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An evaluation of the buffering effects of types and sources of support on depressive symptoms among natural disaster exposed Chinese adults

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Abstract

Objective—Social support is a key protective factor for people exposed to natural disasters. The effect of type and source of this support is not well documented. Investigations are needed to identify the specific modifying role of received and perceived support from family and friends on the association between disaster exposure and depressive symptoms.

Methods—Face-to-face household interviews were conducted in 2014 with a random sample of 751 adults recruited from Yuexiu and Tianhe districts in Guangzhou, China. Sampling was accomplished through spatial epidemiological methods. Participants' exposure to disaster, depressive symptoms, and social support networks was recorded on tablet devices. Multiple regression analysis was used to test the potential moderating role of social support on depression symptoms.

Results—A total of 30.24% reported natural disaster exposure. Disaster exposure and received family support were significantly and positively related to depressive symptoms. In contrast, perceived family support moderated the relationship between disaster exposure and depressive symptoms. No association was found between support from friends and depressive severity.

Conclusion—Perceived family support buffered the effect of disaster exposure in this sample, while received family support was associated with increased depression. Perceived family support is an important resource among those who experience disaster exposure and actual provision of family support may be harmful or miscarried.

Natural Disasters are becoming increasingly prevalent in Asia. According to the Economic and Social Commission for Asia and the Pacific (ESCAP, 2015a), a total of 119 disaster events, accounting for more than half of the total number of disasters occurred in the world, took place in Asia in 2014, affecting 79.6 million people, among whom 6050 died. The Chinese Mainland experienced several major natural disasters, including the earthquake in Wechuan, Sichuan Province, in 2008 and natural disasters affected over 500,000 people causing 0.4% of GDP loss (roughly US\$3 trillion) (ESCAP, 2015b). The current study investigated the effect of social resources on mental health following natural disaster exposure.

Social support is a resource associated with better physical and mental health (Kawachi & Berkman, 2001; Lakey & Orehek, 2011; Thoits, 2011; Uchino, 2009). Lack of social support is considered a key risk factor associated with psychiatric morbidity among survivors of various forms of trauma (Hall, Murray, Galea, Canetti, & Hobfoll, 2014; Kaniasty & Norris, 2008; Ozer, Best, Lipsey, & Weiss, 2003). In cross sectional studies of survivors of natural disaster, social support is related to less depression symptoms (Watanabe, Okumura, Chiu, & Wakai, 2004), and posttraumatic stress disorder (PTSD) symptoms (Arnberg, Hultman, Michel, & Lundin, 2012). Similar results had been found in longitudinal studies (Kaniasty & Norris, 2008).

One of the most useful models utilized to delineate the relationship between social support and mental health is the stress-buffering model (S. Cohen & Wills, 1985). According to this model, stress is reduced by social support in the presence of stressful event (S. Cohen & Wills, 1985). Support for this model was found among survivors of natural disaster (for reviews, see Norris et al., 2002; Prati & Pietrantonio, 2010) or other stressful events (Thoits, 2011; Uchino, 2009).

Perceived versus received support

Social support can be differentiated into two broad dimensions (Gottlieb & Bergen, 2010): perceived support and received support. Perceived support refers to the belief that support will be offered when the help is needed and perceived support is generally associated with better physical and mental health (Uchino, 2009). Among those who experienced disaster, and according to the stress buffering model (Cohen & Willis, 1985), past studies showed that perceived social support was negatively associated with subsequent PTSD ($\beta = -.09$ to $-.11$; Kaniasty & Norris, 2008) and positively to mental well-being ($\beta = .15$; Zhao, Wu, & Xu, 2013).

The influence of received support, defined as support actually received, has not reliably shown the same beneficial effect on mental health as perceived social support. Studies demonstrated that received support has little or even deleterious effect on improving mental health (Newsom, Rook, Nishishiba, Sorkin, & Mahan, 2005; Norris & Kaniasty, 1996; Ullman & Filipas, 2001; Wu, Chen, Weng, & Wu, 2009). Wu and his colleagues (2009), for instance, found that receiving negative social interaction worsened the PTSD symptom of the victims in The Taiwan 921 Chi-Chi Earthquake. Other examples of the detrimental effect of negative social interactions on mental health have been addressed among the rape victims (Ullman & Filipas, 2001), as well as in the general population (Newsom et al., 2005). This undesirable effect could be attributed to a perception by recipients that the support offered is harmful to their self-esteem given their apparent vulnerability and inability to reciprocate, which in turn leads to conflict, strain and disappointment (Rook, 1998). The relationship between received support, perceived support and mental health, therefore, is nuanced and complex, and further studies are needed to untangle these relationships (Nurullah, 2012).

