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Brief Form of the Perceived Social Support Questionnaire (F-SozU K-6): Validation, Norms, and Cross-Cultural Measurement Invariance in the USA, Germany, Russia, and China

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The present study evaluates a brief, cross-cultural scale that maps a wide range of social resources, useful in large-scale assessments of perceived social support. The Brief Perceived Social Support Questionnaire (Fragebogen zur Sozialen Unterstützung Kurzform mit sechs Items, F-SozU K-6) was examined in representative and university student samples from the United States ($N_{representative}$ = 3038), Germany ($N_{representative}$ = 2007, $N_{student}$ = 5406), Russia ($N_{representative}$ = 3020, $N_{student}$ = 4001), and China ($N_{student}$ = 13,582). Cross-cultural measurement invariance testing was conducted in both representative and student samples across countries. Scores on the F-SozU K-6 demonstrated good reliability and strong model fit for a unidimensional structure in all samples, with the exception of poor model fit for German students. The scores on F-SozU K-6 correlated negatively with scores on depression, anxiety, and stress measures and positively with scores on positive mental health measures. Norms for gender and age groups were established separately based on each representative sample. Cross-cultural measurement invariance testing found partial strong measurement invariance across three general population samples and three student samples. Furthermore, a simulation study showed that the amount of invariance observed in the partial invariance model had only a negligible impact on mean comparisons. Psychometric findings across diverse cultural contexts supported the robustness and validity of the F-SozU K-6 for cross-cultural epidemiologic studies.

Public Significance Statement
This study found that the brief Perceived Social Support Questionnaire (F-SozU K-6) displayed overall good psychometric properties and validity in three large representative (the United States, Germany, and Russia) and three university student (Germany, Russia, and China) samples. Cross-cultural measurement invariance tests supported partial strong invariance across samples. The scale appears to be a reliable and economical tool for perceived social support measurement.

Keywords: perceived social support, questionnaire validation, cross-cultural measurement invariance, simulation study, cross-cultural comparisons

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Social support is a broadly researched, multifaceted construct within mental health research. It is usually defined as support obtained from the individual's social network, helping to cope with tasks and stress and/or to achieve personal goals (Fydrich, Geyer, Hessel, Sommer, & Brähler, 1999; Fydrich & Sommer, 2003; Fydrich, Sommer, & Brähler, 2007). It also renders the feeling one

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is esteemed, loved, cared for, and valued (Cobb, 1976). Depending on study purpose and theoretical framework, social support can be divided by sources of support (different social ties such as family, friends, and colleagues), types of support (emotional, instrumental, companionship, etc.), or quantitative and qualitative aspects (availability, adequacy, and seeking, etc.). Among the different kinds of social support, perceived social support refers to an individual's evaluation of or feeling whether the social network is supportive, which is usually based on assessments of present and past social interactions (Fydrich et al., 1999; Fydrich & Sommer, 2003; Fydrich, Sommer, Tydecks, & Brähler, 2009). Compared with received social support, which emphasizes the objective support actually received within the social network, perceived social support has been shown to be more constantly linked to aspects of well-being such as adjustment (Helgeson, 1993) and coping with stress or depression (e.g., Norris & Kaniasty, 1996).

Wide-scale research has demonstrated that perceived social support plays an important role in preventing negative affect, mental illness, and physical disorders (e.g., Auerbach, Bigda-Peyton, Eberhart, Webb, & Ho, 2011; Brailovskaia, Schönfeld, Kochetkov, & Margraf, 2017; Brailovskaia et al., 2018; Cohen & Janicki-Deverts, 2009; Hsieh, 2014; Lakey & Orehek, 2011; Rueger, Malecki, & Demaray, 2010; Uchino, Cacioppo, & Kiecolt-Glaser, 1996), in buffering stress, strain, and previous bullying or trauma experience (Reid, Holt, Bowman, Espelage, & Green, 2016; Weiss, Garvert, & Cloitre, 2015), and in enhancing psychological health, adjustment, and well-being (Cohen, 2004; Gülaçtı, 2010; Han, Berry, & Zheng, 2016; Tian, Liu, Huang, & Huebner, 2013). Moreover, in a recent study using data from 139 countries, the positive association between perceived social support and self-satisfaction was shown to be remarkably consistent across different cultural, economic, and geographic settings (Kumar, Calvo, Avendano, Sivaramakrishnan, & Berkman, 2012).

Several self-report measures are considered well-established for assessing perceived social support in different cultures and languages. However, most available tools contain a relatively large number of items (e.g., Social Provisions Scale, SPS-24, Cutrona & Russell, 1987; Social Support Questionnaire, SSQ-27, Sarason, Levine, Basham, & Sarason, 1983). Thus, they are of limited use in studies that typically require brief instruments. Some instruments focus only on close relationships, such as with family, friends, and significant others in the multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988), or friends and family scales in Procidano and Heller's (1983) Perceived Social Support measure (PSS). These tools may miss the support from other more general networks such as neighbors, colleagues, community (i.e., general others). Furthermore, some short questionnaires have not been evaluated in or conceived for the general population. For instance, the ENRICHD Social Support Inventory (ESSI-8; Mitchell et al., 2003) and Duke-UNC Functional Social Support Questionnaire (DUFSS; Broadhead, Gehlbach, De Gruy, & Kaplan, 1988) have mainly been tested in patients, while the SSQ-6 was tested only in student samples (Sarason, Sarason, Shearin, & Pierce, 1987). Therefore, a brief, cross-culturally well-established scale that maps a general sense of perceived social support across a broad range of populations could be beneficial.

A six-item Perceived Social Support Questionnaire (Fragebogen zur Sozialen Unterstützung Kurzform mit sechs Items, F-SozU K-6) was developed and validated by Kliem et al. (2015) as a brief version of the Social Support Questionnaire (F-SozU) by Fydrich et al. (1999). In German-speaking countries, this F-SozU, which has an original 54-item version as well as a 22-item (three-dimensional, measuring three aspects of social support, including standard support, emotional support, and social inergration) and a 14-item (unidimensional, assessing a collection of general perceived social support) short versions, has been widely used to measure general perceived and anticipated social support in the daily life environment both in general population and in clinical samples (Fydrich et al., 2007, 2009). The recently validated F-SozU K-6 focuses exclusively on perceived social support, and is based on a unidimensional structure directly from the F-SozU K-14.Statements refer to generalized experiences rather than to concrete situations and cover different sources of support, including family, friends, neighbors, significant persons, and general others. In addition to the categories of types of support, the items also cover emotional, instrumental, and social integration aspects of support. Taken together, this broad coverage allows the short instrument to capture general perceived social support. Furthermore, this six-item version has demonstrated convincing psychometric qualities within a representative German sample ($N = 2{,}508$), including high internal consistency at .90, a good fit of a one-factor model, and statistically significant, but small correlations with scores on self-report measures of depression, generalized anxiety, and somatic symptoms (Kliem et al., 2015).

