing social support in early childhood contribute to the development of a positive self-perception and of resilience (Collishaw et al., 2007).

Social support is the subjective conviction, based on earlier experiences in social interactions, that one’s social network, for example, family, friends, neighbors, colleagues, the government, and the society will provide support if necessary (Cohen & Wills, 1985). This support can be instrumental or emotional (Biegel, 1985; Kim & Pridemore, 2005). It reinforces individual abilities to manage stressful situations and increases individual resilience level (Kim, Sherman, & Taylor, 2008; Sarason, Sarason, & Gurung, 2001). Persons who lack social support are prone to various kinds of mental disorders (Iecovich et al., 2004).

Thus, resilience—an internal variable—and social support—an external variable—seem to be able to protect mental health. However, how are both variables interrelated? Can resilience, which development depends *inter alia* on the experience of social support in early childhood, mediates the association between social support and negative mental health?

The present study aims to extend the research field considering protective factors of mental health by an investigation of the relationship between

depression, anxiety, and stress symptoms (negative mental health), on one hand, and resilience and social support (positive variables), on the other hand, in different countries; thereby, the relationship between resilience and social support is analyzed in detail.

Depression, anxiety, and stress symptoms can be triggered and reinforced by different social, political, economic, and environmental conditions and structures (Lovibond, 1998). In countries, where massive changes in long established structures take place, depression, anxiety, and stress symptoms are noticeably high (Cockerham, Hinote, & Abbott, 2006).

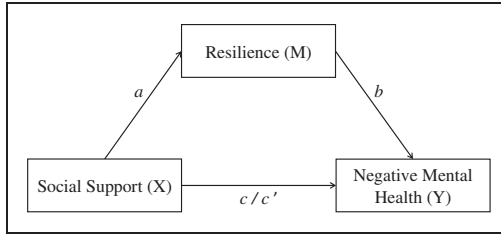
For the present investigation, the countries Germany, Russia, and China were selected. The three countries differ regarding various cultural, historical, social, and geographical conditions. Germany is an individualistic Western country which has undergone structural changes in the 1990s (specifically the reunification of West and East Germany; Rödder, 2011). In contrast, China is a collectivistic Asian country (Markus & Kitayama, 2001; Triandis, 1989) combining a high determination by old values and traditions with a rapid development of high technologies (e.g., Jin, Zheng, & Xin, 2009). Russia is a country between Asia and Europe, where collectivistic (in small towns and in villages) and individualistic (in large towns, e.g., Moscow) elements coexist (Latova & Latov, 2007; Stadelbauer, 2010). Comparable to Germany, Russia has also undergone significant structural changes in the last decades of the 20th century (specifically the restructuring of the Soviet Union in the 1980s and 1990s; e.g., Höhmann, 2004; Pietilä & Rytönen, 2008).

This is the first study to analyze the described variables simultaneously in Germany, Russia, and China. The same assumptions were investigated in all samples: There is a positive relationship between depression, anxiety, and stress symptoms (Hypothesis 1). In contrast, there is a negative relationship between the variables resilience and social support, on one hand, and depression, anxiety, and stress symptoms, on the other hand (Hypothesis 2). Resilience and social support are interrelated positively (Hypothesis 3). Resilience mediates the relationship between social support and the negative mental health variables, that is, depression, anxiety, and stress symptoms (see Figure 1) (Hypothesis 4).

## **Materials and methods**

### *Procedure and participants*

The present study is part of the ongoing cross-cultural Bochum Optimism and Mental Health (BOOM) program investigating risk and protective factors of mental health (Brailovskaia & Margraf, 2016; Brailovskaia, Schönfeld, Kochetkov, & Margraf, 2017; Margraf, Lavalée, Zang, & Schneider, 2016; Schönfeld, Brailovskaia, Bieda, Zhang, & Margraf, 2016). Present data were



**Figure 1.** Mediation model with social support as predictor (X), resilience as mediator (M), and negative mental health (depression, anxiety, and stress symptoms) as outcome (Y). Note.  $c$  = path of X to Y, without inclusion of M (total effect);  $a$  = path of X to M;  $b$  = bath of M to Y;  $c'$  = path of X to Y including M (direct effect).

collected in cooperation between a large German university (Ruhr-Universität Bochum), three universities in Russia (Lomonossov University Moscow, Universities of Voronesh, and University of Orenburg) and three universities in China (Capital Normal University Beijing, Hebei United University, and Nanjing University) by self-report questionnaires (Germany: online survey; Russia: paper-and-pencil format; China: online and paper-and-pencil format). The average response time was 20 minutes. All procedures of the present study received approval of Research and Ethics Committee. Each participant was informed about the study's purpose and gave informed consent to participate.

