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Social Capital and Mental Health Problems among Syrian Refugee Adolescents: The Mediating Roles of Perceived Social Support and Post-traumatic Symptoms

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Abstract*Background*

Social capital is one of the prominent components of refugee mental health. However, its role on mental health is poorly understood.

Aims

The aim of the present study was to investigate the nature of the association between social capital and mental health problems in refugee adolescents.

Method

A cross-sectional study with three hundred twenty-one 12-18-year-old Syrian refugee adolescents was conducted in Turkey. We administered the Arabic versions of the following instruments in school settings: The Social Trust, Multidimensional Scale of Perceived Social Support (MSPSS), The Children's Impact of Event Scale (CRIES-8), and The Strengths and Difficulties Questionnaire (SDQ).

Results

The mediation analyses with Hayes' PROCESS Macro revealed that perceived social support and the intensity of PTSD symptoms fully mediated the relationship between social capital and mental health problems.

Conclusions

The results suggested social trust's two distinct functions which impair the likelihood of mental health problems: (a) social trust might help to facilitate perceived social support from family and friends, and (b) social trust might impair the intensity of traumatic experiences.

Keywords Social capital, Syrian refugees, Mental health problems, Adolescents, Post-traumatic symptoms, Perceived social support

Introduction

According to the United Nations High Commissioner for Refugees' (2019) report, there are 3,614,108 registered Syrian refugees in Turkey, and 13% (469,834) of them are 12-17 years old adolescents. Although it has been eight years since the first refugees arrived, a limited number of studies have examined the refugee mental health problems in Turkey and only a few of them have focused on children and adolescents (Alsayed & Wildes, 2018; Eruyar, Maltby & Vostanis, 2018; Ozer, Sirin & Oppedal, 2016). The research on children and adolescent refugees is especially important, not only because youngsters are more vulnerable than adults to mental health problems (Cartwright, El-Khani, Subryan & Calam, 2015; Sirin & Rogers-Sirin, 2015) but also because the evidence has demonstrated the continuity between childhood and adult mental disorders (Kim-Cohen, Caspi, Moffitt, Harrington, Milne & Poulton, 2003). Additionally, there is a lack of local research with an ecological and social perspective on Syrian refugee mental health. This study aimed to adopt a contextual perspective and focused on the relationship between social capital and mental health problems of Syrian refugee adolescents in Turkey.

Social capital is defined as the features of social organization, such as social trust, networks (of civil engagement) and norms, that enable people to act together more effectively to pursue shared objectives (Putnam, 1996; Putnam, 2002). There is a substantial body of research on the relationship between social capital and mental health (De Silva, McKenzie, Harpham & Huttly, 2005; Kelly, Davoren, Mhaoláin, Breen & Casey, 2009; McKenzie, Whitley & Weich, 2002) and many of these studies were conducted with adolescents (McPherson, Kerr, McGee, Morgan, Cheater, McLean & Egan, 2014; van der Linden, Drukker, Gunther, Feron & van Os, 2003; Weine, Ware & Klebic, 2004). Given the unstable pre- and post-migration-based changes in the refugees' environment that would jeopardize both their social capital and mental health (Beiser & Hou, 2016; Li, Wang, Ye, Jiang, Lou & Hesketh, 2007), this relationship becomes especially important in refugee populations. Although the importance of social capital regarding refugee's mental health has been emphasized by many researchers and is widely used in mental health action plans (Mollica, Cardozo, Osofsky, Raphael, Ager & Salama, 2004; WHO, 2015), theoretical and empirical evidence is still lacking regarding this relationship.