Because that social support is closely related to one's social network, different cultural context and society may influence the understanding or perception of social support. Western cultures (i.e., European and American) are generally more individualistic, where people primarily look after themselves, their core families, and close relationships (Hofstede, 2001). Thus, social support from family, friends, and close relationships covers the main part of their social support sources. Meanwhile, in more group-oriented cultures, people belong to "in-groups" and are interdependent on each other. In those societies, family (usually including all relatives and not just the core family members), friends, and very often other acquaintances play a more essential role in everyday life and coping with challenges. Thus, it is important to evaluate the properties of a social support assessment instrument cross-culturally before using it in a new population.

In the current study, we evaluated the psychometric properties of F-SozU K-6 in samples from the United States (as an example of North American culture), Germany (an example of Western European culture), Russia (an example of Eastern European culture), and China (an example of East Asian culture). Both Germany and the United States represent individualistic cultures, where an independent self-construct is fostered and individual's autonomy, competence, and privacy are advocated (Fiske, Kitayama, Markus, & Nisbett, 1998). However, the United States scores 91 on the 0–100 Hofstede Independence Index, indicating much lower level of interdependence than Germany, which scores 67 on the same scale (Hofstede, 2001). Russia and China, on the other hand, represent collectivistic cultures (20 in China and 39 in Russia on the Hofstede Individualism Index; Hofstede, 2001), where individual and other group members are more strongly linked (Fiske et al., 1998). However, there are also differences between the interdependence styles in Russia and China. Chinese society values "harmony-interdependent relationship," where peo-

ple may worry about the potential negative consequence of direct support-seeking (e.g., hurting "faces," trouble others by ones' own problems; Oetzel, & Ting-Toomey, 2003; Ting-Toomey, 1988). This may result in more implicit help-seeking than in Western Europeans and North Americans (Kim, Sherman, & Taylor, 2008). Russia, on the other hand, has a practical-interdependence style, that emphasizes developing and maintaining a practical informal network that can be helpful in solving problems (Michailova & Hutchings, 2006; Rose, 2000). For instance, Russian people are more likely to give direct and even unsolicited advice, as a form of social support instead of personal boundary violation, than European Americans (Dutton, 2012; Chentsova-Dutton & Vaughn, 2012). Thus, the F-SozU K-6 could be suitable for all four cultures, for it contains items that refer to general others (Items 1, 2, 4, and 6) as well as items that refer to friends and family specifically (Item 3 and Item 5).

In exploring pure cross-cultural differences, directly comparing the sum scores across different language versions would be inadequate, as the results may contain methodological biases (Bowden & Fox-Rushby, 2003; van de Vijver & Leung, 1997; van de Vijver & Tanzer, 2004). Therefore, cross-cultural measurement invariance tests together with within-culture validation are essential. Statistically, cross-group equivalence is best tested via a progressive series of multiple-group confirmatory factor analyses (CFA; Bowen & Masa, 2015; Brown, 2015). The first level is *configural* (*structural*) invariance, which indicates identical factor loading patterns across groups. The second level is *weak* (*metric*) invariance, which indicates the same meaning of the underlying construct across groups. The third level is called *strong* or *scalar* invariance, implying that differences in scales scores are caused only by differences in true levels of the latent factor. However, invariance test usually does not end up with an all or nothing verdict on measurement invariance. Byrne, Shavelson, and Muthén (1989) introduced logic and steps of testing partial invariance once a full invariance model is not supported.

Strictly speaking, mean comparisons between culture groups are only meaningful if full strong measurement invariance has been established. Thus, partial invariance potentially complicates mean comparisons between groups. Simulation studies can be helpful to describe the impact of any partial strong invariance on mean comparisons. Data are generated based on both the least constrained model (configural model) and the most constrained model (strong model) for scale mean comparisons. If the effect sizes of mean difference comparisons from the configural models were similar to that from the strong invariance models, the particular amount of invariant indicators is negligible.

In summary, the F-SozU K-6 is a short and economical instrument with strong psychometric properties, which make it especially suitable for large population surveys. However, it lacks validation beyond German samples. A social support scale that functions cross-nationally would facilitate future clinical epidemiology studies. Therefore, the current study evaluated the F-SozU K-6 in representative samples from Germany, Russia, and the United States and in large student samples from China, Germany, and Russia. Scores obtained from the student samples in China served as the reference data in the invariance analyses.

The first aim of the current study was to test the psychometric properties of the F-SozU K-6 within each sample. Regarding criterion validation, we hypothesized that the scores of F-SozU K-6 would be positively correlated with positive mental constructs (positive mental health, subjective happiness, and satisfaction with life) and negatively associated with mental illness measures (depression, anxiety, and stress), as found in previous studies using other social support scales (e.g., Auerbach et al., 2011; Han et al., 2016; Kumar et al., 2012). Moreover, invariance tests across genders within Germany, Russia, and the United States were conducted, and norms that include gender-across-life span information for these three cultures were created. It is commonly found that women report receiving greater support than men (e.g., in terms of network size and number of support, Antonucci & Akiyama, 1987; and in terms of support from friends and significant other, Zimet et al., 1988). Therefore, it was expected that evidence for gender invariance would be established and that females would perceive a higher level of social support than males.

The second goal was to test measurement invariance and compare factor means of F-SozU K-6 across the three representative samples and the three student samples. Because of the universality of the social support construct (e.g., Kumar et al., 2012) and the cultural uniqueness of the samples (e.g., Hofstede, 2001) reviewed above, we expected at least partial strong invariance.

Method

Participants and Procedure

All participants were recruited within the BOOM (Bochum Optimism and Mental Health) study, a large-scale, cross-cultural, longitudinal investigation on protective factors and risk factors in mental health and mental illness. The project was approved by the Ethics Committee of the Faculty of Psychology at Ruhr University Bochum. Participants gave informed consent before completing questionnaires or answering questions via telephone.

Representative samples. Surveys regarding representative samples from the United States, Germany, and Russia were conducted by the same contractor (USUMA, Berlin), an independent institute for opinion and social research. Participants were all recruited via telephone interviews using the first official language in the country. Representativeness for the adult populations in the three countries was based on the latest available register-assisted census data from each federal office before the sample selection method began, respectively.

In the United States, a random digit number sample was generated using last birthday method to allow an equal spread. Sample quantities were selected across various demographic variables based on assumed completion rates. In case of landline numbers, a target person was randomly chosen within a family using the Kish grid method (Kish, 1949). In Germany, contact numbers came from both registered and generated telephone numbers (including landline and cellular phone numbers). First a representative random sample of contacted households within the country was selected using Arbeitskreise-Deutscher-Markt-Telephone-sampling-system, which is a three-stage stratified random sampling method (ADM, 2018). Then within the household, a target person was randomly chosen again using the Kish grid method (Kish, 1949). In Russia, sampling design included four stages. The first two stages developed a sample that represented the Russian Federation both as a whole and in regional clusters based on a scheme of regions and locations. Then telephone numbers from the regions

precodes and cell-phone numbers of the national and regional providers were randomly selected.