In whole, three student samples were collected. The German sample comprised 4433 students, the Russian sample consisted of 3774 students, and the Chinese sample comprised 4982 students. Considering proceeded power analyses, the samples were large enough to get valid results (power  $>.80$ ,  $\alpha = .05$ ). Regarding the large sample sizes, each sample was split into two-third and one-third samples to cross-validate the results. Table 1 presents the demographic data of all samples. In Russia and in China, where laws grant officially inscribed university students independent of their age the right of decision about study-related issues, for example, participation in studies, minor participants were included.

## Materials

The Depression-Anxiety-Stress Scales 21 (DASS-21; Lovibond & Lovibond, 1995), the short version of the DASS-42, consist of three 7-item scales measuring depression (e.g., "I couldn't seem to experience any positive feeling at all."), anxiety (e.g., "I felt scared without any good reason."), and stress (e.g., "I tended to over-react to situations.") symptoms (Henry & Crawford, 2005; Ng et al., 2007; Norton, 2007). Participants rated how the 21 statements applied to them over the past week on a 4-point Likert-type scale (0 = *did not apply to me at all*; 3 = *applied to me very much or most of the time*). Validated DASS-21

**Table 1.** Demographic description of the split samples.

	Germany		Russia		China	
	Two-third sample	One-third sample	Two-third sample	One-third sample	Two-third sample	One-third sample
N	2955	1478	2516	1258	3321	1661
Age, year: <i>M</i> (SD; range)	26.48 (4.01; 18–60)	26.64 (3.98; 18–58)	19.74 (2.24; 16–48)	20.06 (2.62; 15–43)	19.73 (1.87; 15–42)	19.77 (1.90; 14–42)
Gender (% female)	1636 (55.3)	798 (54.0)	1644 (65.3)	818 (65.0)	2079 (62.6)	1015 (61.1)
Study year (%)						
1 to 2	12.0	12.9	51.0	49.1	78.4	79.4
3 to 4	38.9	35.7	35.7	35.5	17.1	16.0
≥5	49.2	51.5	13.3	15.5	4.5	4.6

Note. *M* = mean, *SD* = standard deviation; older than 35 years: total German sample: 2.6%, total Russian sample: 0.4%, total Chinese sample: 0.1%; due to rounding, the sum may be higher/lower than 100%.

versions in Russian and Chinese languages were used. In Germany, we used an alternative version of this questionnaire. It also included 21 items of the DASS-42 (see Velten et al., 2014). In a German representative sample and in a German student sample, the construct validity of both versions did not differ.

Resilience was assessed with the one-dimensional German Resilience Scale 11 (RS-11; Leppert, 2003; Schumacher, Leppert, Grunzelmann, Strauß, & Brähler, 2005). On a 7-point Likert-type scale participants rated their agreement with eleven statements, for example, “I feel that I can handle many things at a time.” (1 = *disagree*; 7 = *agree*). In earlier German studies, the RS-11 showed good psychometric properties. The Chinese version of the questionnaire has been validated earlier (Gao, Yang, Margraf, & Zahng, 2013). The Russian version was translated within the BOOM project from the original by the customary translation-backtranslation-modification procedure (Berry, 1989).

The one-dimensional German Questionnaire Social Support (F-SozU K-14; Fydrich, Sommer, Tydecks, & Brähler, 2009) measures subjective experienced or anticipated support an individual receives from the social network. Participants assessed how the 14 statements apply to them on a 5-point Likert-type scale, for example, “I experience a lot of understanding and security from others.” (1 = *not true*; 5 = *true*). Chinese and Russian versions were translated by the earlier mentioned procedure (Berry, 1989).

Table 2 presents the reliability of the used scales (Cronbach’s  $\alpha = .70$  (depression) to  $\alpha = .95$  (social support); Split-half reliability (Spearman–Brown coefficient):  $r_{tt} = .66$  (depression) to  $r_{tt} = .94$  (social support)).

**Table 2.** Descriptive values, skew and kurtosis of resilience, social support, depression, anxiety, and stress symptoms and reliability of used scales.

	M (SD)	Minimum	Maximum	Skew	Kurt	$\alpha/r_{tt}$
Germany (N = 2955)						
Resilience	56.07 (13.74)	11.00	77.00	-1.07	.66	.93/.92
Social Support	4.26 (.77)	1.00	5.00	-1.47	2.14	.95/.94
Depression	4.70 (4.63)	0	21.00	1.30	1.13	.76/.80
Anxiety	2.94 (3.35)	0	21.00	1.70	3.33	.83/.86
Stress	7.54 (4.77)	0	21.00	.65	-.21	.81/.82
Russia (N = 2516)						
Resilience	59.37 (8.77)	11.00	77.00	-1.38	3.82	.81/.78
Social Support	4.16 (.81)	1.00	5.00	-1.50	2.19	.94/.92
Depression	4.25 (4.11)	0	21.00	1.39	1.81	.70/.66
Anxiety	3.72 (3.69)	0	21.00	1.43	2.19	.82/.81
Stress	6.69 (4.42)	0	21.00	.61	-.11	.81/.80
China (N = 3321)						
Resilience	58.57 (8.63)	11.00	77.00	-1.40	3.93	.80/.76
Social Support	4.04 (.87)	1.00	5.00	-1.57	2.47	.95/.91
Depression	1.83 (2.44)	0	21.00	1.42	1.95	.70/.71
Anxiety	2.94 (2.74)	0	21.00	1.47	2.39	.77/.78
Stress	3.38 (3.09)	0	21.00	.62	-.10	.82/.81

