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Does Psychological Resilience Mediate the Impact of Social Support on Geriatric Depression?

An Exploratory Study among Chinese Older Adults in Singapore

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Abstract

Social support and resilience were considered to be two significant influential factors for depression in late life. The study aims to present a mediation model for understanding the interrelations among social support, resilience, and geriatric depression. A cross-sectional survey study was conducted among 162 community-dwelling Chinese older adults in Singapore. Findings indicated a significant indirect effect of social support on geriatric depression through the mediation of resilience, by controlling demographic variables. Further, an identical influencing pattern between problem-solving resilience and emotion regulation resilience were found in the two individual models, suggesting a similar mediation role in linking social support and geriatric depression. These results extended and integrated earlier findings on the relationship of psychosocial factors and geriatric depression, and pointed out practical implications for future work on depression interventions.

Keywords: social support, psychological resilience, geriatric depression, mediation effect

Does Psychological Resilience Mediate the Impact of Social Support on Geriatric Depression?

An Exploratory Study among Chinese Older Adults in Singapore

1. Introduction

An increasing volume of evidence has shown that both the number and percentage of older adults have increased dramatically in modern society (Agüero-Torres et al., 2001). Population ageing has led to many concerns about older adults' mental health in recent decades (Kraaij et al., 2002). People are experiencing many negative stressors in their late life, such as physical illnesses, loss of friends and family members, lack of social interaction, or inadequate economic resources. Depression is one of the most highly prevalent mental disorders caused by the accumulation of stressors in late life (de Beurs et al., 2005). It is estimated that around 12 % of adults aged 65 or above in Europe are suffering from depressive symptoms (Copeland et al., 2004). Even higher rates of geriatric depression have been reported in East Asia, such as Taiwan (Chong et al., 2001) and Japan (Wada et al., 2004). Geriatric depression not only negatively affects an individual's well-being (Mann, 2002), but also increases the burden on the public healthcare system (Snowden et al., 2008).

1.1 Resilience and Depression

Many studies have investigated the protective factors that are protective against stressors and depression in late life. Among them, psychological resilience is generally considered to be an important protective mechanism for individuals who are in the face of stressors and adversity (Bonanno, 2004; Masten, 2001). The term 'resilience' originally comes from physics, but in psychology it is used to describe the psychological ability to adaptively cope with stress and adversity. A substantial number of previous studies have indicated the significant association between resilience and depression (see a review of Elisei

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et al., 2013). However, relevant findings extended to older adults are sparse (Gooding et al., 2011). Mehta and colleagues' study (2008) was one of exceptions which reported the predictive effect of resilience on depression among community-dwelling older adults. Since aging is characterized by specific physical, social, and psychological stressors, it is worthwhile further confirming the influence of resilience on depression in late life.

1.2 Social Support, Resilience and Depression

Similar to resilience, social support was examined to be another protective factor to geriatric depression. Previous empirical findings have demonstrated clearly that a perception of low social support leads to depressive symptoms in late life (Barg et al., 2006; Chi and Chou, 2001; Rubinstein et al., 1994). Although the importance of social support in depression and other mental disorders were examined by researchers and clinicians, very few studies have been conducted on explaining how social contexts “get under the skin” to affect individual's depression (Marroquín, 2011). It is far less known on the mechanisms of how social support impacts depressive psychopathology. The empirical discussion of influential mechanisms is essential, for it can open up the field's understanding towards a clearer picture of “how and when social support works, and how and when it does not” on depressive symptoms (Marroquín, 2011).

The extant literature has linked social support with psychological resilience from a neurobiological perspective (see a review of Ozbay et al., 2007). Clinical studies have indicated that low social support led to physiological and neuroendocrine indices of heightened stress reactivity, including increased heart rate (Stansfeld et al., 1997) and blood pressure (Uchino et al., 1996). It therefore reduces individual resilience by exaggerating cardiovascular and neuroendocrine responses to external stressors. In social science domain, researchers also explained the role of social support as a resilience factor (Cobb, 1976; Cohen

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and Wills, 1985). They indicated that people who receive high social support are theoretically better able to adapt to and/or modify external stressors, thereby promoting better adjustment and psychosocial functioning. This relationship was further examined in aging studies, with results demonstrating that high social support can enhance resilience to stress among older adults (Lamond et al., 2008; Netuveli and Blane, 2008).

