BMC Psychology

RESEARCH

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Social cognition and connectedness in adult refugees: the case of Syrians living in Türkiye

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Abstract

Background Millions of people around the world have been forced to migrate due to various factors such as wars, political and ethnic conflicts, and economic instability. Refugees face numerous post-migration challenges such as problems of adaptation to their new country, language barriers, acculturation stress, and ethnicity concerns. These issues, along with other challenges, make it difficult for refugees to build social connections in their new host country. Social connectedness and social cognition among refugees are areas that have not been thoroughly studied. Therefore, this study aims to evaluate social cognition and social connectedness in adult refugees who had to migrate due to the civil war that started in Syria in 2011 and settle in Türkiye.

Method A total of 499 individuals, including 249 Syrian refugees and 250 Turks as the control group, were included in the study. Participants completed a variety of assessments, including a sociodemographic data form, the Beck Depression Inventory (BDI), Toronto Alexithymia Scale (TAS-20), Childhood Trauma Questionnaire (CTQ), Social Connectedness Scale (SCS), and Reading the Mind in the Eyes Test (RMET).

Results The comparison analyses revealed that Turkish participants had higher scores in both social cognition and social connectedness compared with Syrian refugees. The refugees had statistically significantly higher alexithymia and childhood trauma scores than Turkish participants. The MANCOVA analysis indicated that childhood trauma was significantly associated with both social cognition and social connectedness. In addition, depression and alexithymia were significantly associated with social connectedness. The interaction effect of factors on social cognition such as exposure to war, receiving financial support from the state, and financial loss was found to be significant. Other dyadic and triadic interactions had no significant effects on social connectedness.

Conclusion Refugees' social cognition performance and social connectedness levels were found to be lower than in Turkish participants. Refugees' poor social cognition and connectedness may be related to childhood traumas. It may not be a consequence of being a refugee. In this period when refugees face significant challenges, our study offers promising findings that could enhance their integration.

Keywords Syrian refugees, Connectedness, Social cognition, Trauma, Alexithymia

Introduction

Millions of people around the world have been forced to flee their homes and seek refuge elsewhere due to various factors such as wars, persecution, political and ethnic conflicts, human rights violations, climate change, and economic instability [1, 2]. Conflicts and wars, especially in regions such as the Middle East, cause mass migrations. The crisis in Syria is a prime example. Türkiye, together with neighbouring countries such as Iraq,

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Saudi Arabia, Lebanon, Jordan, and some European countries such as Germany, Italy, and France, has been deeply affected by one of the most serious refugee crises of the twenty-first century [3]. This crisis stems from the ongoing civil war and social uprising in Syria, which began in 2011 as part of the Arab Spring, a wave of social movements that also affected Egypt, Libya, Tunisia, and Bahrain [4]. Due to its proximity to both Arab and European countries, and its special policies towards refugees, Türkiye has become the largest host country for Syrians displaced by conflict, with approximately 3.7 million refugees by 2023 [5, 6].

When refugees leave their country of origin, they face numerous challenges that affect their social integration, and mental health [7]. Cultural challenges, language barriers, the inability to meet living expenses, and concerns about relatives left behind are some of the most important challenges faced by refugees [8]. In addition, refugees often face discrimination, racism, and xenophobia. This makes it even more difficult for refugees to adapt and integrate in their new host countries [9]. Moreover, mental health problems such as post-traumatic stress disorder (PTSD), depression, and anxiety are also highly prevalent among refugees [8, 10–14]. These psychological problems tend to be quite common, even years after migration [7, 15].

This study investigates the interaction between social cognition and social connectedness, focusing on how migration and trauma affect the social interactions and integration of adult Syrian refugees living in Türkiye. Social cognition is defined as the capacity to perceive, interpret, and respond to the intentions and behaviors of other people [16]. In a social context, it involves processes such as inferring meaning from the behavior of others in order to understand their beliefs and intentions and being able to interact with complex social environments by exhibiting appropriate behaviors [17]. In this way, people can accurately perceive the mental and emotional state of others. In the context of refugees, social cognition plays a crucial role in navigating unfamiliar social environments and making meaningful connections. The migration experience brings with it specific challenges that affect social cognition and connectivity. Language barriers, cultural shock, and financial hardship are just some of the integration hurdles often faced by refugees. These difficulties can make refugees feel more isolated, hindering their social interactions [9].

Social connectedness is defined as the subjective awareness of being closely related to the social world and is typically considered as the experience of belonging to other people and society [18]. The experience of interpersonal closeness in the social world includes close and distant relationships with family, friends, peers, acquaintances, strangers, and society [18]. Social connectedness often involves a shared interest, culture, or lived experience that favors deep interpersonal relationships. It also encompasses how individuals interact and engage with various social networks, such as their own communities, educational institutions, or other group organizations [19]. In this context, social connectedness refers to the feeling of being embedded in a social network or relationship, emphasizing the importance of social ties and the perceived value derived from these connections. Hence, high levels of social connectedness are associated with greater resilience, a deeper sense of belonging, and facilitate a more fulfilling, supported social life [20].