Most of the social capital-mental health studies stressed the distinctive role of social trust as a key element of social capital (Desai, Dausey & Rosenheck, 2005; Kelly et al., 2009; van der Linden et al., 2003). Social trust reflects "an individual's positive view of humanity, the belief that people generally treat others fairly rather than trying to maximize their own gain at others' expense" (Flanagan & Stout, 2010). The current study also focused on the social trust concept. The previous studies showed the impact of social trust on mental

health problems (Kelly et al., 2009; Yagi, Fujiwara, Yambe, Okuyama, Kawachi & Sakai, 2016). However, one question remained unanswered: What is the nature of this relationship? Why is believing in others' trustworthiness important for mental health? Within the scope of this broad question, the current study aimed to investigate if the relationship between *social trust* and *strengths and difficulties* mediated by *perceived social support* and *intensity of PTSD symptoms* among refugee adolescents.

Methods

Sample

The participants were a total of 321 12-18-year-old Syrian adolescents ($Mean = 13.86$; $S = 1.67$) attending an NGO governed school in Istanbul; 163 females (%50.8) and 158 males (%49.2).

Measurements

Since only a few of the participants could read and write in Turkish or in languages other than Arabic, all of the questionnaires were in Arabic. Measurements used in the study are listed below:

Social trust Following Flanagan and Stout's (2010) approach, the current study also used social trust as a latent variable which measures adolescents' positive views of humanity. The construct consisted of the sum of two widely used classical items ("*In general, most people can be trusted*" and "*Most people are fair and don't take advantage of you.*"). The questions were rated on a 7 point agree-disagree scale.

Multidimensional Scale of Perceived Social Support (MSPSS) Arabic version of MSPSS was used to measure perceived social support from family, friends and significant others (e.g., "I can talk about my problems with my family"). MSPSS is a five degrees Likert type self-report scale (1-completely disagree to 5-completely agree) with 12 items. The higher scores indicate higher social support. Its readability was found to be at a fourth-grade reading level (Zimet, Dahlem, Zimet & Farley, 1988). It is a widely used scale and the developers (Canty-Mitchell & Zimet, 2000) reported good validity and reliability. The total score was used in the current study and the Cronbach's alpha was calculated as .84 in this sample.

The Children's Impact of Event Scale (CRIES-8) Children and War Foundation's Arabic version of CRIES-8 (Children and War Foundation, 2018) was used to measure the participants' likelihood of suffering from post-traumatic stress symptoms. It was originally developed by Horowitz, Wilner & Alvarez (1979) for screening purposes. It has 8 items (e.g., "Do you try not to talk about it") rated on a four-point scale (0 = not at all, 1 = rarely, 3 = sometimes, and 5 = often), and consists of two subscales, namely intrusion (re-experiencing the traumatic event) and avoidance (avoidance of the specific stressful event and the feelings that originated from that event). Only the total score of the scale was used in this study. When the sum of the scores is 17 or more, then the probability is very high that a child will obtain a diagnosis of PTSD (Yule, 1997). The scale is a

widely used tool and is proved to have satisfactory internal consistency. The Cronbach's alpha was .65 in this study.

Strengths and Difficulties Questionnaire (SDQ) The total score of the self-report Arabic version of SDQ (Goodman, 1997) was used to assess mental health problems (e.g., "I fight a lot. I can make other people do what I want"). Goodman, Meltzer and Bailey (1998) provided bandings ("normal", "borderline" or "abnormal") to identify children who are likely "cases" with mental health disorders. It is a three point (0-not true, 1-somewhat true, 2-certainly true) continuous scale with five subscales (each includes 5 items; emotional problems, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior). The first four subscale scores can be summed to give a *total difficulty score*. The total difficulty score is a measure of overall childhood mental health problems. It has a specificity of 80% and sensitivity of 85% in identifying psychiatric diagnosis in 4–17-year-old children and adolescents (Goodman, Ford, Corbin & Meltzer, 2004). It has good validity and reliability ratings from researchers all around the world (Goodman et al., 2012). The Cronbach's alpha for the total score in the current study was .69.