In light of evidence suggesting the interrelationships of social support and resilience, some researchers began to argue that social support reduces the risk for developing mental illness via fostering resilience (Ozbay et al., 2007). Pietrzak et al. (2010) suggested that psychological resilience fully mediated the association between unit support and depressive symptoms among veterans. In another study conducted on U.S. commissioned officers, Peat (2012) not only found the significant effects of team support on both resilience and depression, but also indicated the significant association between resilience and depression. Taken together, the accumulated evidences raise the possibility that resilience serves as a mediator in the impact of social support on depression. Nevertheless, there is still inadequate literature on examining the mediating effect of resilience in the relation of social support and depression among aging population, particularly for older adults in Non-Western contexts.

1.3 The Present Study

Advances in research of resilience and social support on older adults mainly resulted from studies with Caucasian population. Since different sociocultural contexts would result in variances in the way people adapt with stressors (Janevic and Connell, 2001) and receive social support (Chi and Chou, 2001), the findings and implications provided by the Western studies are not necessarily applicable in other regions. Current research related to resilience, social support, and geriatric depression are very limited in Asian, particularly in Chinese societies, despite that aging populations there are having a fast increasing rate (United

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Nations, 2013) and a high depression prevalent rate (Chong et al., 2001; Woo et al., 1994). Singapore is one of the Chinese societies with serious aging problems: elderly people is reaching 10% of the total population (Department of Statistics, 2010), and more than 20% of them are suffering from geriatric depression (Chuan et al., 2008). Hence, gaining insight into the protective factors against geriatric depression is important for rapidly aging Chinese societies like Singapore, because it can help develop adequate prevention and future treatment strategies in this particular cultural context. The present study therefore attempts to confirm and extend the relations of resilience, social support, and depression in a sample of Singaporean Chinese Older Adults.

The main objectives of current study are: 1) to confirm the effects of both resilience and social support on depression among Chinese older adults in Singapore; 2) more importantly, to examine the mediation effect of resilience in the impact of social support on depression among this group of older adults.

2. Methods

2.1 Participants

Potential participants are local Chinese Singaporean residences aged 65 years old or above. They were recruited from three different community areas located in the southwestern, northern, and eastern part of Singapore, respectively. Researchers approached and identified the proposed participants through the help of administrators and nursing staff in the local senior activity and community clubs. The participation of the study is fully voluntary, and the older adults were reimbursed for their time and travel. The informed consent was obtained for all participants before the study, in accordance with the protocol that was approved by Nanyang Technological University Institute Review Board (IRB2013-05-008).

2.2 Procedures

Each participant completed a cross-sectional survey in the local senior activity centres or community clubs, which lasted for approximately 20 minutes. For those who had literate and visual problems, they were assisted by trained student assistants from the research team during survey process. The survey was a structured self-reported questionnaire that collects basic demographic information and measures main outcome psychosocial variables. We provided two language versions, English and Chinese, with a consideration of the multi-culture context in Singapore.

2.3 Materials

Psychological resilience. In order to get an estimation of resilience, we administrated the Resilience Appraisals Scale (RAS) which was initially developed by Johnson and colleagues (2010). The RAS scale was reported to be germane to older adults, and has high validity and reliability in elderly population (Gooding et al., 2011). In the study we adopted two subscales from the original scale, which reflects individual's appraisal resilience in emotion regulation and problem solving. In scales of RAS, participants indicate to what extent each statement applies to them using a five-point Likert scale (e.g. 'I can generally solve problems that occur') ranging from 'strongly disagree' to 'strongly agree'. The Chinese version of the scale was translated from the original English version by three doctoral students, using the back translations method to ensure the high accuracy of each statement. Reliability of the RAS scale and two subscales were highly acceptable in current study, with alphas of .88, .86, and .85 for the resilience (total), problem solving resilience, and emotional regulation resilience, respectively.