Data collection took place from July 16th to December 9th, 2013 for the U.S. sample, from November 20th 2012 to January 18th 2013 for the German sample, and from December 5th 2013 to February 20th 2014 for the Russian sample. Each session took about half an hour. Participants took part in the interview voluntarily and without compensation. In total, 8,065 participants (3,038 from the United States, response rate was 15%; 2007 from Germany, response rate: 8%; and 3,020 from Russia, response rate: 14%) completed the survey. To better represent the general population, weighted data can be applied. However, in the current study our main focus was on the psychometric properties of the scales and the invariance test across-countries and, therefore, original data (without weightings) was presented and used in all analyses. Table 1 presents an overview of the demographic information of the valid samples.

University student samples. Chinese student participants came from Capital Normal University, Shanghai Normal University, Nanjing University, Hebei United University, and Guizhou University of Finance and Economics, located in five different cities. Freshman year students from 5 to 23 different departments received emails regarding the survey within the first month of their study, from September 2012 to October 2013. A total of 13,582 students (response rate: 94.5%) voluntarily completed the survey administered in group testing sessions (online version in two universities, paper-pencil version in another three universities) with a compensation of cash (approximately the equivalent of $1.5). All 5,406 German student participants were from Ruhr-Universität Bochum. They were recruited in October 2011 by e-mail invitation to all registered bachelor students at the time with an enclosed link to the online questionnaire. Students who completed the online survey had a chance to win a lottery (reward was either a tablet computer or a gift voucher). The Russian sample consisted of students from 4–6 different institutes at the University of Voronesh, Lomonossov University Moscow, and the University of Orenburg. Invitation letters were sent to all students from those institutes, and 4,001 participants (response rate: 95.3%) voluntarily filled in paper questionnaires with compensation of lottery (e-book devices). Data were collected from November 2012 to March, 2013. All surveys took approximately 40 min to complete. Sample characteristics are described in Table 1.

Materials

All questionnaires used in the current study have validated German versions. Validated English versions exist for all questionnaires but the F-SozU K-6. The remaining English, Russian, and Chinese versions were developed from the German or English original version using translation-back-translation method (Brislin, 1970). Translators were native speakers proficient in the other language and trained psychologists (e.g., Chinese native speakers who studied and taught German literature and/or psychology at a university).

Table 1
Demographic Information Description of All Samples

Demographic feature	Representative sample			Student sample		
	USA	Germany	Russia	China	Germany	Russia
Total *N*	3,038	2,007	3,020	13,418 (98.8)	4,532 (86.3)	3,956 (99.0)
Gender, *N* (%)						
Female	1,786 (58.8)	1,181 (58.8)	1,607 (53.2)	8,383 (61.7)	2,911 (53.8)	2,568 (64.25)
Male	1,252 (41.2)	826 (41.2)	1,413 (46.8)	5,071 (37.3)	2,334 (43.2)	1,425 (35.6)
Age						
Mean (*SD*)	55.12 (17.50)	51.95 (17.36)	42.24 (17.13)	19.71 (1.85)	26.54 (3.98)	19.81 (2.35)
Range	18–99	18–92	18–100	14–42	18–60	15–48
Married/have steady partner, *N* (%)	1,656 (54.5)	1,032 (51.0)	1,806 (59.8)	2,275 (16.8)	2,894 (53.53)	1,990 (49.7)
Years of education[a], *N* (%)						
Did not graduate high school	288 (10.6)	416 (20.7)	112 (3.7)	—	—	—
High school graduated	1,714 (62.8)	1,477 (73.6)	1,783 (59.0)	—	—	—
Higher education graduated	719 (23.7)	439 (21.9)	1,125 (37.3)	13,418 (100)	4,531 (100)	3,956 (100)
Employment status, *N* (%)						
Current student	N/A	124 (6.3)	201 (6.9)	13,418 (100)	4,531 (100)	3,956 (100)
Full/part time Working	N/A	1,107 (56.9)	1,529 (52.5)	5,273[b] (38.8)	3,086[b] (57.1)	1,269[b] (31.7)
Unemployed	N/A	73 (3.8)	231 (7.9)	—	—	—
Homemaker[c]	N/A	50 (2.5)	240 (8.2)	—	—	—
Retired/disability	N/A	591 (30.4)	676 (23.2)	—	—	—
Family economic status[d] or FAS-II categories						
Low	308 (10.9)	313 (15.6)	867 (29.8)	7,152 (52.7)	261 (4.87)	685 (17.1)
Medium	1,057 (37.3)	685 (34.1)	1,405 (48.3)	4,573 (33.7)	2,174 (40.2)	2,115 (52.9)
High	1,470 (51.9)	726 (36.2)	556 (19.1)	1,818 (13.4)	2,051 (37.9)	1,182 (29.5)

Note. FAS-II = Family Affluence Scale-II.
[a] Higher education included college, university, masters, and doctorate. [b] In student samples, the number (percentage) of working individuals referred to how many of them had a part-time job other than being a student. [c] Homemaker included people who were busy with household, on maternity leave, or had left employment to care for child(ren). [d] Since the FAS-II was not tested in German representative sample, the family economic status in German was derived based on the average family net income per month (in euro) in Germany (low = income < 1,250; medium = income between 1,250 and 2,500; high = income > 2,500).

All the scales used in the current study except the F-SozU K-6 and Family Affluence Scale were previously tested for cross-cultural measurement invariance, with support for at least partial strong invariance for each measure (Bieda et al., 2017; Scholten, Velten, Bieda, Zhang, & Margraf, 2017). The internal consistency of each scale within each sample is presented in Table 2.

The brief form of Perceived Social Support Questionnaire (F-SozU K-6). The 6-item brief version of F-SozU (Kliem et al., 2015) measures general perceived social support with a 5-point Likert scale ranging from 1 (*not true at all*) to 5 (*very true*). Higher scores indicate higher, lower scores lower levels of perceived social support.

Depression, Anxiety, and Stress Scales (DASS-21). The 21-item short version of the DASS (Henry & Crawford, 2005; Nilges & Essau, 2015) is used for assessing symptoms of depression, anxiety, and stress (seven items for each) from daily stressors over the past week. Participants respond on a 4-point Likert scale from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). Higher average scores on each subscale indicate more severe symptoms within that category.