Note. *M* = mean, *SD* = standard deviation, *Min* = minimum, *Max* = maximum; *Kurt* = kurtosis;  $\alpha$  = Cronbach's  $\alpha$ ;  $r_{tt}$  = Split-half reliability (Spearman-Brown coefficient).

### Statistical analyses

All statistical analyses were conducted with the Statistical Package for the Social Sciences (SPSS) 23 (Corp, 2012) and the macro Process version 2.16.1 ([www.processmacro.org/index.html](http://www.processmacro.org/index.html)). First, descriptive statistics of depression, anxiety, stress, resilience, and social support were computed in all samples. Cross-cultural comparisons can only be validly made, when strong measurement invariance of the used scales is established (Tucker, Ozer, Lyubomirsky, & Boehm, 2006). Earlier studies did not find full strong measurement invariance of the used questionnaires (Bieda et al., 2016; Oei, Sawang, Goh, & Mukhtar, 2013; Sass, 2011). Hence, mean values between the countries were not compared.

Zero-order bivariate correlations assessed associations between the analyzed variables. Multiple regression analyses were calculated with gender, age, resilience, and social support as independent variables and depression, anxiety, and stress symptoms, respectively, as dependent variables. Furthermore, the mediation model presented in Figure 1 was investigated. It includes social support as

the predictor (X), resilience as the mediator (M), and the negative mental health variables (depression, anxiety, and stress symptoms) as the outcome (Y). The basic relationship between X and Y (without inclusion of M; the total effect) is denoted by  $c$ . The path of X to M is denoted by  $a$  and the path of M to Y is denoted by  $b$ . While the combined effect of the path  $a$  and  $b$  represents the indirect effect, the path  $c'$  denotes the direct effect of X to Y after the inclusion of M in the model. The mediation effect is assessed by the bootstrapping procedure (10,000 samples) which provides accelerated confidence intervals (95%). Considering the shortcomings of the effect size kappa-squared ( $\kappa^2$ ) commonly used in mediation analyses,  $P_M$  (the ration of the indirect effect to the total effect) served as the median effect measure (Wen & Fan, 2015).

All analyses were conducted in the two-third and one-third samples. Results of the two-third samples are presented. Results of the one-third samples are only presented, if they include differences in comparison to the two-third samples.

## Results

### *Descriptive analyses*

Table 2 presents descriptive values of the investigated constructs. While the Kolmogorov–Smirnov test that is known to be highly sensitive to large sample size became significant, analyses of skew, kurtosis, and histogram indicated all analyzed variables to be close to normally distributed.

### *Correlations*

In all three samples, depression, anxiety, and stress symptoms correlate significantly positively with each other and significantly negatively with the variables resilience and social support. Resilience and social support are significantly positively correlated (see Table 3).

### *Regression analyses*

Next, multiple regression analyses with age, gender, social support, and resilience as independent variables and depression, anxiety, and stress symptoms, successively, as dependent variables, were calculated (see Table 4). In all samples, social support and resilience are significantly associated with symptoms of depression (Germany:  $F(4, 950) = 289.92$ ; Russia:  $F(4, 2511) = 172.98$ ; China:  $F(4, 3316) = 185.66$ ; all:  $p < .001$ ), anxiety (Germany:  $F(4, 950) = 138.27$ ; Russia:  $F(4, 2511) = 91.52$ ; China:  $F(3, 3316) = 118.54$ ; all:  $p < .001$ ), and stress (Germany:  $F(4, 2950) = 116.97$ ; Russia:  $F(4, 2511) = 75.80$ ;

**Table 3.** Correlations between resilience, social support, depression, anxiety, and stress symptoms.

	(2)	(3)	(4)	(5)
Germany (N = 2955)				
(1) Resilience	.32**	-.39**	-.28**	-.24**
(2) Social Support		-.46**	-.34**	-.27**
(3) Depression			.63**	.62**
(4) Anxiety				.57**
(5) Stress				
Russia (N = 2516)				
(1) Resilience	.32**	-.41**	-.29**	-.25**
(2) Social Support		-.32**	-.22**	-.20**
(3) Depression			.65**	.65**
(4) Anxiety				.70**
(5) Stress				
China (N = 3321)				
(1) Resilience	.32**	-.40**	-.32**	-.33**
(2) Social Support		-.27**	-.18**	-.19**
(3) Depression			.67**	.67**
(4) Anxiety				.72**
(5) Stress				

Note. \*\* $p < .001$ .