Dimensions of support from different support providers

In addition to perceived and received support, the source of this support is also important to consider (e.g., family members and friends). Previous research demonstrated that mental health is affected by the support provided by different social network members (Chang & Taormina, 2011; Martins, Peterson, Almeida, & Costa, 2011; Shilo & Savaya, 2011; Watanabe et al., 2004; B. S. Zhang & Li, 2011). In the context of natural disaster, for example, Watanabe, Okumura, Chiu and Wakai (2004) found that support provided from different providers varied in its association with depressive severity across time among the 1999 Taiwan Earthquake victims. Family support was associated with lower depressive symptom severity in the short term (6-month post-earthquake) while support from both extended family and neighbors were good predictors of better mental health in long term (12-month post-earthquake).

Each of the social network members may be the most appropriate in providing different nature of social support (Thoits, 2011). Thoits (2011) suggested that one could benefit from the emotional and instrumental support offered by significant others (e.g., family members) whereas people with similar experiences might best provide emotional support and informational support. The effect of the emotional and instrumental support is recognized in contexts, such as school (Malecki & Demaray, 2003), work place (Deelstra et al., 2003;

Kirrane & Buckley, 2004) and hospital (Semmer et al., 2008), as well as among vulnerable populations, like migrants (Finch & Vega, 2003) and postpartum women (Heh, Coombes, & Bartlett, 2004). The significance of emotional and informational support from similar others, on the other hand, was also found, in online communities (Coulson, 2005; Coulson, Buchanan, & Aubeeluck, 2007; Wright & Bell, 2003).

Considering the difference in closeness and the fundamental nature of the relationship, one would expect the influences of social support from family members and friends would not be the same. Few studies, however, attempted to differentiate social support dimensions by the providers of support (e.g., perceived family support, received family support, perceived friend support and received friend support) in order to examine their individual influences. To the best of our knowledge, only one study has taken this approach. HIV sero-positive individuals from McDowell and Serovich's (2007) study demonstrated more consistent effectiveness of perceived family support on mitigating stress, compared to perceived friend support, across participant categories (Women, gay men and straight/bisexual men). Furthermore, the influences on depressive symptom of received support from family and friend were both found insignificant among women and straight/bisexual men, suggesting that the benefit of each dimension of support might also vary by support providers (McDowell & Serovich, 2007). No previous study, however, has focused on disaster-exposed samples.

The aim of the current study was to investigate the relationship between disaster exposure and depressive symptoms delineated by four social support sub-categories (perceived family support, received family support, perceived friend support and received friend support). Based on the limited literature, but supported by the stress buffering model (Cohen & Willis, 1985), two hypotheses are made in this study.

1. Both perceived family support and perceived friend support will significantly moderate the relationship between disaster exposure and depressive symptom severity;
2. Neither received family support or received friend support will moderate the relationship between disaster exposure and depressive symptom severity.

Methods

Sample

The present study was carried out within the Guangzhou Health Study, an epidemiological investigation into the mental, physical, and sexual health of migrants and residents living in Guangzhou, China, the capital city of Guangdong Province (Chen et al., in press; Hoi, Chen, Zhou, Sou, & Hall, 2015). Stratified cluster sampling was used to select participants, aged between 18 to 59 years old, in Yuexiu district and Tianhe district of the South China city of Guangzhou, China between May, 2014 and October, 2014. We chose 700 households within each district using Geographic Information System (GIS). Random geographic coordinates were pinned and overlaid on Google Earth images to locate the nearest residential building for each point. No more than one eligible participant was selected within each chosen building in order to minimize similarity between participants. Households were selected

using a random number generator and participants within households were selected by earliest birthday date method. New households were selected if the chosen household was empty or if the chosen participant refused to respond. If contact failure occurred or refusal occurred three times within the same building, we replaced that building with another with the second nearest distance from the pinned coordinate.