Social support. The perceived social support was measured by the Duke Social Support Index (DSSI) from Landerman et al. (1989). The original DSSI is a long scale with

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35 items, which often lead to physical and emotional exhaustion of participants, especially for older adults (Koenig et al., 1993). As a result, participants in the study completed the abbreviated version of the DSSI (10 items) that captures the essential components of social support related to mental health outcomes. Study by Wardian et al. (2012) had supported the validity and reliability of the 10-item DSSI in the general population. The scale contains questions to measure multiple dimensions of social support (e.g. ‘Do family and friends understand you?’), scored from 1 (hardly ever or few) to 3 (most of the time or many). We also adopted the Chinese version of DSSI that was established previously by Zhang and colleagues (2012). An alpha coefficient of .77 has been reported in the study.

Geriatric depression. Geriatric Depression Scale (GDS; Yesavage et al., 1983) was administered to assess the depression symptoms among participants. GDS is a depression measurement designed initially for older adults. It has been tested and used widely around the world (Garrad et al., 1998). The short form of GDS (15 items) was adapted in the study to reduce burden for responders, instead of the original 30-item scales. The 15-item GDS have been proven to be valid and reliable in previous clinical practice and research (Sheikh and Yesavage, 1986). Participants respond to how they felt over the past week (e.g. ‘Are you basically satisfied with your life’) by indicating ‘Yes’ or ‘No’. The Chinese-version of GDS-15 in the study came from Cheng & Chan (2004). A high internal consistency of .80 was obtained in the study.

2.4 Statistic Strategy

Statistical analyses were conducted using IBM SPSS version 21 (SPSS Inc., Chicago, IL). The analysis procedure involved several steps. First, descriptive statistics for the involved variables were present to indicate the demographic and psychosocial characteristics of the study population. We then applied Pearson Correlation Analysis to test the bivariate

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correlations between the main outcome measure and associative factors. Finally, in order to test the mediation model, we adopted the approach described by Preacher and Hayes (2004) for testing significance of the indirect effect of social support on geriatric depression via resilience. Considering the small sample size, we involved a bootstrapping procedure (N = 5,000) in this approach to yield more valid estimates of the indirect effects, and generated 95% bootstrap confidence intervals (CI) for them. In the analyses, after controlling the demographic variables, i.e. age, gender, education, and living arrangement, the mediation model was ran with social support as the predictor, resilience as the mediator, and geriatric depression as the dependent variable. Figure 1 illustrates the tested mediation model. We also separately tested the mediating roles of two subtypes of resilience, problem solving and emotion regulation, in two individual mediation models for comparison.

[Insert Figure 1 about here]

3. Results

A total of 162 community-dwelling older adults participated in the study (39 male and 124 female; mean age = 72.19, SD = 6.23). The sample was composed of local older Singaporean who were mostly female (76.1%), educated (74.1% received primary school education or below), and living with family (78.4% lives with spouse and/or children). Since the survey is fully voluntary, it is not surprising to see a sample which includes predominantly female participants. Compared to males, females are often reported to have a higher participation rate in community and social activities, including surveys and research studies (Borges et al., 2008; Mazo et al., 2011; Smith, 2005). Except for gender, the ratio of education level and living arrangement are close to those released by a recent government report (2009) on elderly status, which suggests a high representativeness of study sample. In term of depression, the overall participants have a mean GDS-15 score of 3.66 (SD=3.28),

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which indicates a minor degree of depression among included Singaporean elderly. If using the cutoff score (score of GDS-15 \geq 5), the percentage of Singaporean older adults with major depression is estimated to be 34.6%.

Descriptive statistics and bivariate correlations of the main outcome variables are presented in Table 1. Inspection of the bivariate correlations revealed that the four demographic variables have no significant associations with any of the psychosocial variables. In other words, regardless of their age, gender, education, and living arrangement, the participants in our study do not differ too much in their resilience, social support and depressive symptoms. Despite this result, we still controlled these demographic confounders in the later part of analyses, in order to achieve a cleaner assessment of the mediation model. Social support was found to be positively related with individuals' resilience ($r = .41, p < .01$) and two subtypes of resilience (Problem solving resilience: $r = .41, p < .01$; Emotion regulation resilience: $r = .32, p < .01$). Meanwhile, strong negative correlations were also identified between geriatric depression and two main protective factors, i.e. resilience ($r = -.46, p < .01$) and social support ($r = -.48, p < .01$). Thus, individuals who indicated higher level of resilience or social support tend to be less depressive in their late life.