It is argued that individuals with high levels of social connectedness are more likely to enter social environments, do not feel threatened when interacting with their social environment, and tend to evaluate their environment more positively [18, 21]. Individuals with low levels of social connectedness begin to feel isolated and disconnected from others. Low social connectedness causes intense acculturation stress. From this perspective, it has been supported by studies that it is an effective factor in the process of adapting to a new culture [22]. It is known that refugees face a great challenge such as rebuilding their social networks in the host country, as well as staying in touch with relatives in their own country [23]. It is of great importance for refugees to develop their social connection with the host country because social connectedness can also contribute to reducing psychological problems resulting from post-migration stress factors by promoting interpersonal relationships.

Theory of mind (ToM) is a crucial concept that complements our understanding of social cognition and connectedness. ToM is the ability to make correct inferences from one's own and others' mental states such as thoughts, desires, and intentions [24]. It also includes abilities such as expressing and understanding emotions, empathizing, understanding a person's intentions and forming mental representations [25]. This capacity allows individuals to interpret and predict the behaviour of others based on their mental state, thus facilitating effective social interactions and communication [26]. Well-developed social cognition significantly enhances one's ability to empathise, navigate complex social dynamics, and build meaningful relationships. By accurately understanding and responding to the thoughts and feelings of others, individuals can participate more effectively in social exchanges, develop stronger bonds, and a deeper sense of belonging within social groups. This is particularly important for refugees, who often face challenges in integrating into new communities and building supportive networks. Thus, ToM plays a vital role in the

formation and maintenance of social bonds, promoting social integration, connectedness, empathy, and general well-being [27].

In the case of Syrian refugees in Türkiye, there are several factors that influence social cognition and connectivity, including the challenges of migration and the impact of trauma. In this case, trauma refers to severe or intensely upsetting events that exceed the individual's ability to cope and lead to long-lasting negative effects [28]. The experience of displacement and conflict can profoundly affect social cognition by changing the way refugees interpret and respond to social cues. Research shows that individuals who have had traumatic experiences often have difficulty reading and responding to social signals accurately [29]. Trauma can manifest as emotional numbness, which significantly affects refugees' social interactions and their capacity to build lasting relationships. These effects can make refugees more susceptible to perceived social risks, which can make their integration into new communities more difficult. The difficulties of adapting to a new environment make the process of establishing social connections and a sense of belonging particularly challenging [30].

The focus of this paper revolves around two critical themes: social cognition and social connectedness. These aspects are profoundly affected by trauma, which is an integral part of the refugee experience, and the challenges of migration. Accordingly, the primary aim of this study is to investigate the social cognition and social connectedness levels of adult refugees who were exposed to the civil war in Syria and had to migrate and compare them with Turkish participants. The secondary aim was to examine the relationship between social cognition and social connectedness with trauma, depression, and alexithymia. We hypothesized that refugees who had experienced trauma due to war and migrated might have poorer social cognition performance and engagement compared with individuals without these experiences. Our goal was to create comprehensive support systems that could more effectively address the needs of Syrian refugees, ultimately aiding in their social integration and enhancing their quality of life.

Method

Participants

The sample of the study consisted of Syrian and Turkish adults, aged 18–45 years. The Syrian participants were chosen from among individuals who had been living in Türkiye for at least 10 years and who did not Live in refugee camps. The boundaries of the group were determined for the reasons we will discuss below. With the enactment of the Law on Foreigners and International Protection in 2014, which was modelled after the European Union Asylum System, Türkiye introduced legal regulations concerning the integration of foreigners into the country for the first time. In accordance with this law, local integration is supported and considered as a permanent solution for foreigners to adapt to the country [31]. Considering that local integration is a gradual process encompassing legal, social, economic, and cultural dimensions, it is reasonable to define the sample criteria for Syrians living in Türkiye as those who have resided in the country for at least 10 years. Accordingly, Syrian refugees who resided in camps, who tend to be more isolated and have more limited access to rights and services, were excluded. The aim of selecting Syrian participants who have resided in Türkiye for at least 10 years and lived outside refugee camps was to focus on individuals with a relatively high level of integration into the Turkish nation. This demographic group is assumed to have had longer and more consistent interactions with the host community, better access to social and economic resources, and greater opportunities for social and cultural integration. The experiences of Syrian respondents who are residents and have lived in Türkiye for over 10 years may differ significantly from those of individuals living in refugee camps, where limited mobility is more common, or refugees who have only recently arrived in Türkiye.