Positive Mental Health Scale (PMH-9). The 9-item PMH (Lukat, Margraf, Lutz, van der Veld, & Becker, 2016) assesses positive aspects of well-being and health with a 4-point Likert scale ranging from 0 (*do not agree*) to 3 (*agree*). Higher scores indicate better emotional well-being.

Satisfaction with Life Scale (SWLS). The 5-item SWLS measures global life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985; Glaesmer, Grande, Braehler, & Roth, 2011). Participants respond on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores suggest higher life satisfaction.

Subjective Happiness Scale (SHS). The 4-item SHS assesses global subjective happiness (Lyubomirsky & Lepper, 1999; Swami et al., 2009). Items are rated on a 7-point scale with different anchor wording dependent on the questions. Higher scores indicate higher subjective happiness.

Family Affluence Scale (FAS-II). FAS is a 4-item scale measuring family wealth. Items cover the numbers of automobiles, computers and holiday-purposed travel as well as whether participants have their own bedroom. It was developed by the World Health Organization (WHO) and has been validated across 35 countries (including the United States, Germany, and Russian) showing a high correlation with the national gross domestic product (Boyce, Torsheim, Currie, & Zambon, 2006). It was also validated in a Chinese sample by Liu et al. (2012). Scores can be allocated to three categories as recommended by Boyce et al. (2006), indicating low (score range from 0 to 2), medium (score

Table 2
Means, SDs, Internal Consistency (Cronbach's α) and Average Interitem Correlation (AIC), Composite Reliability (ρ) and Its 95% Confidence Interval, and Correlation Results of F-SoU K-6 and All Other Measures

Measure	*Mean* (*SD*)	*S*	*K*	α	AIC	ρ [95% CI]	*r*	*Mean* (*SD*)	*S*	*K*	α	AIC	ρ [95% CI]	*r*
Sample	German representative							German student						
F-SoU K-6	27.55 (3.29)	35.30	135.96	.81	.42	.89 [.87, .90]		25.62 (4.85)	12.95	85.79	.90	.60	.94 [.93, .94]	
Stress	4.76 (4.57)	8.89	97.59	.88	.52	.92 [.91, .93]	−.20	7.56 (4.77)	2.03	73.67	.86	.48	.91 [.90, .92]	−.25
Anxiety	1.88 (3.01)	57.40	188.18	.80	.38	.90 [.88, .92]	−.27	2.98 (3.39)	28.52	122.54	.78	.34	.87 [.85, .88]	−.33
Depression	2.24 (3.31)	45.21	181.46	.85	.47	.93 [.92, .94]	−.34	4.69 (4.61)	11.96	98.56	.90	.56	.94 [.93, .94]	−.44
PMH	22.08 (4.60)	13.69	155.73	.89	.49	.93 [.93, .94]	.40	18.08 (5.99)	2.56	115.57	.93	.59	.95 [.95, .96]	.51
SWLS	27.45 (5.54)	5.65	57.83	.85	.53	.85 [.83, .86]	.38	25.09 (6.57)	4.36	47.50	.88	.61	.88 [.88, .89]	.47
SHS	21.76 (4.06)	3.85	34.57	.71	.42	.72 [.69, .74]	.38	18.88 (5.40)	1.91	31.65	.87	.64	.87 [.87, .88]	.48
Sample	Russian representative							Russian student						
F-SoU K-6	25.73 (4.64)	21.76	99.82	.78	.39	.88 [.87, .89]		24.24 (5.05)	7.18	72.22	.87	.54	.90 [.89, .90]	
Stress	5.38 (4.63)	8.71	98.62	.86	.47	.91 [.90, .91]	−.22	6.82 (4.44)	4.31	75.56	.80	.35	.84 [.83, .85]	−.22
Anxiety	3.15 (3.80)	23.76	131.09	.82	.40	.89 [.88, .90]	−.19	3.88 (3.83)	16.41	103.06	.79	.35	.86 [.84, .87]	−.23
Depression	3.79 (3.88)	21.41	118.95	.81	.39	.89 [.88, .90]	−.27	4.36 (4.13)	15.15	99.11	.83	.31	.89 [.88, .90]	−.32
PMH	21.00 (5.22)	15.76	163.03	.85	.39	.91 [.90, .92]	.41	19.02 (5.13)	4.79	123.54	.86	.42	.90 [.89, .90]	.46
SWLS	23.61 (6.69)	1.85	41.85	.76	.40	.76 [.74, .77]	.33	24.36 (5.78)	3.30	47.07	.81	.49	.81 [.80, .82]	.35
SHS	19.96 (4.96)	3.09	28.40	.48	.21	.48 [.45, .51]	—	20.39 (4.42)	2.63	32.50	.73	.45	.74 [.73, .75]	.38
Sample	U.S. representative							Chinese student						
F-SoU K-6	25.38 (5.33)	16.48	107.63	.89	.57	.93 [.93, .94]		24.16 (5.38)	5.47	74.64	.90	.59	.92 [.92, .93]	
Stress	6.22 (4.81)	6.15	87.76	.85	.46	.90 [.89, .91]	−.30	3.33 (3.10)	14.39	99.52	.77	.33	.85 [.84, .86]	−.18
Anxiety	4.28 (4.53)	15.79	104.63	.83	.43	.91 [.90, .92]	−.30	2.89 (2.72)	30.24	133.22	.74	.32	.86 [.86, .87]	−.17
Depression	4.04 (4.85)	18.71	123.73	.89	.55	.94 [.94, .95]	−.41	1.81 (2.44)	61.31	205.22	.78	.36	.90 [.90, .91]	−.24
PMH	23.15 (5.04)	33.56	260.49	.92	.56	.96 [.95, .96]	.42	21.13 (5.05)	10.16	151.26	.90	.49	.93 [.93, .94]	.35
SWLS	27.06 (6.55)	7.23	69.21	.84	.53	.84 [.83, .85]	.38	23.98 (6.47)	3.70	52.25	.87	.59	.87 [.86, .87]	.28
SHS	22.18 (4.71)	9.48	50.87	.58	.34	.55 [.52, .57]	—	21.74 (4.27)	4.88	39.83	.75	.45	.74 [.74, .75]	.35

Note. CI = confidence interval; F-SozU K-6 = Perceived Social Support Questionnaire (6 items; possible range 6–30); Anxiety, Stress, and Depression were subscales of the Depression, Anxiety, and Stress Scales (each subscale contains 7 items, possible range 0–21); PMH = Positive Mental Health Scale (9 items; 0–27); SWLS = Satisfaction with life Scale (5 items; 5–35); SHS = Subjective Happiness Scale (4 items; 4–28); S = skewness values of Mardia's multivariate normality test; K = kurtosis values of Mardia's multivariate normality test. Because of the low Cronbach's α and composite reliability of SHS in the United States and Russian representative samples, the correlations between the F-SozU K-6 and the SHS were omitted. All correlation analyses was significant, $p < .001$.

ranges from 3 to 5), and high (scores ranges from 6 to 9) family affluence, respectively.