[Insert Table 1 about here]

After controlling the demographic factors (age, gender, education, and living arrangement), we used the PROCESS procedure for SPSS to examine the proposed mediation model illustrated in Figure 1. The indirect effects of social support on geriatric depression through resilience (a and b) were estimated in the mediation model. The direct effects of social support on geriatric depression within and without the mediation of resilience were also derived for comparison (c and c'). In order to determine whether the two types of resilience vary in affecting the mediation model of social support and geriatric depression,

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problem solving and emotion regulation resilience, were tested individually in the regression analyses. Table 2 demonstrates the results of the indirect effect of social support on geriatric depression through resilience.

The findings of the mediating effect of resilience revealed a significant negative indirect effect of social support on geriatric depression ($B = -.11$; Sobel $z = -3.39$, $p < .001$). Bootstrap results ($N = 5,000$) confirmed the significant effect with a bootstrapped 95% CI around the indirect effect not containing zero ($-.18, -.05$). In addition, paths a ($B = .44^{***}$, $SE = .08$) and b ($B = -.24^{***}$, $SE = .06$) were also found to be significant at $p < .001$ level, further suggesting a stronger evidence of mediation effect than significant ab alone (MacKinnon et al., 2007). Consequently, the mediation model of resilience, social support and geriatric depression were fully supported by the above findings.

Lastly, the results from two individual mediation models showed a similar mediating effect among two subtypes of resilience. Both problem solving and emotion regulation resilience mediate significant negative indirect effects of social support on geriatric depression. The two indirect effects were not only similar to each other (both are $-.08$), but also similar to that of the total resilience ($-.11$). However, the two mediation models differed from each other, by a higher path a and a lower path b observed in problem solving resilience model (Table 2).

[Insert Table 2 about here]

4. Discussion

The study was one of the first few attempts to examine resilience as a mediator in the link between social support and depression, using a Non-Western aging sample. In response to the recent suggestion in the field (Marroquín, 2011), the preliminary results from the study

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provided important information and evidences to understand the influential mechanism of social support on depression, by introducing resilience as a mediator. Consist with previous studies conducted in Western countries (Bisschop et al., 2004; Pierini and Stuifbergen, 2010), results from current study have confirmed resilience to be a significant protective factors against depression among Chinese older adults in Singapore. Similarly, the strong negative correlation between social support and geriatric depression is in accordance with the previous findings obtained in other cultural contexts (Barg et al., 2006; Koizumi et al., 2005) as well as other Chinese societies (Chi and Chou, 2001; Su et al., 2012).

The proposed mediation model was fully supported in the study, indicating a strong significant indirect effect of social support on geriatric depression through resilience. More specifically, higher social support leads to higher perception on one's own resilience ability, which at the end leads to less depression. Since recent research has indicated the interaction effects of social support and resilience on quality of life (Xu and Ou, 2014) and other diseases like HIV (Earnshaw et al., 2014), findings from current study further extended the conclusion to a specific mental disorder of depression among Asian older adults. Pietrzak and colleagues (2010) had also examined the mediation effect of resilience between social support and depression, which however only limited to veterans of Operations Enduring Freedom and Iraqi Freedom. As suggested by Brown & Harris (1978) in their book *The social origins of depression*, the perception of adequate social support can help bolster higher self-esteem, confidence and sense of control when facing stressful situations. A strong sense of confidence and control would strengthen one's own resilience, further leading to active coping strategies to overcome the stressors and reduce depression. Besides reducing the stress, social support also promotes resilience by enabling individuals and families to recover more quickly from stress (McCubbin and McCubbin, 1992).

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Results from the two individual mediation models suggested an identical influencing pattern among the mediating roles of problem solving resilience and emotion regulation resilience. Although the overall indirect effects are similar, a higher path b of emotion regulation resilience was observed than that in problem-solving resilience. This has revealed a relatively higher predictive effect from emotion regulation resilience on depression among the Chinese older adults in Singapore. In Heppner et al.'s (2004) study, they found that Chinese people tended to report a negative appraisal on their problem-solving ability towards stressors. Hwang (1978) have a similar conclusion that Chinese elderly in Hong Kong adopt more passive means of coping strategies, such as learning to persevere and live with the problems. As Confucian philosophy treasures successful governance on one's own emotion and temperament (Inoguchi and Doh, 2009), older adults with Chinese culture are more likely to regulate their emotions when facing stressful situations, rather than act actively for problem-solving. Guided by these reasoning, culture impact may be a possible explanation for a higher effect from emotion regulation resilience on geriatric depression among Chinese older adults in Singapore.