Teams of two Chinese interviewers using mobile tablet devices conducted face-to-face interviews. Interviewers were students in psychology or public health and received extensive 3-day training in research ethics, interview methods, including role-play exercises, and safety planning before conducting interviews. Interviewers were monitored throughout the study and provided planned follow-up training was provided during research team meetings. All interviews were carried out in the participants' native language (Mandarin or Cantonese). Oral informed consent was obtained prior to questionnaire administration. Participants responded to sensitive items related to mental health independently, using the tablet device, and interviewers provided assistance as needed. Participants received a 50 RMB (8\$USD) phone card after study completion as a token of appreciation. Among the 1215 attempted surveys, there were 14 partial completions, 368 refusals, and 82 uninhabited locations, resulting in 751 completed surveys and a response rate was 62%, utilizing the American Association for Public Opinion Research (AAPOR) formula for response rate 1 (AAPOR, 2015), which is acceptable for epidemiological studies conducted in Mainland China (Wang et al., 2010). The institutional review board of the University of North Carolina approved the study protocol.

Instruments

The Patient Health Questionnaire (PHQ-9)—PHQ-9 measured nine items related to the severity of depressive symptoms of respondents during the past two weeks (Kroenke, Spitzer, & Williams, 2001). The items were scored on a Likert-type ordinal scale rating from 0 (not at all) to 3 (all the time). Each of the items were summed such that the greater the score indicated greater depression symptom severity. High internal consistency reliability was obtained for this scale ($\alpha = 0.86$) among general population in China (Wang et al., 2014) and in this study $\alpha=0.86$.

Social Support Rating Scale (SSRS)—SSRS was developed by Xiao (1999) for measuring social support among Chinese populations. The scale consisted of 10 items, which measured current perceived and received social support. Higher summed scores indicated greater social support. The internal consistency reliability was high for the total scale ($\alpha = 0.89$) (Xiao & Yang, 1987). Responses obtained from SSRS were used both as a total summed score to measure total support, and categorized into four categories: perceived family support (5 items measured the perceived availability of emotional support from partner, parents, children, siblings, other family members; $\alpha=0.81$), received family support (2 items measured financial and emotional support received; $\alpha=0.79$), perceived friend support (1 item measured the number of friends that could be relied on for emotional support) and received friend support (2 items measured received financial and emotional support; $\alpha=0.71$).

Life Event Checklist—The Life Event Checklist (Weathers, Marx, Friedman, & Schnurr, 2014) was utilized to measure the respondents' exposure to disaster (e.g., flood, hurricane, tornado, earthquake) within the past 12 months. Respondents were considered "Disaster exposed" if they directly experienced an event, witnessed it, it happened to a family member or friend, or it occurred as a part of their work duty. Based on their responses, the participants were categorized into either a disaster exposed group or non-exposed group.

Participant characteristics—Participant sex (male=0, female=1), age, marital status (0=single, 1=cohabitating but not married, 2=married, 3=divorced/widowed), migrant status (0=migrant, 1=local resident), personal income, educational level (0=college, 1=high school/vocational school, 2=junior high school or below), months living in Guangzhou and employment status (0=full-time, 1=part-time, 2=Unemployed seeking job, 3=Unemployed not seeking job, 4=Freelance, 5=Others) were collected.

Data analysis

We first compared social support scores and depressive symptom severity between the disaster exposed and non-exposed groups with independent samples t-test. The comparison revealed whether there were any significant differences in terms of social support and depressive symptoms related to natural disaster exposure. Next, correlational analyses were conducted among all of the variables intended to examine their interrelationships.

Finally, multivariable linear regression models were used to predict the depression severity based on disaster exposure and social support and its sub-categories. Age, gender, educational level, marital status, migrant status and employment status were included in the models as potential confounders as previous studies emphasized and showed their importance in predicting mental health or social support (Arnberg & Melin, 2013; Kawachi & Berkman, 2001; B. S. Zhang & Li, 2011). In this study, we attempted to examine the main effect and moderation effect of the independent variables. We tested five regression models. In the first model, only confounders were included. In model 2, disaster exposure and perceived support from family and friends was added to examine their main effects. In model 3, moderation was tested by including interaction terms for family and friend perceived support and disaster exposure. In model 4, we evaluated the main effects of received social support from family and friends, and in model 5, the interaction terms for family and friend received support and disaster exposure were added. Regressions were decomposed by disaster exposure and the coefficient differences were tested through linear combination of estimate pre-implemented using the margins command in Stata 13 (Aiken & West, 1991; J. Cohen & Cohen, 1983). Effect sizes for R^2 values follow conventions (S. Cohen & Wills, 1985), such that small = 0.02, medium = .13, and large = .26. All analysis were conducted using Stata 13 (StataCorp, 2014).