The required minimum sample size was calculated using the G*Power program [32]. The analysis was conducted with an effect size ($f^2(V)$) of 0.0625, a significance level (α) of 0.05, and a power (1—β) of 0.80, as a result, it was found that a minimum of 208 participants were required. A total of 499 people participated in the study, 74.1% ($n=370$) were female and 25.9% ($n=129$) were male. Two hundred fifty (50.1%) of the participants were Turkish and 49.9% ($n=249$) were Syrian. Two hundred seventy-eight (55.7%) participants were aged 18–25 years, 19.8% ($n=99$) were aged 25–32 years, 14% ($n=70$) were aged 32–40 years, and 10.4% ($n=52$) were aged 40 years or older. When their marital status was examined, 60.3% ($n=301$) of the participants reported being single, 36.5% ($n=182$) were married, 3.0% ($n=15$) were divorced, and 0.2% ($n=1$) were widowed. When education was examined, 4.2% ($n=21$) of the participants had primary school education, 17.4% ($n=87$) had high school education, 64.3% ($n=321$) had a bachelor's degree, and 14.0% ($n=70$) had a master's degree. When financial support from the state was assessed, the vast majority of the participants (91.8%, $n=458$) reported not receiving any financial aid; 8.0% ($n=40$) did receive support. Some 68.5% of the participants ($n=342$) stated they had not been exposed to war, 25.3% ($n=126$) of the participants reported that they lost a relative in the war, and 5.2% ($n=26$) experienced Limb loss due

to the war. Additionally, 15.6% of the participants ($n=78$) reported experiencing mental health issues as a result of the war, and 5.6% ($n=28$) sought treatment for these issues. The socioeconomic and demographic information of the participants is presented in detail in Table 1.

Procedures

The data of this cross-sectional study conducted with adult Syrian refugees and Turkish participants Living in Istanbul were collected between September 2023 and June 2024. The study was obtained through chain referral, where data were collected from a non-random, easy-to-contact or easy-to-reach group. This is a recommended

Table 1 Demographic characteristics of the sample ($N=499$)

Variable	Turks ($n=250$)	Percentage (%)	Syrians ($n=249$)	Percentage (%)	Total ($n=499$)	Percentage (%)
Gender						
Female	198	79.2	172	69.1	370	74.1
Male	52	20.8	77	30.9	129	25.9
Age						
18–25	147	58.8	131	52.6	278	55.7
25–32	46	18.4	53	21.3	99	19.8
32–40	31	12.4	39	15.7	70	14.0
40 and above	26	10.4	26	10.4	52	10.4
Marital Status						
Single	175	70.0	126	50.6	301	60.3
Married	70	28.0	112	45.0	182	36.5
Divorced	5	2.0	10	4.0	15	3.0
Widowed	-	-	1	0.4	1	0.2
Education						
Primary	7	2.8	14	5.6	21	4.2
High school	28	11.2	59	23.7	87	17.4
Undegraduate	172	68.8	149	59.8	321	64.3
Graduate	43	17.2	27	10.8	70	14.0
Financial support[a]						
No	250	100.0	208	83.5	458	91.8
Yes	-	-	40	16.1	40	8.0
Exposure to War						
No	250	100.0	92	36.9	342	68.5
Yes	-	-	157	63.1	157	31.5
Loss of a Close One in War						
No	250	100.0	123	45.8	373	74.7
Yes	-	-	126	50.6	126	25.3
Financial Loss						
No	250	250	18	6.8	268	53.7
Yes	-	-	231	92.8	231	46.3
Loss of Limb Due to War						
No	250	100.0	213	85.9	473	94.8
Yes	-	-	26	10.4	26	5.2
Mental Illness Due to War						
No	250	100.0	161	65.1	421	84.4
Yes	-	-	78	31.3	78	15.6
Psychological/Psychiatric Treatment After War						
No	250	100.0	221	83.5	471	94.4
Yes	-	-	28	11.2	28	5.6

[a] receiving financial support from the state

method for sampling hard-to-reach populations. The initial participants were Syrian university students with refugee status, enrolled in the institutions where the study's authors were employed. This network was expanded by inviting other Syrian individuals known to the first participants (dormitory, school, family) to the study. Two Syrian assistants, who were psychology students and fluent in Turkish and Arabic, accompanied the data collection process from the Syrian participants. The assistants also visited schools and dormitories to reach more participants. Before completing the forms, participants received training on the study's purpose, the characteristics of the tests and scales, how to complete them, and the ethical considerations involved.

The inclusion criteria were being aged between 18 and 45 years, having at least primary school education, and consenting to participate in the study. For participants from Syria, additional requirements included being able to read Turkish, having come to Türkiye due to the war, and holding refugee status. The exclusion criteria were illiteracy, not having a war-related channel of arrival to Türkiye, being diagnosed as having any psychiatric and/or neurologic disease or taking psychiatric medication. Informative consent forms were presented to the participants and signed before starting the application. These forms included information about the study, the confidentiality of the study data, voluntariness for participation, and a statement saying that they could leave the study at any time without giving any reason. The tests and scales took approximately 40 min to complete. The participants completed a sociodemographic data form, the Beck Depression Inventory (BDI), Toronto Alexithymia Scale (TAS-20), Childhood Trauma Questionnaire (CTQ), Social Connectedness Scale (SCS), and Reading the Mind in the Eyes Test (RMET). Approval for the research was granted by the Scientific Research Ethics Committee of the University of Health Science (reference number 536/2023).