China:  $F(4, 3316) = 113.11$ ; all:  $p < .001$ ). In all samples, the whole model explains the most variance for depression. In the German sample, social support is strongly associated with depression, anxiety, and stress symptoms than resilience (see Table 4; no overlap of confidence intervals). In contrast, in the Russian and in the Chinese sample, the association of resilience with the negative mental health symptoms is stronger.

### Mediation analyses

Results of the bootstrapped mediation analyses presented in Table 5 show that resilience mediates the relationship between social support and the three negative mental health variables. For depression, anxiety, and stress symptoms, adding resilience into the model reduces significantly the total effect in each sample. The confidence intervals of each effect do not contain zero. The indirect effect (the path of social support to resilience and the path of resilience to the negative mental health variables) is significant. The effect sizes of the indirect effect ( $P_M$ ) are satisfying.



**Table 4.** Multiple regression analyses with gender, age, social support and resilience as independent variables and depression, anxiety, and stress symptoms, successively, as dependent variables.

	Germany (N = 2955)			Russia (N = 2516)			China (N = 3321)		
	$\Delta R^2$	$\beta$	95% CI	$\Delta R^2$	$\beta$	95% CI	$\Delta R^2$	$\beta$	95% CI
Depression	.28			.22			.18		
Gender		-.07**	[-.93, -.35]		-.08**	[-.96, -.36]		.01	[-.12, .19]
Age		.02	[-.01, .06]		-.01	[-.07, .06]		-.04**	[-.10, -.02]
Social Support		-.38**	[-2.45, -2.06]		-.22**	[-1.29, -.91]		-.16**	[-.55, -.36]
Resilience		-.27**	[-.10, -.08]		-.34**	[-.18, -.14]		-.35**	[-.11, -.09]
Anxiety	.16			.13			.13		
Gender		-.11**	[-.98, -.53]		-.16**	[-1.53, -.96]		-.07**	[-.59, -.23]
Age		.00	[-.03, .03]		-.01	[-.07, .05]		-.11**	[-.21, -.11]
Social Support		-.29**	[-1.39, -1.09]		-.16**	[-.91, -.55]		-.12**	[-.48, -.26]
Resilience		-.19**	[-.06, -.04]		-.23**	[-.11, -.08]		-.28**	[-.10, -.08]
Stress	.14			.11			.12		
Gender		-.20**	[-2.23, -1.58]		-.17**	[-1.88, -1.19]		-.02	[-.31, .11]
Age		.01	[-.03, .05]		-.04*	[-.16, -.01]		-.07**	[-.16, -.06]
Social Support		-.23**	[-1.62, -1.18]		-.15**	[-1.01, -.58]		-.11**	[-.50, -.26]
Resilience		-.17**	[-.07, -.05]		-.20**	[-.12, -.08]		-.29**	[-.12, -.09]

Note.  $\beta$  = standardized coefficient beta; CI = confidence interval.  
 \* $p < .05$ ; \*\* $p < .01$ .

**Cross-validation**

Results of the one-third samples are comparable to the results of the two-third samples. Social support and resilience are significantly positively interrelated, and both correlate significantly negatively with depression, anxiety, and stress symptoms. Again, regression results demonstrate the stronger association between resilience and the negative mental health variables in Russia and in China. In Germany, the association between social support and the negative mental health variables is stronger. The mediation analyses provide further significant evidence of resilience to mediate the relationship between social support, on one hand, and depression, anxiety, and stress symptoms, on the other hand.

**Discussion**

The present study investigated the variables resilience and social support in German, Russian, and Chinese student samples. Even so, the three countries differ regarding various conditions, in general similar results were found in all

**Table 5.** Estimated coefficients of the mediation model with social support (X), resilience (M), and depression, anxiety, and stress symptoms (Y).