Results

Sample Characteristics

Prior to the data analysis, we excluded the participants who were students or aged below 18 from our sample. Students were excluded in order for our sample to represent community

dwelling adults. The demographic information of the participants is enumerated in Table 1. Among the remaining 691 Chinese participants, 50.3% ($n = 347$) were female and more than half had an education level higher than high school (52.6%, $n = 361$). The population mean age was 34.2 ($SD = 10.8$).

A total of 30.24% of the participants reported being exposed to a natural disaster. The comparison of the scores of social support, its sub-scales and depressive severity between the exposure groups is shown in Table 2. Participants who were exposed to disaster reported greater depression, $t = -3.54$, $p < .00$, perceived friend support ($t = -1.96$, $p < .05$) and received friend support ($t = -2.33$, $p < .05$) than the disaster-exposed group.

Univariate analysis

Independent sample t-test results showed that the disaster exposed group reported higher mean levels of perceived and received friend support (p 's $< .05$), and depressive symptoms ($p < .001$) than the non-disaster exposed group (see Table 2).

Correlational analyses demonstrated that depressive symptoms were negatively correlated with total social support score ($r = -.09$, $p < .05$), perceived family support ($r = -.14$, $p < .001$), perceived friend support ($r = -.08$, $p < .05$) and age ($r = -.15$, $p < .001$). Sex, age and migrant status was associated with social support, with men, older participants and locals reporting more social resources, p 's $< .001$. Younger participants and women reported receiving more friend support, p 's $< .05$.

Multiple regression analysis

Regression diagnostics revealed non-normality and violation of heteroskedasticity. The outcome variable was transformed and robust estimation procedures were utilized. In Model 1 (Table 3) depressive severity was regressed on multiple covariates. Age, part-time employment and migrant status were significant in this model. In Model 2 (Table 4), disaster exposure and family and friend perceived support were added to model 1, with an overall significant model ($F(16, 633) = 4.16$, $p < .001$) and an R^2 of .08. Age ($\beta = 0.04$, $p = .024$), disaster exposure ($\beta = 0.11$, $p < .01$) and subjective family support ($\beta = 0.10$, $p = .025$) were significant in the model. In Model 3, interaction terms disaster exposure $\times$ family perceived support and disaster exposure $\times$ friend perceived support were added. The family perceived support interaction was significant ($\beta = -0.24$, $p = .02$). Simple slope tests revealed that there were significant differences by disaster exposure in the association between depressive severity with perceived family support ($z = -3.28$, $p < .001$; Figure 1b), but not for those who did not report disaster exposure ($z = -0.82$, $p = .41$).

In Model 4, (Table 4) depression was regressed on model 1 covariates, disaster exposure, and family and friend received support. The overall model was significant ($F(16, 633) = 4.04$, $p < .001$) and accounted for 8% of the variance in depressive symptoms. Age ($\beta = -0.13$, $p < .01$), disaster exposure ($\beta = 0.13$, $p < .001$) and received family support ($\beta = -0.11$, $p = .029$) were significant predictors of depression. In model 5, the interaction terms disaster exposure $\times$ family received support and disaster exposure $\times$ friend received support were added and were non-significant.

Discussion

The aim of this study was to evaluate the effect of perceived and received social support from family and friends on the relationship between disaster exposure and depressive symptoms. Our results demonstrated that although experiencing a disaster was positively and significantly associated with depressive symptoms, this effect could be modified by the level of social support. The perception of family support availability, as expected, was highly beneficial to individuals who were exposed to disaster, while received family support was associated with greater depressive symptoms. This might be indicative of a dilemma of wanting family members to accept and understand but not introduce changes into routine behaviors. No apparent relationships, however, between depressive level and perceived friend support and received friend support were found.