Assessments tools

Sociodemographic data form

The form was created by the researchers, considering the literature on refugee studies. It included questions about the participants' age, sex, education level, cohabitants, whether they received regular help, history of psychiatric and medical illness, medication use. and potential traumatic events.

Beck Depression Inventory (BDI)

The BDI was developed by Aaron T. Beck in 1961 to determine the presence and severity of depressive symptoms in adults [33]. The scale consists of 21 items and each item is scored between 0 and 3. The total score varies between 0 and 63. The higher the total score, the more severe the depression. The cut-off score of the scale is 17. The validity and reliability study of the Turkish version has been conducted [34]. In the adaptation study conducted by Hisli (1989), the internal consistency of the scale was found as 0.80, and the split-half reliability coefficient was calculated as 0.74. In our study, Cronbach's Alpha value was found as 0.92 for BDI.

Toronto Alexithymia Scale (TAS-20)

The TAS-20, which is widely used in the assessment of alexithymia, was developed by Bagby et al. in 1994 [35]. The total scores that can be obtained from the 20-item, five-point Likert-type scale vary between 20 and 100. High scores explain high alexithymic levels. The scale has three sub-dimensions as "Identifying Feelings", "Describing Feelings", and "Externally-Oriented Thinking". The Turkish validity and reliability study was conducted in 2009 by Güleç et al. [36]. The total scale Cronbach's Alpha value was found as 0.78 and the subscales were between 0.57 and 0.80. In our study, Cronbach's Alpha value was found as 0.89 for difficulty in recognizing emotions, 0.70 for difficulty in expressing emotions, 0.61 for expressive thinking, and 0.82 for the total score of the scale.

Childhood Trauma Questionnaire (CTQ)

Developed by Bernstein et al. in 1998 [37], the CTQ is a self-report scale for retrospective and quantitative screening of abuse and neglect experiences before the age of 20 years. It consists of 28 questions. It consists of five sub-dimensions: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. The total score of the subscales varies between 5–25, and the total score of the scale varies between 25–125. The validity and reliability study of the Turkish version has been conducted [38]. In the Turkish adaptation study, Cronbach's Alpha for the overall scale was found as 0.87. Additionally, the Gutmann split-half coefficient was determined as 0.69. In our study, Cronbach's Alpha value was 0.84 for emotional abuse, 0.87 for emotional neglect, 0.93 for physical abuse, 0.58 for physical neglect, 0.94 for sexual abuse, and 0.91 for the total score of the scale.

Social Connectedness Scale (SCS)

The SCS was developed to measure the individual's sense of social connectedness during and after adolescence [39]. The scale consists of one dimension. In each item of the scale, a situation indicating feelings and thoughts about social relations is presented and individuals are asked to evaluate how often they experience this situation on a six-point scale. The Turkish validity and reliability study has been conducted [40]. The internal consistency and test–retest reliability were found as $\alpha = 0.90$ and 0.90,

respectively. In our study, Cronbach's Alpha value of the scale was 0.96.

Reading the Mind in the Eyes Test (RMET)

The RMET was developed by Baron-Cohen et al. to assess the emotion recognition, mental state analysis, and ToM skills of children with ASD [41]. The test consisted of 36 items and four options for each pair of eyes. Scoring of the scale is taken as 1 for correct options selected in each item and 0 for incorrect options. The Turkish adaptation study was conducted by Yıldırım et al. [42]. In the Turkish adaptation, four items were removed and Turkish version has 32 items. The total score that can be obtained from the test is in the range of 0–32 and higher scores indicate better social cognition skills and ToM skills. In the Turkish adaptation study, the Kuder-Richardson 20 (KR-20) value was found as 0.72. In our study, the KR-20 value of the scale was 0.72.

Statistical analysis

To determine whether the variables were suitable for parametric tests, kurtosis and skewness values were analyzed and both values were expected to be within ± 2. The analyses revealed that the kurtosis and skewness values for the total score and sub-dimension scores of the Childhood Trauma Scale fell outside the ± 2 range. The inverse distribution function (IDF) method was used to transform the variables. After IDF transformation, the total score and sub-dimension scores of childhood traumas were found to be within acceptable limits and the values obtained after IDF transformation were used in all subsequent analyses. Pearson's product moment correlation coefficient method was used to determine the correlation between variables. The independent samples t-test was used to compare the mean scores of the Turkish and Syrian participants. Multivariate analysis of covariance (MANCOVA) was performed to determine the factors affecting social cognition and social connectedness. In the analysis, alexithymia, depression, and childhood trauma were included in the model as covariates, and exposure to war, loss of a relative in war, financial loss, and financial support from the state were included as factors. The analyses were conducted using the SPSS version 25.0 software package.