Data Analyses

SPSS (Version 23.0) was used to calculate item characteristics, Cronbach's αs, and correlations between the F-SozU K-6 and positive mental health (including PMH, SWLS, SHS, and LOT-R) and mental health problems (DASS-Stress/Anxiety/Depression) inventories.

CFAs were conducted using Mplus (Version 8; Muthén & Muthén, 1998-2017). Weighted Least Square Mean and Variance adjusted (WLSMV) estimators was used for model testing, for it has been considered the best choice for ordinal data analysis for more than a decade (Flora & Curran, 2004; Muthén & Muthén, 1998-2017). Model fit indexes were used to determine model fit. Specifically, values of the comparative fit index (CFI) $>.95$, the Tucker-Lewis Index (TLI) $> .95$, and the McDonald's Noncentrality Index (NCI) $> .90$ indicated a strong fit of the data (lower TYPE II error rates and acceptable TYPE I error rates; Hu & Bentler, 1999). Another sensitive index to model fit is the root-mean-square error of approximation (RMSEA). The value of RMSEA was interpreted as follows: values $<.05$ indicated close fit, between .05 and .10 fair to moderate fit (Steiger, 1990), and $>.10$ unacceptable fit (MacCallum, Widaman, Preacher, & Hong, 2001).

Composite reliability ρ (Raykov, 2009) was calculated with CFAs for SWLS, SHS, and LOT-R with Robust Maximum Likelihood as estimator and for the F-SozU K-6, DASS, and PMH with WLSMV estimation. Furthermore, because of the project design, a test–retest reliability within a month was not conducted. Longitudinal measurement test within Chinese and German student samples was conducted.

The main analyses of measurement invariance testing were conducted in four steps, as recommended by Bowen and Masa (2015). First, single-Group CFAs were established within each sample. Second, configural invariance, that is, a multi-Group CFA with no equality constraints, was tested. A good model fit suggested equal factor structures across groups. Third, testing weak invariance included multi-Group CFA with all the factor loadings constrained to be equal across groups. The final step tested strong measurement invariance by additionally constraining the thresholds to be equal across groups. Typically, the χ^2 test is used for evaluating the discrepancy between the covariance matrix of the restricted model and that of the unrestricted model (Brown, 2015). However, χ^2 is sensitive to large sample sizes (Oishi, 2007), which commonly leads to oversized rejection rates (Meade & Bauer, 2007). Thus, with our large sample sizes, cut-off of model fit indexes changes were used to determine invariance. In each step, the more restricted model was accepted if (a) the RMSEA, NCI, and CFI values indicated good model fit and (b) the drop of CFI (ΔCFI) compared with the preceding model was $\leq .002$ and change of NCI (ΔNCI) was $\leq .0067$ as recommended by Meade, Johnson, and Braddy (2008). If ΔCFI or ΔNCI was too large and a full invariance rejected, partial weak/strong invariance was examined by freely estimating an item's factor loading/threshold one by one for all groups according to modification indexes (Byrne et al., 1989). If the proportion of noninvariant parameters to all parameters tested (including loadings and thresholds) was less than 20%, partial invariance was accepted as recommended by Dimitrov (2010).

To investigate the impact of these different forms of measurement invariance for comparing mean-scale scores, an additional simulation study was performed. This simulation used the two most extreme models, that is, the configural model and the full strong invariant model. Simple mean across all items was calculated within each generated dataset and analysis of variance was used to test for differences between the three groups. Supplemental Appendix A presents a detailed description of the method and results of the simulation study and the R code with Lavaan package (Rosseel, 2012) for replicating the analysis.

Results

Item Characteristics

Item characteristics such as item wording in four languages, means, *SD*s, skewness, kurtosis, Cronbach's α and α-if-item-deleted, and corrected item-total score correlations are described in Table 3. Ranges of the F-SozU K-6 scores for the U.S. representative, Russian representative and Chinese student samples ranged from 6 to 30, whereas for German representative samples the range was from 11 to 30. The corrected item-total score correlations of all four samples ranged from .41 (Item 1 in Russia) to .78 (Item 2 in China), all below .8, indicating all items measured similar constructs without multicollinearity. Skewness and kurtosis values in the U.S. representative sample and Chinese student sample indicated acceptable normal univariate distributions (George & Mallery, 2010), whereas in German and Russian representative samples they indicated relatively less asymmetry and left-tailed distributions.

Internal Consistency

Internal consistency including ρ and Cronbach's α, average interitem correlation, α when a given item is deleted, are presented in Table 2 and Table 3. Overall, internal consistency was satisfactory to very good.

Structural Validity

Model fitness tests of single Group CFAs within each sample are presented in Table 4, and item loadings and thresholds are presented in Table B.1 of supplemental Appendix B (standardized item loadings from the single Group CFAs are presented in Table 3 as well). A one-factor model was defined for testing within each sample. For all samples, CFAs revealed very good fit parameters, whereas for the U.S. sample and all student samples, the RMSEA values did not reach the cut-off. The modification index suggested a correlated error between Item 5 (*when I am sick, I can without hesitation ask friends and family to take care of important matters for me*) and Item 6 (*if I am down, I know to whom I can go without hesitation*) in the Russian and Chinese student samples, and the U.S. representative sample. Both items indicated that one can find supports in a negative situation (feeling down or sick); thus, the correlation may because of similar wording. After allowing for correlation between the error items, RMSEA values decreased in the U.S. general, Chinese and Russian student sample, indicating

Table 3
Means, (SDs), Skewness, Kurtosis, Cronbach's α and α-if-Item-Deleted (α), Corrected Item-Total Score Correlations (R_{Tt}), and Factor Loadings (Loading) of the F-SozU K-6 in German, the United States, and Russian Representative Sample, and in Chinese Student Sample