The moderation effect of perceived family support extends previous research (Martins et al., 2011; Shilo & Savaya, 2011). Our results were consistent with previous studies that demonstrated the negligible relationship between perceived friend support and mental health (Martins et al., 2011; McDowell & Serovich, 2007) and suggested that the efficiency of each dimension of social support varied across providers. This partially fits into Thoits' (2011) model, which argued that the support recipients may require different kinds of support from different providers. On one hand, emotional support and instrumental support from significant others (e.g., family members) could sustain one's sense of belonging, while on the other hand people with similar experiences might provide empathic support and informational support. The mental health of the recipient, thus, can benefit from a full spectrum of support so long as the type of support is provided by an appropriate source (Finch & Vega, 2003; Heh et al., 2004; Kirrane & Buckley, 2004; Malecki & Demaray, 2003; Semmer et al., 2008). Future studies are needed to elaborate on the various social network members and their corresponding appropriate ways of support provision in order to better understand the mechanism linking social support to mental health.

The study results also revealed a negative main effect on mental health from received family support regardless of disaster exposure. Similar results from previous studies demonstrated that receiving support might be harmful to support recipients (Newsom et al., 2005; Ullman & Filipas, 2001; Wu et al., 2009). There are several possible explanations to the deleterious effect of received family support. First, the results can be interpreted as the persons with the worst mental health and who have the highest level of depressive symptoms simply receive the most amount of family support (Lahey & Orehek, 2011; Larzelere, Kuhn, & Johnson, 2004). It is, nonetheless, unlikely in our study because, according to our results, the disaster exposed group who was more depressed was not significantly receiving more family support than others.

Second, family support can easily be misinterpreted (Rook, 1998). While appropriate support can alleviate the severity of mental disorders, it is well established that negative social interaction can harm recipients (Charuvastra & Cloitre, 2008). Moreover, the feeling of burden, indebtedness and guilt to support providers may further affect their mental well-being (Gleason, Iida, Bolger, & Shrout, 2003), especially when recipients did not have the chance to reciprocate (Gleason, Bolger, Iida, & Shrout, 2008), or if they themselves have an

obligation to care for their family. Another possible interpretation is related to cultural values. This could also be a family-oriented Confucian values that emphasize filial piety, and the maintenance of social harmony. A person receiving support might feel indebted to family members for burdening them with their own grief. The issue of face, or *mianzi* in Chinese, may also help to explain this finding (J. Zhang, Conwell, Zhou, & Jiang, 2004). *Mianzi* refers to the a complex relationship between self-esteem that can be lost through shame and embarrassment. The loss of face goes beyond the individual. The fear of possibly exposing all family members to others in the community (out-groups) that there is a person with depression at home or within the family might lead to the burden of fear of bringing shame to the family. The loss of face is implicated in suicide in rural china. Cultural issues in should be investigated directly in subsequent research (Poulin, Deng, Ingersoll, Witt, & Swain, 2012; Yeung & Fung, 2007).

The reason for the insignificant findings for friend support remains uncertain. It can be attributed to the possibility that the course of development equips humans with the tendency to rely on significant others (e.g., family members) for support when demands exceed one's capacity to cope (Ainsworth, 1991; Bowlby, 1988). We did note that participants who reported exposure to disaster also reported greater perceived and received friend support. This finding is consistent with social support mobilization (Kaniasty & Norris, 1993), and could suggest that the possible benefits of received support, if ever experienced, may have faded by the time the current study was conducted.

Our study has several important limitations that warrant discussion. It was a retrospective study and the participants did not report the period of time since event exposure. Moreover, our interpretation was restrained by the scope of questionnaire. This study was embedded in a large-scale epidemiological study so space limited our measurements. Only the level of family and friend support was measured in SSRS and we cannot identify whether there was family member or friend lost during the disaster the participants experienced. This raises the possibility that the higher depressive level among the disaster-exposed persons with lower family support might be attributed to the smaller size of their family or friend networks (C. L. W. Chan et al., 2011). Future studies should add additional items to evaluate this possibility.

We also did not explore the specific nature of the disaster exposure and research has indicated specific patterns of distress are related to certain disaster experiences and losses (C. S. Chan & Rhodes, 2014). We also did not specifically examine possible differences in how social support modified distress for those directly exposed or exposed to disaster through a loved one, or whether repeated exposures to disaster had occurred. The present sample was insufficient to explore whether the stress buffering hypothesis holds for different routes of disaster exposure. We also did not adjust for receipt of counseling or psychiatric treatment, or previous psychiatric diagnosis, which may confound the present analyses. Finally, given this was a cross-sectional study, causal relationships cannot be determined and future longitudinal studies are hence warranted.