Results

Comparison analyses between the Turkish and Syrian groups

The comparison analyses revealed that the Turkish participants scored significantly higher than the Syrian participants in RMET ($t=7.748$, $p<0.001$) and SCS ($t=4.247$, $p<0.001$). On the other hand, Syrian participants had statistically significantly higher scores than Turkish participants in TAS-20 total scores ($t=-6.417$, $p<0.001$), difficulty identifying feelings ($t=-5.998$, $p<0.001$), difficulty describing feelings ($t=-6.532$, $p<0.001$), externally oriented thinking ($t=-2.115$, $p=0.035$), CTQ total scores ($t=-3.792$, $p<0.001$), emotional neglect ($t=-4.520$, $p<0.001$), physical abuse ($t=-2.328$, $p=0.020$), and physical neglect ($t=-5.819$, $p<0.001$) (Table 2 and Fig. 1).

Correlation analyses

The correlation analysis results were evaluated separately for the Turkish and Syrian groups. Fisher's Z-test was used to determine the differences between the correlation coefficients obtained in the groups. The correlation values between social cognition and social connectedness ($z=-1.927$, $p=0.027$), depression and externally oriented thinking ($z=-2.088$, $p=0.018$), and social connectedness and externally oriented thinking ($z=-2.332$, $p=0.01$) were significantly different between the Turkish and Syrian groups. The correlation values are presented in Table 3.

The findings of MANCOVA analysis for social cognition and social connectedness

MANCOVA analysis was conducted to explore the variables associated with social cognition and social connectedness. In this model, social cognition and social connectedness served as dependent variables, and alexithymia, depression, and childhood trauma were included as covariates. The analysis also incorporated the following categorical variables as potential factors: "exposure to war", "loss of a close one", "financial loss", and "receiving financial support from the state", to assess their relationships with the dependent variables. The theoretical model for the MANCOVA analysis is presented in Fig. 2. The results of the MANCOVA analysis are given in Table 4.

The MANCOVA analysis indicated that the corrected model had a significant effect on social cognition ($F(15, 482)=5.257$, $p<0.001$, $\eta^2=0.143$) and social connectedness ($F(15, 482)=14.000$, $p<0.001$, $\eta^2=0.302$). Consequently, the independent variables and covariates explained 14.1% of the total variance in social cognition and 30.3% of the total variance in social connectedness. These findings indicate that the overall effects of the model on the dependent variables are significant, and most of the variances in the dependent variables are explained by the independent variables and covariates (Table 4).

As a result of the analysis including covariates, only childhood trauma had a significant effect on social cognition ($F(1, 482)=4.872$, $p=0.028$, $\eta^2=0.009$). This result indicates that childhood trauma explains 0.9% of the total variance in social cognition. When

Table 2 Comparison of psychological and social measures between Turkish and Syrian participants

Variable	Turks ($N = 250$)		Syrians ($N = 249$)		*t*	*p*	Mean Difference	Standard Error Difference	95% CI Lower	95% CI Upper
	Mean	sd	Mean	sd						
1. RMET	22.64	4.25	19.53	4.73	7.748	**< 0.001**	3.118	0.402	2.327	3.909
2. SCS	34.09	10.44	29.95	11.29	4.247	**< 0.001**	4.133	0.973	2.221	6.045
3. TAS-20-Total	47.68	10.90	54.18	11.71	-6.417	**< 0.001**	-6.500	1.013	-8.490	-4.510
4. TAS-20-Identifying Feelings	14.34	5.87	17.74	6.79	-5.998	**< 0.001**	-3.407	0.568	-4.524	-2.291
5. TAS-20-Describing Feelings	11.46	3.96	13.83	4.12	-6.532	**< 0.001**	-2.362	0.362	-3.073	-1.652
6. TAS-20-Externally-Oriented Thinking	21.88	4.00	22.61	3.70	-2.115	**0.035**	-0.730	0.345	-1.408	-0.052
7. BDI	14.85	12.13	14.83	10.72	0.029	0.977	0.029	1.025	-1.984	2.043
8. CTQ-Total	38.94	15.36	44.21	15.69	-3.792	**< 0.001**	-5.270	1.390	-8.001	-2.540
9. CTQ-Emotional Abuse	7.69	4.01	8.27	4.16	-1.596	0.111	-0.584	0.366	-1.303	0.135
10. CTQ-Emotional Neglect	10.91	5.52	13.11	5.34	-4.520	**< 0.001**	-2.198	0.486	-3.154	-1.242
11. CTQ-Physical Abuse	6.14	3.36	6.92	4.13	-2.328	**0.020**	-0.784	0.337	-1.446	-0.122
12. CTQ-Physical Neglect	7.46	3.00	9.11	3.30	-5.819	**< 0.001**	-1.642	0.282	-2.196	-1.087
13. CTQ-Sexual Abuse	6.74	4.12	6.80	4.20	-0.168	0.867	-0.063	0.372	-0.794	0.669

BDI Beck Depression Inventory, *CTQ* Childhood Trauma Questionnaire, *RMET* Reading the Mind in the Eyes Test, *SCS* Social Connectedness Scale, *TAS-20* Toronto Alexithymia Scale