Procedures

The data were collected on September-2018 in an NGO governed school in Istanbul. All of the students, teachers and managers were from Syria. The school management confirmed the administration of the scales and verbally asked for permission from the parents of the children. Because refugees are very sensitive about signing any kind of paper, no paper-based informed consent forms were requested from them. After receiving the parental permissions and a human research review committee approval, the whole set of questionnaires were given to each student in the classrooms. Before administering the tests, all of the participants were asked to read the informed consent form and agreed to be a volunteer in the study. The information on the consent form was verbally provide and the volunteers were also informed about the aim of the study. All of the participants filled out the questionnaires (in Arabic) by themselves. The administrators (psychologists) and translators were present in the classrooms when the data were being collected.

Statistical analysis

All analyses were performed using SPSS Version 26.0. The mediation analyses were carried out according to Shrout and Bolger's (2002) method. In order to test the significance of the mediation, we computed the Sobel test (Z) and used the indirect effect coefficient with %95 confidence intervals. Mediation and bootstrap analyses were carried out using Hayes' (2013) regression-based analytic approach and PROCESS Macro for SPSS.

Results

Preliminary analysis

The prevalence of SDQ-measured mental health problems are presented in Table 1. When participants' ($n = 314$) total difficulty scores from SDQ were categorized via the original bandings (Goodman et al., 1998), 75.2% of the participants were categorized as 'normal', 15% were 'borderline', and 9.9% were 'abnormal'.

Based on the Perrin, Meiser-Stedman & Smith's (2005) clinical cut-off, participants' ($n = 268$) CRIES-8 scores from the sum of the scores on Intrusion and Avoidance were used to categorize groups as low (0-16 points) and high (17-40 points) on post-traumatic stress symptoms (PTSD). Accordingly, 124 participants (46.3%) were scored low and 144 participants (53.7%) were scored high on PTSD symptoms.

Table 1
Descriptive statistics, gender comparisons and prevalence of SDQ-measured mental health problems (%) in the sample ($N = 321$)

Descriptive statistics, gender comparison, and prevalence of SDQ measures in normal, borderline, and abnormal groups (N = 321)										
	Whole sample (N = 321)		Male participants (n = 158)		Female participants (n = 163)					
	M	S	M	S	M	S	d	normal	borderline	abnormal
Social Trust	8.24	3.22	8.19	3.47	7.86	2.91	.10**			
MSPSS	66.69	13.51	65.93	13.22	67.70	13.08	.14			
CRIES-8	17.54	8.32	18.23	7.74	17.09	8.67	.14			
SDQ	12.45	5.06	12.56	4.64	12.35	5.45	.04	75.2	15	9.9
Emotional Problems	4.06	2.16	3.80	2.05	4.30	2.24	.23*	74.5	14.3	11.2
Conduct Problems	2.19	1.51	2.26	1.47	2.12	1.55	.09	82	11.4	6.6
Hyperactivity/Inattention	3.31	1.77	3.33	1.73	3.31	1.81	.01	89.4	6.2	4.4
Peer Relationship Problems	2.88	1.70	3.16	1.58	2.62	1.78	.32**	67	25.1	7.9
Prosocial Behavior	8.47	1.48	8.33	1.61	8.60	1.33	.18	96.9	1.9	1.2

MSPSS: Multidimensional Perceived Social Support Scale total score; CRIES-8: The Children's Impact of Event Scale total score; SDQ: Strengths and Difficulties Questionnaire total score

d = Cohen's d

* $p < .05$. ** $p < .01$

Means, standard deviations, and gender comparisons are also presented in Table 1. Compared with male participants ($Mean = 8.19$; $S = 3.47$), female participants ($Mean = 7.86$, $S = 2.91$), reported significantly lower levels of social trust, $t(316) = -2.64$, $p < .01$. No significant difference was found between genders in the MSPSS, CRIES and SDQ total scores. Further analyses with SDQ subscales revealed that female participants ($Mean = 4.30$; $S = 2.24$) reported higher levels of emotional problems when compared with male participants ($Mean = 3.80$; $S = 2.05$), $t(319) = 2.07$, $p < .05$. However, female participants ($Mean = 2.88$; $S = 1.70$) reported lower levels of peer relationship problems than male participants ($Mean = 3.16$; $S = 1.58$), $t(319) = -2.87$, $p < .01$. No significant gender differences were found for other SDQ subscales.