Noting that no prior research had differentiated the effects of perceived and received support from different care providers on the link between disaster exposure and mental health, the

current study filled this important gap in the literature. Perceived family support buffered the distress caused by disaster exposure while higher received family support was associated with higher depressive level regardless of disaster exposure. Perceived friend support and received friend support, however, were not related to mental health. Family support may be a critical resource for Chinese communities affected by disaster, but the perception of support availability is more beneficial than actual support provision which can even be harmful if miscarried.

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Figure 1.
Correlation by disaster exposure of depressive symptom severity a) with total social support;
b) with perceived family support.

Table 1

Demographic Information by Disaster Exposure (N = 691)

	Total n (%)	Disaster Exposed n (%)	Non-exposed n (%)	Missing Value n (%)	p
Sex				1	.06
Female	347 (50.3)	91 (45.1)	247 (53.0)		
Male	343 (49.7)	111 (54.9)	219 (47.0)		
Age				9	.04
18–35	425 (61.5)	139 (68.8)	275 (59.0)		
36–50	187 (27.1)	47 (23.3)	133 (28.5)		
50+	79 (11.4)	16 (7.9)	58 (12.5)		
Education				4	.004
Junior high school or below	162 (24.3)	34 (21.0)	128 (79.0)		
High school/vocational school	155 (23.1)	59 (29.2)	96 (20.7)		
Associate degree or higher	350 (52.6)	109 (31.1)	241 (68.9)		
Income				19	.59
< 2000 RMB	113 (16.4)	36 (17.8)	76 (16.3)		
2000 – 4000 RMB	220 (31.8)	59 (29.2)	154 (33.1)		
4000 – 6000 RMB	146 (21.1)	40 (19.8)	101 (21.7)		
> 6000 RMB	212 (30.68)	67 (33.2)	135 (29.0)		
Marital status				12	.057
Never married nor cohabitating	196 (28.9)	71 (35.7)	121 (26.3)		
Cohabitating but not married	20 (3.0)	8 (4.0)	12 (2.6)		
Married	449 (66.1)	116 (58.3)	317 (68.9)		
Divorced/widowed	14 (2.1)	4 (2.6)	10 (71.4)		
Migrant status				3	.08
Yes	391 (56.8)	124 (61.4)	252 (54.1)		
No	297 (43.2)	78 (38.6)	214 (45.9)		
Employment status				7	.19
Employed full time	471 (68.9)	135 (66.8)	323 (69.9)		
Employed part time	20 (2.9)	9 (4.5)	9 (2.0)		

	Total n (%)	Disaster Exposed n (%)	Non-exposed n (%)	Missing Value n (%)	<i>p</i>
Unemployed but seeking job	24 (3.5)	7 (3.47)	17 (3.7)		
Unemployed and not seeking job	61 (8.9)	17 (8.4)	44 (9.5)		
Freelance	81 (11.8)	30 (14.9)	50 (10.8)		
Others	27 (4.0)	4 (1.98)	19 (4.1)		
Length of time lived in Guangzhou				3	.13
0 – 3 months	31 (4.5)	11 (5.5)	18 (3.9)		
4 – 6 months	18 (2.6)	4 (2.0)	13 (2.8)		
7 months – 1 year	30 (4.4)	14 (6.9)	14 (3.0)		
1 – 5 years	152 (22.1)	47 (23.3)	104 (22.3)		
> 5 years	457 (66.4)	126 (62.4)	317 (68.0)		
Total	691 (100)	202 (30.2)	466 (69.8)	23	

Table 2Depressive severity and Social Support by Disaster Exposure ($N = 691$)

	Total M (SD)	Disaster Exposed M (SD)	Non-exposed M (SD)	t
Perceived Family Support	9.64 (3.90)	9.50 (4.11)	9.70 (3.82)	0.60
Received Family Support	3.61 (2.17)	3.60 (3.36)	3.61 (1.78)	0.13
Perceived Friend Support	1.97 (0.87)	2.07 (0.81)	1.93 (0.89)	-1.96 [*]
Received Friend Support	1.99 (1.36)	2.17 (1.28)	1.91 (1.38)	-2.33 [*]
Depressive severity	2.98 (3.92)	3.79 (4.12)	2.63 (3.78)	-3.54 ^{***}

Note.

^{*}
 $p < .05$.^{**}
 $p < .01$.^{***}
 $p < .001$.