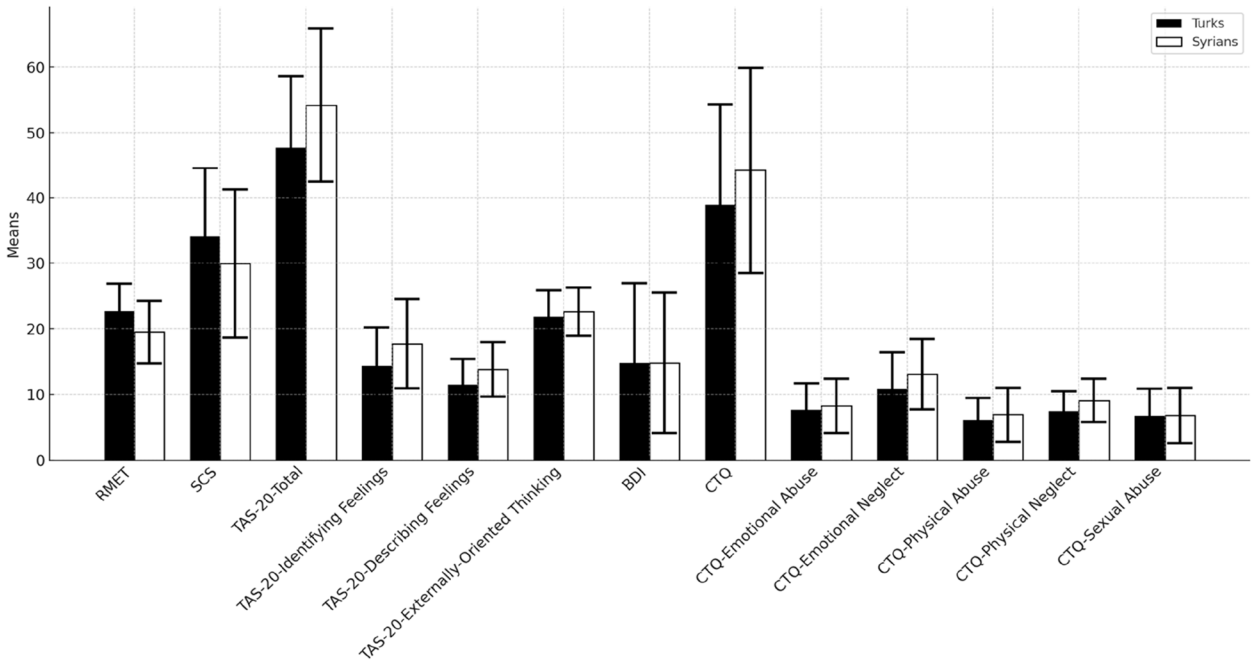

Fig. 1 Comparison of mean scores across psychological and social measures between Turkish and Syrian participants. *Note 1*. Error bars represent standard deviations. *Note.* RMET = Reading the Mind in the Eyes Test; SCS = Social Connectedness Scale; TAS-20 = Toronto Alexithymia Scale; BDI = Beck Depression Inventory; CTQ = Childhood Trauma Questionnaire

Table 3 The results of correlation analysis for Turks and Syrians

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. RMET	1	.05	.04	.10	.04	-.11	.06	-.11	.12	-.22**	-.04	-.25**	-.01
2. SCS	.22**	1	-.31**	-.33**	-.25**	-.11	-.42**	-.26**	-.24**	-.24**	-.13*	-.23**	-.12
3. TAS-20-Total	-.01	-.44**	1	.92**	.88**	.50**	.52**	.19**	.27**	.09	.15*	.01	.18**
4. TAS-20-Identifying Feelings	.09	-.33**	.89**	1	.79**	.18**	.54**	.18**	.30**	.01	.18**	-.04	.21**
5. TAS-20-Describing Feelings	.02	-.42**	.87**	.79**	1	.23**	.48**	.16*	.27**	.06	.13*	-.03	.15*
6. TAS-20-Externally-Oriented Thinking	-.18**	-.31**	.55**	.19**	.23**	1	.11	.10	-.00	.22**	-.01	.15*	-.00
7. BDI	-.06	-.53**	.61**	.55**	.56**	.29**	1	.30**	.28**	.29**	.15*	.15*	.21**
8. CTQ	-.09	-.27**	.19**	.11	.18**	.17**	.34**	1	.82**	.66**	.82**	.73**	.71**
9. CTQ-Emotional Abuse	.03	-.21**	.21**	.19**	.21**	.09	.31**	.85**	1	.33**	.77**	.38**	.61**
10. CTQ-Emotional Neglect	-.09	-.32**	.21**	.14*	.22**	.15*	.39**	.70**	.45**	1	.25**	.62**	.11
11. CTQ-Physical Abuse	-.09	-.04	-.02	-.07	-.03	.08	.09	.76**	.69**	.24**	1	.45**	.64**
12. CTQ-Physical Neglect	-.24**	-.25**	.11	-.00	.10	.20**	.26**	.80**	.53**	.60**	.54**	1	.33**
13. CTQ-Sexual Abuse	-.01	-.16*	.15*	.09	.13*	.13*	.18**	.76**	.65**	.22**	.63**	.52**	1