Inter-correlations between study variables are presented in Table 2. Moreover, older age was significantly associated with decreased social trust ($r = -.25$, $p < .01$), decreased MSPSS ($r = -.15$, $p < .05$), and increased SDQ ($r = .14$, $p < .05$). The Pearson's r correlation between age and CRIES-8 was not significant, $r = .11$, $p > .05$.

Table 2
Inter-correlations (Pearson-r coefficients) in the whole sample (N = 321)

	Social Trust	2	3	4	5	6	7	8
2. MSPSS	.15*							
3. CRIES-8	-.20**	-.11						
4. SDQ	-.16**	-.38**	.28**					
5. Emotional Problems	-.20**	-.24**	.31**	.78**				
6. Conduct Problems	-.13*	-.32**	.21**	.66**	.32**			
7. Hyperactivity/Inattention	-.05	-.20**	.14*	.72**	.39**	.41**		
8. Peer Relationship Problems	-.03	-.36**	.10	.64**	.36**	.23**	.24**	
9. Prosocial Behavior	.05	.30**	.03	-.21**	-.02	-.27**	-.16**	-.19**

MSPSS: Multidimensional Perceived Social Support Scale total score; CRIES-8: The Children's Impact of Event Scale total score;
SDQ: Strengths and Difficulties Questionnaire total score

* $p < .05$. ** $p < .01$

Mediation analysis results

We tested the mediating roles of MSPSS and CRIES-8 scores on the relationship between the social trust scores and SDQ. The first two models separately examined the mediating roles of MSPSS and CRIES-8, and the final model simultaneously examined the mediating role of both MSPSS and CRIES-8. None of the results were changed when age and gender were controlled.

In the first mediation model the social trust score demonstrated a positive, significant relation to SDQ, $b = -.21$, $t(257) = -2.14$, $p < .05$. The social trust score was a significant predictor of MSPSS ($b = .62$, $t(257) = 2.41$, $p < .05$), which, in turn, significantly predicted SDQ, $b = -.14$, $t(256) = -6.23$, $p < .001$. The direct effect of the social trust score on SDQ was not significant when the MSPSS was included in the model, $b = -.12$, $t(256) = -1.34$, $p > .05$. Approximately 15% of the variance in SDQ was accounted for by the predictors, $F(2,256) = 22.04$, $p < .001$, $R^2 = .15$. The indirect effect was tested using a percentile bootstrap estimation approach with 1000 samples (Shrout & Bolger, 2002), implemented with the PROCESS macro Version 3.2 (Hayes, 2013). The indirect effect of the social trust score on the SDQ through MSPSS was significant ($ab_{cs} = -.0852$, $CI = -.1668$, $-.0019$). Thus, findings suggest that MSPSS fully mediated the relation between the social trust score and SDQ ($Z = -2.26$, $p < .05$).

In the second mediation model, the mediating role of CRIES-8 scores on the relationship between social trust and SDQ was examined. The results showed that the social trust score demonstrated a positive, significant relation to SDQ, $b = -.26$, $t(264) = -2.74$, $p < .01$. Social trust was a significant predictor of CRIES-8 scores ($b = -.51$, $t(264) = -3.27$, $p < .01$), which, in turn, significantly predicted SDQ, $b = .15$, $t(263) = 4.19$, $p < .001$. The direct effect of social trust on the SDQ was not significant when CRIES-8 was included in the model, $b = -.19$, $t(263) = -1.95$, $p > .05$. Approximately 9% of the variance in SDQ was accounted for by the predictors, $F(2,263) = 12.79$, $p < .001$, $R^2 = .09$. The indirect effect of social trust on the SDQ through CRIES-8 scores was significant ($ab_{cs} = -.0789$, $CI = -.1434$, $-.0270$). Thus, findings suggest that the CRIES-8 scores fully mediated the relation between social trust and SDQ ($Z = 2.58$, $p < .01$).