Table 3
Regression Analysis Predicting Depressive Symptom Severity by Perceived Social Support

	Model 1			Model 2			Model 3		
	B	rSE (B)	β	B	rSE (B)	β	B	rSE (B)	β
Sex (Female)	0.04	0.09	0.02	0.08	0.09	0.04	0.06	0.09	0.03
Age	-0.01	0.01	-0.14*	-0.01	0.01	-0.13*	-0.01	0.01	-0.13*
Education (REF = college)									
High school/vocational school	0.04	0.14	0.01	0.02	0.14	0.01	0.02	0.14	0.01
Junior high school or below	0.04	0.13	0.02	0.08	0.13	0.04	0.09	0.13	0.04
Marital status (REF = Single)									
Cohabiting but not married	0.40	0.22	0.06	0.49	0.21	0.07*	0.49	0.21	0.07*
Married	-0.15	0.13	-0.07	0.02	0.15	0.01	0.05	0.15	0.02
Divorced/widowed	-0.15	0.29	-0.02	0.09	0.29	-0.01	-0.03	0.29	-0.00
Migrant status (no)	0.23	0.11	0.10*	0.18	0.11	0.08	0.17	0.11	0.08
Employment (REF= full time)									
Employed part time	0.45	0.21	0.07*	0.34	0.19	0.05	0.37	0.19	0.05
Unemployed seeking job	0.29	0.26	0.05	0.28	0.24	0.04	0.31	0.24	0.05
Unemployed not seeking job	0.31	0.17	0.09	0.27	0.17	0.07	0.27	0.17	0.07
Freelance	0.23	0.14	0.06	0.21	0.14	0.06	0.21	0.14	0.06
Others	-0.31	0.20	-0.05	-0.27	0.21	-0.04	-0.25	0.21	-0.04
Disaster exposure (yes)	0.04	0.09	0.02	0.33	0.10	0.13***	0.96	0.33	0.38**
Perceived Family Support				-0.03	0.13	-0.10*	-0.01	0.02	-0.04
Perceived Friend Support				-0.05	0.06	-0.04	-0.05	0.02	-0.03
Perceived Family Support $\times$ Disaster exposure							-0.04	0.02	-0.24*
Perceived Friend Support $\times$ Disaster exposure							-0.05	0.12	-0.05
R^2		0.06			0.08			0.09	
F-test for model		3.88**			4.16***			4.17***	

Note.

* $p < .05$.

$p < .001$, rSE = robust standard errors.

$^{*}10^{*} > p$
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Table 4
Regression Analysis Predicting Depressive Symptom Severity by Received Social Support

	Model 4			Model 5		
	B	rSE (B)	β	B	rSE (B)	β
Sex (Female)	0.04	0.09	0.02	0.03	0.09	0.01
Age	-0.01	0.01	-0.13 *	-0.01	0.01	-0.13 *
Education (REF = college)						
High school/vocational school	0.02	0.14	0.00	0.01	0.14	0.01
Junior high school or below	0.08	0.13	0.03	0.07	0.13	0.03
Marital status (REF = Single)						
Cohabiting but not married	0.30	0.22	0.05	0.30	0.22	0.05
Married	-0.28	0.15	-0.12	-0.27	0.15	-0.11
Divorced/widowed	-0.17	0.29	-0.02	-0.14	0.29	0.02
Migrant status (no)	0.18	0.11	0.08	0.18	0.11	0.08
Employment (REF= full time)						
Employed part time	0.26	0.20	0.04	0.31	0.20	0.04
Unemployed seeking job	0.30	0.25	0.05	0.31	0.25	0.05
Unemployed not seeking job	0.24	0.17	0.06	0.24	0.17	0.06
Freelance	0.17	0.14	0.05	0.17	0.14	0.05
Others	-0.27	0.22	-0.04	-0.26	0.22	-0.04
Disaster exposure (yes)	0.32	0.10	0.13 **	0.77	0.30	0.31 **
Received Family Support	0.05	0.03	0.11 *	0.08	0.03	0.15 **
Received Friend Support	-0.06	0.04	-0.08	-0.07	0.04	-0.08
Received Family Support $\times$ Disaster exposure				-0.08	0.05	-0.22
Received Friend Support $\times$ Disaster exposure				0.03	0.08	0.03
R^2		0.08			0.09	
F-test for model		4.04 ***			4.72 ***	

Note.

* $p < .05$.

** $p < .01$.

d' > 1.001 * rSE = robust standard errors.

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