Item	*Mean*	*SD*	Skewness	Kurtosis	α	r_{tt}	Loading
Representative sample from the United States (N = 3,037)							
1. I experience a lot of understanding and security from others.	3.97	1.16	−1.06	.29	.88	.61	.736
2. I know a very close person whose help I can always count on.	4.42	1.04	−2.04	3.56	.86	.73	.886
3. If necessary, I can easily borrow something I might need from neighbors or friends.	4.14	1.21	−1.42	.93	.87	.69	.823
4. I know several people with whom I like to do things.	4.25	1.10	−1.52	1.51	.87	.71	.838
5. When I am sick, I can without hesitation ask friends and family to take care of important matters for me.	4.24	1.16	−1.59	1.58	.86	.75	.843
6. If I am down, I know to whom I can go without hesitation.	4.36	1.07	−1.82	2.58	.86	.76	.878
Total score	25.37	5.40	−1.48	1.92	.89		
German representative sample (N = 1,945)							
1. Ich erfahre von anderen viel Verständnis und Geborgenheit.	4.28	.89	−1.22	1.28	.76	.55	.697
2. Ich habe einen sehr vertrauten Menschen, mit dessen Hilfe ich immer rechnen kann.	4.74	.70	−3.19	10.75	.76	.57	.783
3. Bei Bedarf kann ich mir ohne Probleme bei Freunden oder Nachbarn etwas ausleihen.	4.61	.85	−2.62	6.96	.77	.51	.704
4. Ich kenne mehrere Menschen, mit denen ich gerne etwas unternehme.	4.54	.85	−2.10	4.21	.76	.58	.737
5. Wenn ich krank bin, kann ich ohne Zögern Freunde / Angehörige bitten, wichtige Dinge für mich zu erledigen.	4.66	.74	−2.56	6.90	.75	.60	.794
6. Wenn ich mal sehr bedrückt bin, weiß ich, zu wem ich damit ohne weiteres gehen kann.	4.59	.85	−2.44	5.97	.74	.63	.819
Total score	27.42	3.41	−1.79	4.25	.79		
Russian representative sample (N = 3,030)							
1. Другие люди поним ают м еня, я хорошо чувствую себя в их обществе	3.91	1.21	−.92	−.07	.78	.47	.617
2. Человек, котором у я доверяю, всегда м ожет предложить м не пом ощь	4.58	.94	−2.55	6.04	.76	.55	.774
3. Я всегда м огу одолжить то, в чем нуждаюсь, у друзей или соседей	4.07	1.28	−1.22	.30	.77	.51	.676
4. Я знаю м ножество людей, с которым и хотел бы что-нибудь делать вм есте	4.42	1.05	−1.96	3.00	.76	.53	.729
5. Когда я болен, я м огу доверить важные дела друзьям /членам сем ьи	4.46	1.01	−2.11	3.84	.74	.60	.815
6. Когда я нахожусь в депрессии, я знаю тех, к ком у я без колебаний м огу обратиться за пом ощью	4.41	1.09	−1.98	2.93	.74	.62	.838
Total score	25.84	4.63	−1.55	2.62	.79		
Chinese student sample (N = 13,418)							
1.从其他人那里我收获了许多理解, 保护和关爱。	4.08	1.06	−1.09	.47	.87	.76	.872
2.有一个我很信任的人总是会给我提供帮助。	4.19	1.09	−1.32	.86	.87	.78	.907
3.我总能顺利地从朋友或者邻居那里借来需要的东西。	4.07	1.01	−1.09	.69	.87	.75	.858
4.我认识很多人,我愿意和他们待着做点什么。	4.06	1.07	−1.03	.26	.88	.72	.823
5.当我生病时,我可以毫不犹豫地请朋友/家人帮我处理一些重要的事情。	3.95	1.14	−.87	−.18	.88	.68	.723
6.当我情绪低落时,我知道我会毫不犹豫地找谁。	3.80	1.24	−.73	−.57	.89	.65	.701
Total score	24.15	5.36	−1.14	1.06	.90		

Note. German item wordings of the F-SozU K-6 are from "A brief form of the Perceived Social Support Questionnaire (F-SozU) was developed, validated, and standardized," by S. Kliem, T. Mößle, F. Rehbein, D.F. Hellmann, M. Zenger, and E. Brähler, 2015, *Journal of Clinical Epidemiology, 68,* 551–562. Copyright (2015) by Elsevier. Reprinted with permission. Standardized factor loadings in U.S. general sample and Chinese student sample were from the one-factor model that with correlation between item errors ($\theta_{5,6}$).

improved model fit. However, for German student samples, the modification index suggested that there are more correlated error items.

Gender Invariance and Norms

A test of measurement invariance was conducted for each representative sample between female and male groups. The F-SozU K-6 showed full scalar invariance across gender for all three representative samples, indicating possibility of comparing observed means. Moreover, latent mean comparisons based on the scalar model revealed that for all general samples, male participants showed lower social support levels than female participants ($zs < -3.5$, $ps \leq .001$). Detailed model fit results can be found in supplemental Appendix C (Table C.1). Furthermore, normative data by age and gender from the German, Russian, and U.S. representative population samples are shown in Table C.2 of supplemental Appendix C.

Longitudinal Measurement Test

Results suggested that the one-factor structure was stable (i.e., partial and full strong invariance) in at least Chinese and German participants over 1-year period. Details is presented in supplemental Appendix D.

Cross-Cultural Measurement Invariance Test

Measurement invariance testing using multi-Group CFAs showed overall good invariance across cultures. Table 4 displays the model testing results of representative samples. Both configural and weak invariance models were established by good model fit, △NCI, and △CFI, suggesting that all three countries showed identical structures and the same latent factor was measured in each group. During scalar (strong) invariance testing, change in the McDonald's NCI and CFI were greater than the suggested cut-off; thus, a full scalar invariance model did not hold. Modification indices

Table 4
Single Group CFA Results and Cross-Cultural Measurement Invariance Tests Results of the F-SozU K-6

Model	Sample	N[a]	χ^2	*df*	RMSEA [90% CI]	TLI	CFI	ΔCFI	NCI[b]	ΔNCI
Single group CFA										
Germany one-factor	Representative	2,007	57.692	9	.052 [.040, .065]	.986	.992		.9879	
Russia one-factor	Representative	3,020	68.383	9	.047 [.037, .057]	.990	.994		.9902	
USA one-factor	Representative	3,037	212.501	9	.086 [.076, .097]	.989	.993		.9670	
USA one-factor ($\theta_{5,6}$ free)	Representative	3,037	68.442	8	.050 [.039, .061]	.996	.998		.9901	
Germany one-factor	Student	4,532	577.190	9	.118 [.110, .126]	.977	.986		.9392	
Russia one-factor	Student	3,996	464.798	9	.113 [.104, .121]	.967	.980		.9446	
Russia one-factor ($\theta_{5,6}$ free)	Student	3,996	128.420	8	.061 [.052, .071]	.990	.995		.9850	
China one-factor	Student	13,557	2336.118	9	.138 [.133, .143]	.971	.983		.9177	
China one-factor ($\theta_{5,6}$ free)	Student	13,557	658.694	8	.077 [.073, .083]	.991	.995		.9763	
Multi-group CFA										
Configural (USA $\theta_{5,6}$ free)	Representative		188.346	26	.048 [.042, .055]	.994	.997		.9900	
Weak	Representative		169.951	36	.037 [.032, .043]	.997	.997	< .001	.9917	.0017
Strong	Representative		596.627	70	.053 [.049, .057]	.993	.989	−.008	.9679	−.0238
Partial strong (free τ1–3, τ1–4, τ3–3, τ3–4)	Representative		296.098	62	.037 [.033, .042]	.997	.995	−.002	.9856	−.0061
Configural (China and Russia $\theta_{5,6}$ free)	Student		1294.432	25	.083 [.079, .087]	.989	.994		.9717	
Weak	Student		1208.153	35	.067 [.064, .071]	.993	.994	< .001	.9738	.0021
Strong	Student		4208.288	69	.090 [.088, .093]	.987	.980	−.014	.9105	−.0632
Partial strong (τ1–3, τ1–4, τ5–4, τ6–3, τ6–4 free)	Student		1532.349	59	.058 [.056, .061]	.995	.993	−.001	.9672	−.0066