	Total effect			Direct effect			Indirect effect			Effect size		
	c	SE	95% CI	c'	SE	95% CI	ab	SE	95% CI	P <sup>M</sup>	SE	95% CI
<b>Germany (N = 2955)</b>												
Depression	-2.75	.10	[-2.94, -2.56]	-2.23	.10	[-2.42, -2.04]	-.52	.05	[-.63, -.43]	.19	.02	[.16, .23]
Anxiety	-1.46	.08	[-1.61, -1.31]	-1.20	.08	[-1.35, -1.04]	-.26	.03	[-.33, -.21]	.18	.02	[.14, .23]
Stress	-1.64	.11	[-1.86, -1.43]	-1.30	.11	[-1.52, -1.07]	-.35	.05	[-.44, -.26]	.21	.03	[.16, .28]
<b>Russia (N = 2516)</b>												
Depression	-1.63	.10	[-1.82, -1.44]	-1.06	.10	[-1.24, -.87]	-.57	.07	[-.72, -.45]	.35	.04	[.28, .43]
Anxiety	-1.01	.09	[-1.18, -.84]	-.65	.09	[-.83, -.47]	-.36	.05	[-.46, -.28]	.36	.05	[.27, .46]
Stress	-1.08	.11	[-1.29, -.87]	-.71	.11	[-.92, -.49]	-.38	.05	[-.49, -.28]	.35	.05	[.25, .47]
<b>China (N = 3321)</b>												
Depression	-.75	.07	[-.88, -.62]	-.44	.06	[-.55, -.33]	-.31	.03	[-.38, -.25]	.41	.04	[.34, .50]
Anxiety	-.57	.08	[-.70, -.44]	-.28	.06	[-.40, -.16]	-.29	.03	[-.36, -.23]	.51	.07	[.39, .66]
Stress	-.67	.07	[-.82, -.53]	-.34	.07	[-.47, -.20]	-.34	.04	[-.41, -.27]	.50	.06	[.40, .63]

Note. SE: standard error; CI: confidence interval. All findings are significant:  $p < .001$ ; all CIs generated with bootstrapping; N = 10,000.

samples which encourage the assumption about their universality. Cross-culturally, there is a positive relationship between depression, anxiety, and stress symptoms (confirming Hypothesis 1).

Many people suffer from anxiety that ranges from daily concerns to massive existential fear. Depression symptoms often accompany anxiety symptoms. Both are frequently triggered by negative environmental conditions leading to stress reactions (Poltavski & Ferraro, 2003).

Internal and external resources help to manage these negative factors and to protect mental health. Considering present results, resilience and social support belong to such resources. In all samples, resilience and social support are negatively related to depression, anxiety, and stress symptoms (confirming Hypothesis 2). Therefore, resilient and socially supported people are more resistant to the negative mental health factors than people with lower values of these variables.

A detailed investigation of the association between resilience and social support showed the same result pattern in each sample. Both variables are positively interrelated (confirming of Hypothesis 3). Furthermore, resilience was found to mediate the relationship of social support and the negative mental health variables significantly (confirming Hypothesis 4). Earlier studies described resilience to be an internal protective factor against negative environmental influences which enhances individual's stress resistance (Connor & Zhang, 2006). It develops from dynamic multiple interactions and processes within and between the person and its environment (Masten, 2001). Parenting quality in early childhood is positively related to the individual resilience level (Gunnar, 2001). Furthermore, children with close supportive friendships have high resilience values (Peltonen, Qouta, Diab, & Punamäki, 2014). Thus, social support, which itself is an external protective factor (Krause & Borawski-Clark, 1994; Sarason et al., 2001), is closely linked to the development of resilience. In turn, resilience mediates the influence of social support on the development of negative mental health symptoms.

It can be assumed that earlier developed individual resilience is especially important when the level of actual social support is low. If there is no possibility to receive help from the environment, people activate their individual internal resources as protective factors. This is a universal, cross-cultural characteristic. Therefore, even if a person currently lacks social support, for instance after the loss of the close social network or if governmental support collapses, it is possible to manage negative impact of environmental stressors and to maintain positive mental health. This emphasizes the necessity to reinforce individual internal resources particularly in childhood (e.g., increase of self-esteem). Intervention programs which show parents how to further support their children to develop effective self-regulation skills are of advantage. Actual social support is particularly meaningful for not resilient people. In studies of Romanian adoptees, strong psychological and physical support by adoptive parents frequently

increased the mental health of children who earlier had no possibility to develop high resilience values (Gunnar, 2001).

There are also some differences between the investigated countries. The stronger association of social support with depression, anxiety, and stress symptoms in the German sample and the stronger associations of resilience with the negative mental health symptoms in the Russian and in the Chinese sample are surprising. Germany is often described as a high individualistic country and China as a high collectivistic country (e.g., Markus & Kitayama, 1990). A possible explanation of these findings is the following. The present study investigated student samples from large universities in Germany, Russia, and China. In Germany, many students are often financially supported by their parents and have the possibility to live at home during their study period (Middendorff, Apolinarski, Poskowsky, Kandulla, & Netz, 2012). In Russia and in China, young people, especially those from villages and small cities, often move to larger cities for the study period. Here, they frequently live alone and work in addition to studying because their families have no possibilities to support them financially (e.g., Korotkova, 2014). This is a high challenge, especially for freshmen, which requires a high level of resilience. Over time they learn to become part of the college community and build up a supportive social network that helps them to protect their mental health. Students with higher resilience values who are self-confident and optimistic are particularly successful in doing this.