In the last mediation model, we simultaneously examined the mediating role of both MSPSS and CRIES-8 scores. The results are displayed in Fig 1. The indirect effects of social trust on the SDQ score through both the MSPSS ($ab_{cs} = -.1350$, $CI = -.2486, -.0377$) and CRIES-8 ($ab_{cs} = -.0492$, $CI = -.1174, -.0027$) total scores were significant. Approximately 21% of the variance in SDQ was accounted for by the predictors, $F(3,215) = 18.93$, $p < .001$, $R^2 = .21$. Furthermore, the initially significant direct effect of social trust on the SDQ score became non-significant when the MSPSS and CRIES-8 total scores were included in the model, $b = -.03$, $t(215) = -0.28$, $p > .05$. Thus, the results suggested that the MSPSS and CRIES-8 total scores accounted for a comparable amount of the relation between the social trust scores and SDQ scores.

Fig1 Path diagram showing the unstandardized coefficients for mediated effect (through MSPSS and CRIES-8) and direct effect of the Social Trust on SDQ. Note. MSPSS: Multidimensional Perceived Social Support Scale total score; CRIES-8: The Children's Impact of Event Scale total score; SDQ: Strengths and Difficulties Questionnaire total score * $p < .05$. ** $p < .01$. *** $p < .001$

Discussion

Consistent with previous studies with Syrian refugee children and adolescents in Turkey (Eruiyar et al., 2018; Ozer et al., 2016), our study showed that half of the participants were above the clinical-cut off score for likelihood of suffering from PTSD symptoms. Although, mental health problems scores (15% borderline and 9.9% abnormal) were lower than PTSD scores, the results were similar to previous studies with Syrian refugee adolescents (Alsayed & Wildes, 2018; Eruiyar et al., 2018).

The main aim of the current study was to examine the relationship between social trust and mental health problems among Syrian refugee adolescents. Confirming and extending previous findings (Klineberg et al., 2006; Papageorgiou, Frangou-Garunovic, Iordanidou, Yule, Smith & Vostanis, 2000), both post-traumatic

symptoms and perceived social support were significantly associated with mental health problems. Further, our results suggested that post-traumatic symptoms and perceived social support are functionally distinct constructs that are both central to mental health problems. Specifically, both post-traumatic symptoms and perceived social support emerged as unique predictors of mental health problems and unique mediators of the relation between social trust and mental health problems. Indeed, mediation analyses revealed that post-traumatic symptoms and perceived social support fully mediated the relation between social trust and mental health problems.

Therefore, these results provide an empirically derived answer to the question of “why believing the trustworthiness of others (i.e., social trust) improves mental health” by revealing social trust’s two distinct functions in mental health problems. First, social trust might help to facilitate perceived social support from family and friends. This function may be explained further as follows. Social trust shapes social helpfulness and fairness, and social fairness makes people more likely to have faith in friends and family (Uslaner, 2002), which is essential for receiving social support from them, and, ultimately, social support enhances resilience and reduces vulnerability as a buffer for mental health problems. Second, social trust might impair the intensity of traumatic experiences. This second function can be explained further in terms of trauma-related negative cognitions such as “the world is completely dangerous, no one can be trusted (McLean, Yeh, Rosenfield & Foa, 2015).” Victims are frequently plagued by fears of recurrence of the traumatic event (Yule, Bolton, Udwin, Boyle, O’Ryan & Nurrish, 2000) and their negative trauma related perceptions are associated with PTSD symptom severity (Foa, Ehlers, Clark, Tolin & Orsillo, 1999). Accordingly, one may expect that higher levels of social trust could help victims to avoid negative trauma-related cognitions. Future studies which would examine social trust as a protective factor against negative cognitions may expect that believing others’ trustworthiness reduces the likelihood of mental health problems by playing a buffering role against negative trauma related cognitions.