Similar to resilience, social support may also be influenced by culture. Interdependence on family is an integral part of the Confucian philosophy embedded in the Asian culture, particularly in Chinese culture (Marcella et al., 1985). As a result, Chinese older adults are more likely to rely on social support gained from family (spouses or children and/or grandchildren) to reduce depression (Chi and Chou, 2001). While support from friends which were reported to be main influential factor in Western elderly samples (Dean et al., 1990), the mediation model established in current study may differ from that in the West. Future studies are needed to distinguish the different impacts across the sources of social support.

4.1 Implications

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These findings have some practical and theoretical implications for future work. First, this study expands the role of social support from the only direct influence on depression, to the potential indirect effect on depression via resilience. The study thus provided a clearer picture on the association between social support and older adults' mental well-being: the more and better social support one receives, the higher resilience he/she may develop when facing stressors, and further the higher chance he/she may have to improve depression. Second, the mediation model also implies future studies to have an integrated view of social support and resilience, when designing or evaluating the psychosocial interventions for geriatric depression. They need to bring the consideration of resilience in evaluation of the social support interventions, and consider social support issues in designing the resilience interventions.

4.2 Limitations

Results of the study shed light on the relations of social support, resilience, and geriatric depression. However, some limitations are worth mentioning. First, the small sample size with mostly female participants may affect the generalizability of the findings in the current study. Further, the participants were also limited to those living in the community with relative healthy body conditions; therefore the results cannot be generalized to those living in hospitals or nursing homes with limited physical functions. In fact, this group of older adults may be even worthy of study in future research, because their special conditions (e.g. limited mobility and communication ability) are more likely to lead to different patterns of relationship among social support, resilience and depression. The understanding of their psychosocial problems will have more practical and clinical significance in addressing their needs and promoting their mental well-being. Second, self-report data and translation limitations would possibly affect the validity of responses from senior participants. More objective measuring techniques are needed in real contexts. Third, given the causality

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assumption of mediation relationship, cross-sectional survey used in the study might not be rigor enough to confirm that resilience causes geriatric depression rather than reverse possibility. Longitudinal design can be considered for future study to address this concern. Lastly, some scholars considered social support as a multidimensional construct including both instrumental and emotional support (Sherbourne and Stewart, 1991). Therefore it is worthwhile to explore the model further by introducing different subtypes of social support in future research.

5. Conclusion

In summary, the results of study extended and integrated earlier findings on the relationship among resilience, social support, and geriatric depression. A mediation model was examined within a survey among 162 Chinese older adults in Singapore, which indicated a significant mediating effect of resilience on the link between social support and geriatric depression. Two individual mediation models of problem solving and emotion regulation were also examined, with similar influencing pattern found as mediators. These findings help provide an integrated understanding of how social support and resilience work together to affect depression, as well as practical implications on developing psychosocial interventions for depression among older adults.