In the present study, about 17% of the German participants came from a village or a small city. In the Russian and in the Chinese sample, approximately 60% of the participants came from a village or a small city. Furthermore, while the German sample included more older and advanced students, the Russian and the Chinese students were remarkable younger (see Table 1). It can be assumed that many of the German students do not have the need to activate their internal resources—use their resilience—because they know that they can rely on the support of their social network in stressful situations. In contrast, students in Russia and in China who often live far away from home and their familiar social network must be resilient to cope with depression, anxiety, and stress symptoms. This kind of explanation is open for discussion. Future research might investigate alternative explanations of present findings.

Future longitudinal studies are needed to replicate our analyses. Probably, there are further variables influencing the relationship between social support and resilience, for example, socioeconomic status of the family or different personality traits.

### *Limitations and future directions of research*

Earlier research demonstrated cultural sensitivity of the analyzed constructs, especially stress symptoms (Pietilä & Rytönen, 2008). Therefore, it would be

beneficial to develop instruments which are based on Russian and Chinese cultural values and to compare them to established instruments. However, culture-specific instruments would make cross-cultural comparisons more difficult and the results would not meet the requirements for universal validity (e.g., Oei et al., 2013).

In present study, actual awareness of social support was established in student samples. However, the amount of social support participants got earlier in life, especially in childhood, was not measured. Resilience development is associated with parental competence and parenting quality (Fergusson & Lynskey, 1996). In future studies, it would be advisable to measure both kinds of support to understand more about their connection to resilience.

Furthermore, when interpreting present results, it should be considered that the German sample was considerably older than the sample in Russia and in China. This, in part, is due to the different educational systems in the three countries. In Germany, university freshmen are typically older than in Russia and in China. Additionally, while the German sample consisted of more advanced students (>4 study year), in the Russian and in the Chinese sample more students from the 1 and 2 study years were included (see Table 1).

A methodical limitation of the present study could be seen in the various survey methods (Germany: online; Russia: paper-and-pencil; China: online and paper-and-pencil). However, including the survey method as a control variable in the calculations, no differences between the three samples and within the Chinese sample were found.

## Conclusions

The present results help to figure out two positive factors of mental health: resilience and social support. Cross-culturally, both factors are negatively associated with depression, anxiety, and stress symptoms. Regarding present results, it can be assumed that negative environmental impact and life experiences do not necessarily cause negative mental health effects such as depression symptoms. It would be worthwhile in future experimental studies to investigate, if resilience (internal resource) and social support (external resource) reduce individual sensitivity for mental disorders. If this is the case, these results should be used in practice to develop intervention programs to increase for instance resilience. Especially, children growing up in unfavorable familial circumstances could benefit from such programs.

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## References

- Berry, J. W. (1989). Introduction to methodology. In H. Triandis & J. W. Berry (Eds.), *Handbook of cross-cultural psychology* (Vol. 2, pp. 1–28). Boston, MA: Allyn & Bacon.
- 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*. doi:10.1037/pas0000353
- Biegel, D. E. (1985). The application of network theory and research to the field of aging. In W. J. Sauer & R. T. Coward (Eds.), *Social support networks and the care of the elderly: Theory, research and practice* (pp. 251–74). New York, NY: Springer.
- Brailovskaia, J., & Margraf, J. (2016). Comparing Facebook Users and Facebook Non-Users: Relationship between Personality Traits and Mental Health Variables – an Exploratory Study. *PLoS ONE*, *11*(12), e0166999. doi:10.1371/journal.pone.0166999
- Brailovskaia, J., Schönfeld, P., Kochetkov, Y., & Margraf, J. (2017). What does migration mean to us? USA and Russia: Relationship between migration, resilience, social support, happiness, life satisfaction, depression, anxiety and stress. *Current Psychology*. doi:10.1007/s12144-017-9627-3
- Caplan, G. (1990). Loss, stress, and mental health. *Community Mental Health Journal*, *26*, 27–48.
- Cockerham, W. C., Hinote, B. P., & Abbott, P. (2006). Psychological distress, gender, and health lifestyles in Belarus, Kazakhstan, Russia, and Ukraine. *Social Science & Medicine*, *63*, 2381–2394.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, 310–357.
- Collishaw, S., Pickles, A., Messer, J., Rutter, M., Shearer, C., & Maughan, B. (2007). Resilience to adult psychopathology following childhood maltreatment: Evidence from a community sample. *Child Abuse & Neglect*, *31*, 211–229.
- Connor, K. M., & Zhang, W. (2006). Resilience: Determinants, measurement, and treatment responsiveness. *CNS Spectrums*, *11*, 5–12. doi:10.1017/S1092852900025797
- Corp, S. (2012). *IBM SPSS statistics for Macintosh, Version 21.0*. Armonk, NY: IBM Corp.
- Fergusson, D. M., & Lynskey, M. T. (1996). Adolescent resiliency to family adversity. *Journal of Child Psychology and Psychiatry*, *37*, 281–292.
- Fydreich, T., Sommer, G., Tydecks, S., & Brähler, E. (2009). Fragebogen zur sozialen Unterstützung (F-Soz-U): Normierung der Kurzform (K-14). *Zeitschrift für Medizinische Psychologie*, *18*, 43–48.
- Gao, Z., Yang, S., Margraf, J., & Zhang, X. (2013). Reliability and validity test of Wagnild and Young's resilience scale (RS-11) in Chinese. *China Journal of Health Psychology*, *21*, 1324–1326.
- Greenberg, P. E., Stiglin, L. E., Finkelstein, S. N., & Berndt, E. R. (1993). The economic burden of depression in 1990. *Journal of Clinical Psychiatry*, *54*, 405–418.