Note. CFA = confirmatory factor analysis; RMSEA = root mean square error of analysis; 90% CI = 90% confidence interval of RMSEA; CFI = comparative fit index; TLI = Tucker-Lewis Index; NCI = McDonald's Noncentrality Index; $\theta_{5,6}$ = item error correlation between Item 5 and Item 6. τ1–3 = threshold 3 of Item 1 (*I experience a lot of understanding and security from others*); τ1–4 = threshold 4 of Item 1; τ3–3 = threshold 3 of Item 3 (*if necessary, I can easily borrow something I might need from neighbors or friends*); τ3–4 = threshold 4 of Item 3; τ5–4 = threshold 4 of Item 5 (*when I am sick, I can without hesitation ask friends and family to take care of important matters for me*); τ6–3 = threshold 3 of Item 6 (*if I am down, I know to whom I can go without hesitation*); τ6–4 = threshold 4 of Item 6.
[a] N varied because of missing data. [b] Mplus did not provide NCI; thus, the NCI here was calculated using the formula "exponential(−.*5(χ^2 of the target model - *df* of the target model)/(N - 1))."

suggested that threshold 3 and threshold 4 of Item 1and Item 3 were the largest source of the misfit. After releasing the respective four thresholds for all groups, partial scalar invariance model was established. Figure 1 presented the item threshold values (probit of y = lower response at θ = 0) by representative groups. At θ = 0, Russians had a lower probability and Americans had higher probability than Germans of responding "true" and "very true" to Item 1; while Russians rated less frequently and Germans rated more frequently as true and very true on Item 3 than Americans.

Table 4 also presents the measurement equivalence testing results of the F-SozU K-6 in three student samples. Both configural and weak invariance models were supported by acceptable fit indices and change in CFI and NCI values, indicating that the unidimensional structure of the F-SozU K-6 applied to all groups and that individual items have similar weights to the constructs of perceived social support. The strong invariance model was rejected because of △CFI >0.01 and △NCI >0.0067. Freely estimating the threshold 3 and threshold 4 of Item 1 and Item 6 and threshold

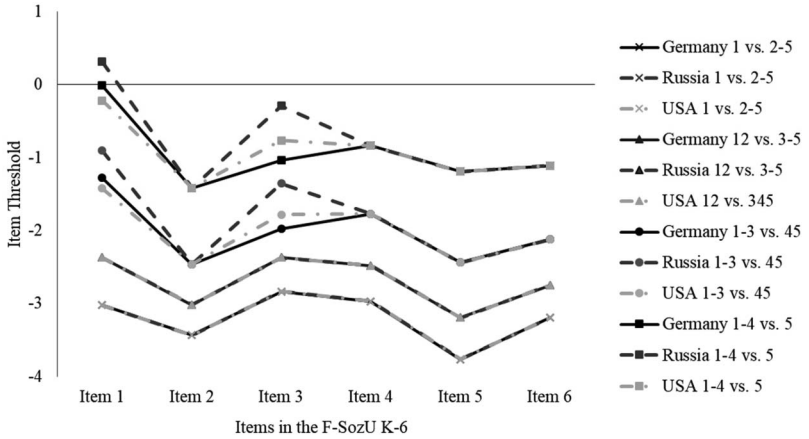

Figure 1. Item threshold values (probit of y = lower response at θ = 0) based on partial strong model in representative groups.

4 of Item 5 based on modification indices established partial strong invariance. It showed that Chinese students respond more frequently true and very true on Item 1 than students from the other two countries; whereas Russian students had higher probability of rating very true on Item 5 and Item 6 than students from the other two countries (see Figure 2). Unstandardized loadings, *SE*, and standardized item loadings and item thresholds from the measurement invariance tests are presented in Table B.2 and Table B.3 of supplemental Appendix B. In addition, results of the simulation study that tries to estimate the magnitude of these effects is presented as supplemental Appendix A.

Criterion Validity

To investigate criterion validity, correlation coefficients between the F-SozU K-6 and other self-rating inventories for mental health problems (DASS-Stress, DASS-Anxiety, and DASS-Depression) and mental well-being (PMH, SWLS, and SHS) were computed. The means and *SD*s of the sum scores of each scale, internal consistency, composite reliability, and the correlations between the F-SozU K-6 and each scale within each sample are presented in Table 2. All correlations were significant in the expected direction, suggesting higher perceived social support was associated with lower stress, anxiety, and depression symptoms, and higher levels of positive mental health, satisfaction of life, and subjective happiness. Moreover, effect sizes between social support and all the positive constructs were of medium to large magnitude ($51 \geq r\text{s} > .30$, Hinkle, Wiersma, & Jurs, 2006) in all samples except the correlation between the F-SozU K-6 and SWLS in Chinese student. Meanwhile, the effect sizes between the F-SozU K-6 and DASS were small in two Russian samples and in Chinese sample ($r\text{s} < 0.3$), small to medium in German samples (r range from $-.20$ to $-.44$), and medium in American sample (r ranged from $-.30$ to $-.41$).

Discussion

The current study validated the six-item version of the perceived social support questionnaire and tested its measurement invariance in general population samples from Germany, Russia, and the United States and in student samples from China, Germany, and Russia. In general, the F-SozU K-6 demonstrated good psychometric properties in all samples tested. Moreover, cross-cultural measurement invariance testing indicated that factor structure and item loadings of the F-SozU K-6 were equal across three general population samples and across three student samples. Partial strong invariance was also established across cultures.