Values above the diagonal represent correlations for Syrian participants; values below the diagonal represent correlations for Turkish participants

BDI Beck Depression Inventory, *CTQ* Childhood Trauma Questionnaire, *RMET* Reading the Mind in the Eyes Test, *SCS* Social Connectedness Scale, *TAS-20* Toronto Alexithymia Scale

*p0.05, **p0.01

the effects of the other covariates, alexithymia (F(1, 482) = 0.000, $p = 0.995$, $\eta^2 = 0.000$) and depression (F(1, 482) = 0.406, $p = 0.524$, $\eta^2 = 0.002$) were examined, no significant effect was found on social cognition. When the social connectedness was evaluated, it was found that alexithymia (F(1, 482) = 9.923, $p = 0.002$, $\eta^2 = 0.021$), depression (F(1, 482) = 51.020, $p < 0.0001$, $\eta^2 = 0.095$), and childhood trauma (F(1, 482) = 10.127, $p = 0.002$, $\eta^2 = 0.021$) had significant effects on social

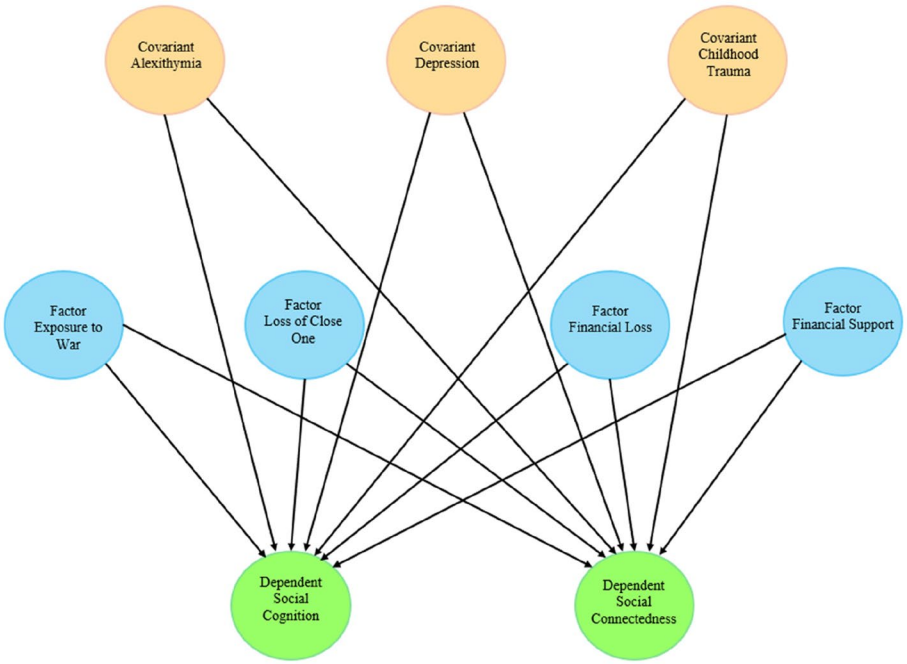

Fig. 2 Theoretical Model used in the Multivariate Analysis of Covariance (MANCOVA)

connectedness. Accordingly, alexithymia explains 2.1% of the total variance in social connectedness, depression explains 9.5%, and childhood trauma explains 2.1% of the total variance in social connectedness (Table 4).

When examining the main effects of the independent variables on social cognition, it was found that exposure to war ($F(1, 482)=1.356$, $p=0.245$, $\eta^2=0.000$), receiving financial support from the state ($F(1, 482)=0.001$, $p=0.972$, $\eta^2=0.002$), loss of a close one ($F(1, 482)=0.001$, $p=0.811$, $\eta^2=0.000$), and financial loss ($F(1, 482)=1.032$, $p=0.310$, $\eta^2=0.007$) had no significant effect on social cognition. Similarly, it was found that exposure to war ($F(1, 482)=1.131$, $p=0.288$, $\eta^2=0.000$), receiving financial support from the state ($F(1, 482)=0.154$, $p=0.695$, $\eta^2=0.006$), loss of a close one ($F(1, 482)=1.271$, $p=0.260$, $\eta^2=0.007$), and financial loss ($F(1, 482)=0.024$, $p=0.876$, $\eta^2=0.006$) had no significant effect on social connectedness (Table 4).

When the interaction effects on social cognition were examined, it was found that the interaction between "exposure to war" and "receiving financial support from the state" was significant ($F(1, 482)=5.121$, $p=0.024$, $\eta^2=0.010$). This interaction explains 1% of the total variance in social cognition. The interaction effects of other pairs of factors were not found to be significant, including "exposure to war" and "loss of a close one" ($F(1, 482)=0.953$, $p=0.329$, $\eta^2=0.001$), "exposure to war" and "financial loss" ($F(1, 482)=0.417$, $p=0.519$, $\eta^2=0.000$), "receiving financial support from the state" and "loss of a close one" ($F(1, 482)=0.014$, $p=0.904$, $\eta^2=0.001$), "receiving financial support from the state" and "financial loss" ($F(1, 482)=0.578$, $p=0.447$, $\eta^2=0.005$), and "loss of a close one" and "financial loss" ($F(1, 482)=1.169$, $p=0.280$, $\eta^2=0.007$).