- Gunnar, M. R. (2001). Effects of early deprivation: Findings from orphanage-reared infants and children. In C. A. Nelson & M. Luciana (Eds.), *Handbook of developmental cognitive neuroscience* (pp. 617–629). Cambridge, MA: MIT Press.
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 44*, 227–239.
- Hoffman, D. L., Dukes, E. M., & Wittchen, H. U. (2008). Human and economic burden of generalised anxiety disorder. *Depress Anxiety, 25*, 72–90.
- Höhmann, H. H. (2004, February 3). Wirtschaftssystem und ökonomische Entwicklung. *Bundeszentrale für politische Bildung, 281*. Retrieved from <http://www.bpb.de/izpb/9437/wirtschaftssystem-und-oekonomische-entwicklung#art2>
- Iecovich, E., Barasch, M., Mirsky, J., Kaufman, R., Avgar, A., & Kol-Fogelson, A. (2004). Social Support Networks and Loneliness Among Elderly Jews in Russia and Ukraine. *Journal of Marriage and Family, 66*, 306–317.
- Jin, S., Zheng, J., & Xin, Z. (2009). The structure and characteristics of contemporary Chinese values. *Acta Psychologica Sinica, 41*, 1000–1014.
- Kim, H. S., Sherman, D. K., & Taylor, S. E. (2008). Culture and Social Support. *American Psychologist, 63*, 518–526. doi:10.1037/0003-066X
- Kim, S. W., & Pridemore, W. A. (2005). Social support and homicide in transitional Russia. *Journal of Criminal Justice, 33*, 561–572.
- Korotkova, M. S. (2014). Students' social status in subjective measurement: some outcomes of an empirical research. Retrieved from [http://www.zpu-journal.ru/zpu/contents/2014/4/Korotkova\\_Students-Social-Status/11\\_2014\\_4.pdf](http://www.zpu-journal.ru/zpu/contents/2014/4/Korotkova_Students-Social-Status/11_2014_4.pdf)
- Krause, N., & Borawski-Clark, E. (1994). Clarifying the functions of social support in later life. *Research on Aging, 16*, 251–279.
- Latova, N. V., & Latov, Y. V. (2007). Peculiarities of the Westernization of the students' mentality in modernizing nations. *Sociological Research, 11*, 90–98.
- Leppert, K. (2003). RS-Resilienzskala. In E. Brähler, J. Schumacher, & B. Strauß (Hrsg.), *Diagnostische Verfahren in der Psychotherapie* (Diagnostik für Klinik und Praxis, Band 1, 2. Auflage) (S. 295–298). Göttingen, Deutschland: Hogrefe.
- Leppert, K., Koch, B., Brähler, E., & Strauß, B. (2008). Die Resilienzskala (RS) – Überprüfung der Langform RS-25 und einer Kurzform RS-13. *Klinische Diagnostik und Evaluation, 1*, 226–243.
- Lovibond, P. F. (1998). Long-Term Stability of Depression, Anxiety, and Stress Syndromes. *Journal of Abnormal Psychology, 107*, 520–526.
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales (DASS)*. Sydney, Australia: Psychology Foundation.
- Margraf, J., Lavalley, K., Zhang, X. C., & Schneider, S. (2016). Social Rhythm and Mental Health: A Cross-Cultural Comparison. *PLoS ONE, 11*, e0150312. doi:10.1371/journal.pone.0150312
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224–253.
- Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*, 227–238. doi:10.1037/0003-066X.56.3.227
- Middendorf, E., Apolinarski, B., Poskowsky, J., Kandulla, M., & Netz, N. (2012). Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2012.