Indeed, our results are in accordance with Bronfenbrenner’s bioecological systems theory (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994) which suggested that interactions among a number of nested systems significantly affect the individual. Social trust is often considered as more about groups (an element of exosystem) rather than individuals, and researchers argue that its ecological nature distinguishes it from social support, which is a property of individuals (an element of microsystem) (McKenzie et al., 2002). However, traumatic stress is considered to be included in the biophysical system (Hoffman & Kruczek, 2011), because the impacts of a traumatic life event on individual can trigger a biophysical stress (Pfefferbaum, 1997) and biophysical factors are included in the innermost ring of the bioecological model. Accordingly, on the one hand, by revealing the mediating role of social support in the relationship between social trust and adolescents’ mental health problems, our results suggested both the direct effect of the microsystem (social support) on

mental health problems, and the mesosystemic influence (bidirectional influence among the various systems) of the exosystem (social capital) and microsystem (social support) on adolescents' mental health problems. On the other hand, by revealing the mediating role of post-traumatic symptoms in the relationship between social trust and mental health problems, our results demonstrated both the direct effect of the biophysical system (post-traumatic symptoms) on mental health problems, and the mesosystemic influence of the exosystem (social capital) and biophysical system (post-traumatic symptoms) on adolescents' mental health problems. Future studies would further analyze other compounds of social capital such as social networks and include other important elements of microsystem and exosystem such as the role of health services and language barriers to a better understanding of the nature of the relationship between social capital and mental health problems among refugee adolescents.

In addition, we also examined the possible roles of age and gender on social trust. Similar to previous studies in non-refugee adolescents (Wray-Lake and Flanagan, 2012), compared to boys, girls had lower social trust levels in our study. However, the effects of social trust on post-traumatic symptoms, perceived social support and mental health were not different between girls and boys. Lastly, consistent with previous studies (Flanagan & Stout, 2010; Wray-Lake & Flanagan, 2012), our study also found a significant association between increased age and decreased social trust. This relation did not change the associations in our tested model either. However, future gender-focused and longitudinal studies in refugee populations are needed to establish theoretical and causal links between social capital and mental health problems. By doing so, future studies could further explore this relationship, and could provide age and gender specific mental health intervention procedures to improve social capital among refugees.

Limitations

A number of limitations should be considered when interpreting these findings. First, this study is correlational, neither these results can be used to infer any causal relationship between variables nor reverse causation can be ruled out. Second, the sample was recruited from only one school. Thus, these findings cannot be fully generalizable to all refugee adolescents who either live in refugee camps, or could not attend school. Third, we only used a self-report measure to evaluate mental health problems among adolescents.

Conclusions

Despite the limitations, the present study has unique strengths. To the best of our knowledge, this is the first study to examine the mental health problems of Syrian refugees in Turkey with regard to social capital. The current study showed that social trust, perceived social support and post-traumatic stress disorder symptoms predict the mental health problems among Syrian refugee adolescents. Moreover, the relationship between social trust and mental health problems is fully mediated by perceived social support and PTSD symptoms.

Overall, the current study suggested an answer to the question of why social capital improve mental health. It may be because of its two functions: (a) facilitating to receive social support from family and peers, (b) and impairing the intensity of traumatic experiences. In conclusion, the results of the current study contribute to the literature on the relation between social trust and mental health problems.

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Compliance with ethical standards All participants provided informed written consent prior to starting the questionnaire, and the data were collected anonymously. Study protocol and informed consent form were approved by the Ethical Review Board of Dunya Doktorlari Dernegi. The study has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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