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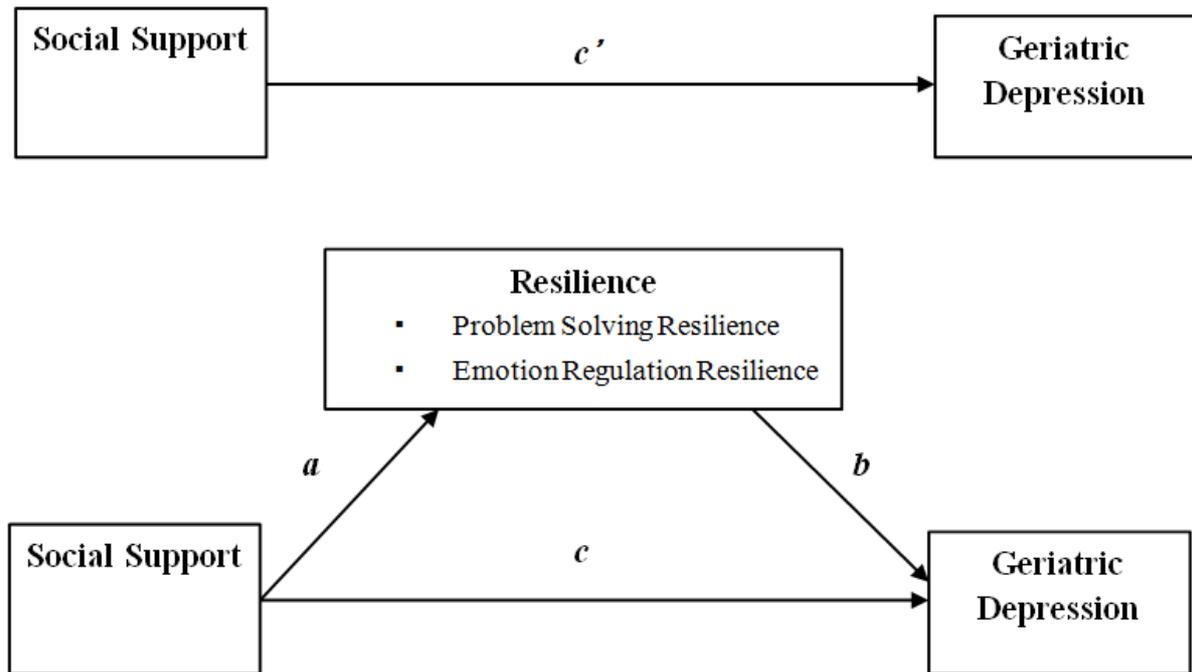


Figure 1. The conceptual mediation model of resilience, social support and depression.

MEDIATION EFFECT OF RESILIENCE

Table 1

Descriptive Statistics and Bivariate Correlations of Involved Variables

	1	2	3	4	5	6	7	8	Mean or n	SD or %
1. Age	-								72.19	6.23
2. Gender	.05	-							123 ^a	75.9 ^a
3. Education	-1.91 [*]	.28 ^{**}	-						0.97	0.80
4. Living arrangement	-.11	.15	-.13	-					127 ^b	78.4 ^b
5. Resilience (total)	-.03	-.08	-.04	.05	-				31.03	4.37
6. Problem solving resilience	-.07	-.04	.02	.00	.89 ^{**}	-			15.22	2.45
7. Emotion regulation resilience	.01	-.11	-.10	.09	.89 ^{**}	.58 ^{**}	-		15.81	2.46
8. Social support	.08	-.13	.02	.08	.41 ^{**}	.41 ^{**}	.32 ^{**}	-	22.63	4.03
9. Geriatric depression	.04	.01	-.07	-.11	-.46 ^{**}	-.41 ^{**}	-.42 ^{**}	-.48 ^{**}	3.66	3.28

Note. SD = Standard Deviation. ^aData presented for female participants. ^bData presented for “living with others”. Statistical significance indicated by ^{*} $p < .05$; ^{**} $p < .01$.

MEDIATION EFFECT OF RESILIENCE

Table 2

Indirect Effect of Social Support on Geriatric Depression through Resilience

Mediators	Unstandardized estimates (<i>SE</i>)				Indirect effects			
	<i>a</i>	<i>b</i>	<i>c</i>	<i>c'</i>	<i>ab</i>	Bootstra p <i>ab</i>	Bootstra p <i>SE</i>	Bootstrap 95% CI
Resilience (total)	.44*** (.08)	-.24*** (.06)	-.28*** (.06)	-.39*** (.06)	-.11	-.11	.03	[-.18, -.05]
Problem solving resilience	.25*** (.04)	-.34*** (.10)	-.30*** (.06)	-.39*** (.06)	-.08	-.08	.03	[-.15, -.04]
Emotion regulation resilience	.19*** (.05)	-.40*** (.10)	-.31*** (.06)	-.39*** (.06)	-.08	-.08	.03	[-.14, -.03]

Note. Statistical significance indicated by *** $p < .001$. With *age, gender, education, and living arrangement* controlled.