- Bundeministerium für Bildung und Forschung. Retrieved from [https://www.bmbf.de/pub/wslsdl\\_2012.pdf](https://www.bmbf.de/pub/wslsdl_2012.pdf)
- Ng, F., Trauer, T., Dodd, S., Callaly, T., Campbell, S., & Berk, M. (2007). The validity of the 21-item version of the Depression Anxiety Stress Scales (DASS-21) as a routine clinical outcome measure. *Acta Neuropsychiatrica*, *19*, 304–310.
- Norton, P. J. (2007). Depression Anxiety and Stress Scales (DASS-21): Psychometric analysis across four racial groups. *Anxiety, Stress & Coping*, *20*, 253–265.
- Oei, T. P. S., Sawang, S., Goh, Y. W., & Mukhtar, F. (2013). Using the Depression Anxiety Stress Scale 21 (DASS-21) across cultures. *International Journal of Psychology*, *48*, 1018–1029. doi:10.1080/00207594.2012.755535
- Peltonen, K., Qouta, S., Diab, M., & Punamäki, R. L. (2014). Resilience among children in war: the role of multilevel social factors. *Traumatology*, *20*, 232–240.
- Pietilä, I., & Rytönen, M. (2008). Coping with stress and by stress: Russian men and women talking about transition, stress and health. *Social Science & Medicine*, *66*, 327–338. doi:10.1016/j.socscimed.2007.09.002
- Poltavski, D., & Ferraro, F. R. (2003). Stress and illness in American and Russian college students. *Personality and Individual Differences*, *34*, 971–982.
- Rapaport, M. H., Clary, C., Fayyad, R., & Endicott, J. (2005). Quality-of-Life impairment in depressive and anxiety disorders. *The American Journal of Psychiatry*, *162*, 1171–1178.
- Rödder, A. (2011). *Geschichte der deutschen Wiedervereinigung*. München, Deutschland: C.H. Beck.
- Sarason, B. R., Sarason, I. G., & Gurung, R. A. R. (2001). Close personal relationships and health outcomes: A key to the role of social support. In S. Duck (Ed.), *Personal Relationships* (pp. 15–41). Chichester, England: Wiley.
- Sass, D. A. (2011). Testing measurement invariance and comparing latent factor means within a confirmatory factor analysis framework. *Journal of Psychoeducational Assessment*, *29*, 347–363. doi:10.1177/0734282911406661
- Schönfeld, P., Braïlovskaia, J., Bieda, A., Zhang, X. C., & Margraf, J. (2016). The Effects of Daily Stress on Positive and Negative Mental Health: Mediation Through Self-efficacy. *International Journal of Clinical and Health Psychology*, *16*, 1–10.
- Schumacher, J., Leppert, K., Gunzelmann, T., Strauß, B., & Brähler, E. (2005). Die Resilienzskala - Ein Fragebogen zur Erfassung der psychischen Widerstandsfähigkeit als Personmerkmal. *Zeitschrift für Klinische Psychiatrie und Psychotherapie*, *53*, 16–39.
- Stadelbauer, J. (2010, October 20). Bevölkerungsverteilung und Demografie. *Bundeszentrale für politische Bildung*. Retrieved from <http://www.bpb.de/internationales/europa/russland/479demografie>
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, *96*, 506–520.
- Trumpf, J., Vriends, N., Meyer, A. H., Becker, E. S., Neumer, S. P., & Margraf, J. (2010). The Dresden Predictor Study of anxiety and depression: objectives, design, and methods. *Social Psychiatry and Psychiatric Epidemiology*, *45*, 853–864.
- Tucker, K., Ozer, D., Lyubomirsky, S., & Boehm, J. (2006). Testing for Measurement Invariance in the Satisfaction with Life Scale: A Comparison of Russians and North Americans. *Social Indicators Research*, *78*, 341–360.
- Ungar, M. (2008). Resilience across cultures. *British Journal of Social Work*, *38*, 218–235.



- Velten, J., Lavalée, K. L., Scholten, S., Meyer, A. H., Zhang, X. C., & Schneider, S. (2014). Lifestyle choices and mental health: a representative population survey. *BMC Psychology*, 2, 58. doi:10.1186/s40359-014-0055-y
- Wagnild, G. M., & Young, H. M. (1990). Resilience among older women. *Image: Journal of Nursing Scholarship*, 22, 252–255.
- Wagnild, G. M., & Young, H. M. (1993). Development and psychometric evaluation of the resilience Scale. *Journal of Nursing Measurement*, 1, 165–178.
- Wen, Z., & Fan, X. (2015). Monotonicity of Effect Sizes: Questioning kappa-squared as mediation effect size measure. *Psychological Methods*, 20, 193–203.
- Wittchen, H. U., & Jacobi, F. (2005). Size and burden of mental disorders in Europe – a critical review and appraisal of 27 studies. *European Neuropsychopharmacology*, 15, 357–376. doi:10.1016/j.euroneuro.2005.04.012
- World Health Organization. (2001). *The World Health Report 2001: Mental Health, New Understanding, New Hope*. Geneva, Switzerland: World Health Organization.

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