The reliability of the scale score, as indicated by the internal consistency test, was found to be good in all samples tested. It was also comparable to the same six-item version reported in Kliem et al. (2015) and to other longer versions of the F-SozU (e.g., Fydrich et al., 1999, 2009). Meanwhile, the reliability estimates of the F-SozU K-6 scores vary from .78 to .89 across group; thus, it should be with cautious when future studies want to quantitatively comparing the magnitude of effects across different cultural groups (Borsboom, 2006). Moreover, the unidimensionality found in each representative sample based on the CFA and RMSEA results supported a general interpretation of the total score. However, the RMSEA value was poor in the German student sample. It suggested that the one-factor solution may not be the best interpretation of the scale in this sample. Thus, we recommend using the F-SozU K-14 version in future studies investigating social support in German university students. Furthermore, strong positive associations were found between the F-SozU K-6 and other positive mental health measures, including positive mental health, satisfaction with life, and subjective happiness, together with negative correlations with depression, anxiety, and stress symptoms. These correlations were in line with previous studies examining social support and mental health (e.g., Auerbach et al., 2011; Han et al., 2016; Kumar et al., 2012; Rueger et al., 2010; Tian et al., 2013). Longitudinal measurement test suggested that the one-factor structure was stable in at least Chinese and German participants over 1-year period. Therefore, a directly comparison using the sum scores was justified at least within this two countries. Moreover, the original F-SozU K-14 showed stability by a 1-week retest reliability of .96. In addition, at least partial strong invariance was supported across both genders in all general samples. And female groups generally showed higher level of social

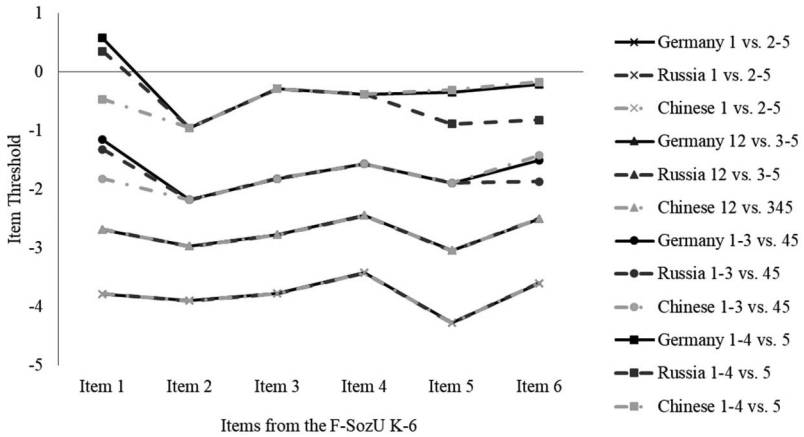

Figure 2. Item threshold values (probit of y = lower response at θ = 0) based on partial strong model in student groups.

support than male groups, which is also in line with previous findings (e.g., Antonucci & Akiyama, 1987; Zimet et al., 1988).

Although cultures may vary in appreciation for and realization of social support, the full weak invariance of the F-SozU K-6 across all three representative and three student groups also indicated that there is commonality in perceived social support across the cultures we tested. However, partial strong invariance also indicated that comparisons of observed means across groups are not readily interpretable. Specifically, at the same social support level, the Russian general population has a lower frequency of agreeing to Item 1 (*understanding and security from others*) and Item 3 (*borrow something from neighbors or friends*) than the German and U.S. samples. Among the student samples Chinese had a higher probability of agreeing to Item 1 than the other two groups of students, while Russians had higher probability of agreeing to Item 5 (*when I am sick . . .*) and Item 6 (*if I am down . . .*) than the other two groups (at the same latent trait level). However, because of the large sample sizes, we were able to detect all the relatively small effect sizes; thus, the differences found should not be overinterpreted.

Various cultural and/or methodological factors may have contributed to an item's noninvariance (van de Vijver, 2007). For example, Russians foster a practical interdependent social network (Michailova & Hutchings, 2006; Rose, 2000); thus, Russian students may tend to agree on Item 5 and Item 6, which implies receiving support under difficult circumstance. Meanwhile, living in a society that values harmonious interpersonal environments (e.g., Huang, 2016), it was no surprise that Chinese students tend to rate Item 1 higher than students from Russia or Germany. In addition, noninvariance may arise from different understanding or social desirability of some items. For instance, "*Geborgenheit*" in German means more than just "*security*," it also symbolizes closeness, warmth, and so forth. The different meaning may lead to a higher threshold of fully agreeing to Item 1 than in Americans. Furthermore, translation bias may exist. For instance, "*Я всегда могу*" means "*I can always. . . .*" This is slightly deviant from "if necessary I can . . .," which may lead to less frequency of very true response on this item in Russians than in Germans and Americans.

Recently, several methods, such as the alignment method (Asparouhov & Muthén, 2014; Byrne & van de Vijver, 2017), have been developed to perform mean comparisons in the absence of strong invariance. However, based on the simulation study we performed, the results from analyzing scale means if assuming all parameters to differ between groups would be very similar to results when assuming equal item loadings and intercepts. Thus, even simple comparisons of scale means or sum scores across the three countries investigated seem to be justified. For researchers who are interested in cross-cultural comparisons, these results also raise an awareness that group differences that emerge using multiple-group testing have a gradual, rather than an all-or-nothing, impact on mean differences (von Brachel, Hirschfeld, Teismann, Bieda, & Margraf, 2018).

Despite a number of strengths such as the large sample size, the representative samples, and the cross-cultural framework, the current study has several limitations one should consider. First, relatively high kurtosis values indicated left-skewed and heavy tails in German and Russian representative samples, which was similar to previous research regarding different versions of F-SozU (Fydrich et al., 2009; Kliem et al., 2015). This suggested that the scale is more suitable for discriminating people with rather low than with very high support perception in Germany and in Russia. Second, reasons for the nonequivalent item intercepts across countries remain unclear. We recommend investigating social desirability and conducting a focus group study or cognitive interview cross-culturally as next steps. Third, there is no convergent measure of perceived social support to directly support the criterion validity of the F-SozU K-6. Nevertheless, we found mostly medium effect correlations between the F-SozU K-6 and other positive constructs, suggesting that the social supported measured by the F-SozU K-6 was closer to other positive constructs than to mental problems, yet also sufficiently distinct from them. Fourth, social support is a multifaceted construct (e.g., Fydrich et al., 1999), the F-SozU K-6 only provides information on a general level of the construct. Researcher may consider other longer scales such as the F-SozU K-22 (Fydrich et al., 2007), MSPSS (Zimet et al., 1988), or PSS (Procidano & Heller, 1983) if different components of social support is the main research questions.

The F-SozU K-6 results have several potential implications. First, the measure can be used in large epidemiological studies to quickly determine the relationship between perceived general social support and other constructs. Second, it can be used as an early screening tool to determine low support groups or to identify those likely to benefit most from support augmentation. Third, it can serve as a short tool to assess whether or not an intervention has had an effect social support. Forth, cross-cultural latent mean comparison is possible based on the partial scalar invariance we found and the simulation study results.

In summary, the 6-item perceived social support questionnaire in general showed good psychometric properties in Chinese, German, Russian, and the U.S. samples. It is a reliable assessment instrument that because of its brevity can be used in large-scale, cross-cultural studies for a quick, economical screening of general perceived social support. Cross-cultural measurement invariance testing demonstrated partial strong measurement equivalence across cultures.

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