Regarding the interactions between three factors, it was found that the interaction between "exposure to war", "receiving financial support from the state", and "financial loss" was significant ($F(1, 482)=7.012$, $p=0.008$, $\eta^2=0.009$), explaining 0.9% of the total variance in social cognition. Other three-way interactions had no significant effects on social cognition (Figs. 3 and 4).

When evaluating the interaction effects on social connectedness, it was seen that none of the interactions between the variables had a significant effect on social connectedness. In evaluating the interactions between two factors, the effects of "exposure to war" and "receiving financial support from the state" ($F(1, 482)=3.105$, $p=0.079$, $\eta^2=0.002$), "exposure to war" and "loss of a close one" ($F(1, 482)=1.622$, $p=0.203$, $\eta^2=0.000$), "exposure to war" and "financial loss" ($F(1, 482)=0.500$, $p=0.480$, $\eta^2=0.000$), "receiving financial support from the state" and "loss of a close one" ($F(1, 482)=0.911$, $p=0.340$, $\eta^2=0.002$), "receiving financial support from the state" and "financial loss" ($F(1, 482)=0.492$, $p=0.483$, $\eta^2=0.001$), and "loss of a close one" and "financial loss" ($F(1, 482)=0.238$, $p=0.626$, $\eta^2=0.004$) were not found to be significant. Regarding the three-way interactions, "exposure to war", "receiving financial support from

Table 4 Multivariate Analysis of Covariance (MANCOVA) results for social cognition and social connectedness

Variables	Type III Sum of Squares	Mean Square	F	*p*	η^2
Social Cognition					
Corrected Model	1578.646	105.243	5.257	**<.0001**	.143
Intercept	4078.658	4078.658	203.736	**<.0001**	.364
Covariants					
Alexithymia	.001	.001	.000	.995	.000
Depression	8.123	8.123	.406	.524	.002
Childhood Trauma	97.528	97.528	4.872	**.028**	.009
Main Effects					
Exposure to War	27.151	27.151	1.356	.245	.000
Financial Support	.025	.025	.001	.972	.002
Loss of a Close One	1.141	.025	.001	.811	.000
Financial Loss	20.656	20.656	1.032	.310	.007
Interactions					
Exposure to War * Financial Support	102.519	102.519	5.121	**.024**	.010
Exposure to War * Loss of a Close One	19.083	19.083	.953	.329	.001
Exposure to War * Financial Loss	8.352	8.352	.417	.519	.000
Financial Support * Loss of a Close One	.289	.289	.014	.904	.001
Financial Support * Financial Loss	11.570	11.570	.578	.447	.005
Loss of a Close One * Financial Loss	23.396	23.396	1.169	.280	.007
Exposure to War * Financial Support * Loss of a Close One	5.053	5.053	.252	.616	.000
Exposure to War * Financial Support * Financial Loss	140.369	140.369	7.012	**.008**	.009
Error	9649.300	20.019			
Total	232,487.000				
Corrected Total	11,227.946				
$R^2 = .141$					
Social Connectedness					
Corrected Model	18,430.419	1228.695	14.000	**<.0001**	.302
Intercept	21,469.269	21,469.269	244.622	**<.0001**	.412
Covariants					
Alexithymia	870.902	870.902	9.923	**.002**	.021
Depression	4477.765	4477.765	51.020	**<.0001**	.095
Childhood Trauma	888.826	888.826	10.127	**.002**	.021
Main Effects					
Exposure to War	99.238	99.238	1.131	.288	.000
Financial Support	13.507	13.507	.154	.695	.006
Loss of a Close One	111.536	111.536	1.271	.260	.007
Financial Loss	2.129	2.129	.024	.876	.006
Interactions					
Exposure to War * Financial Support	272.518	272.518	3.105	.079	.002
Exposure to War * Loss of a Close One	142.375	142.375	1.622	.203	.000
Exposure to War * Financial Loss	43.895	43.895	.500	.480	.000
Financial Support * Loss of a Close One	79.946	79.946	.911	.340	.002
Financial Support * Financial Loss	43.213	43.213	.492	.483	.001
Loss of a Close One * Financial Loss	20.860	20.860	.238	.626	.004
Exposure to War * Financial Support * Loss of a Close One	.688	.688	.008	.929	.000
Exposure to War * Financial Support * Financial Loss	267.565	267.565	3.049	.081	.001
Error	42,302.809	87.765			
Total	572,206.872				
Corrected Total	60,733.227				
$R^2 = .303$					

Significant results are shown in boldface

Financial Support: Receiving financial support from the state

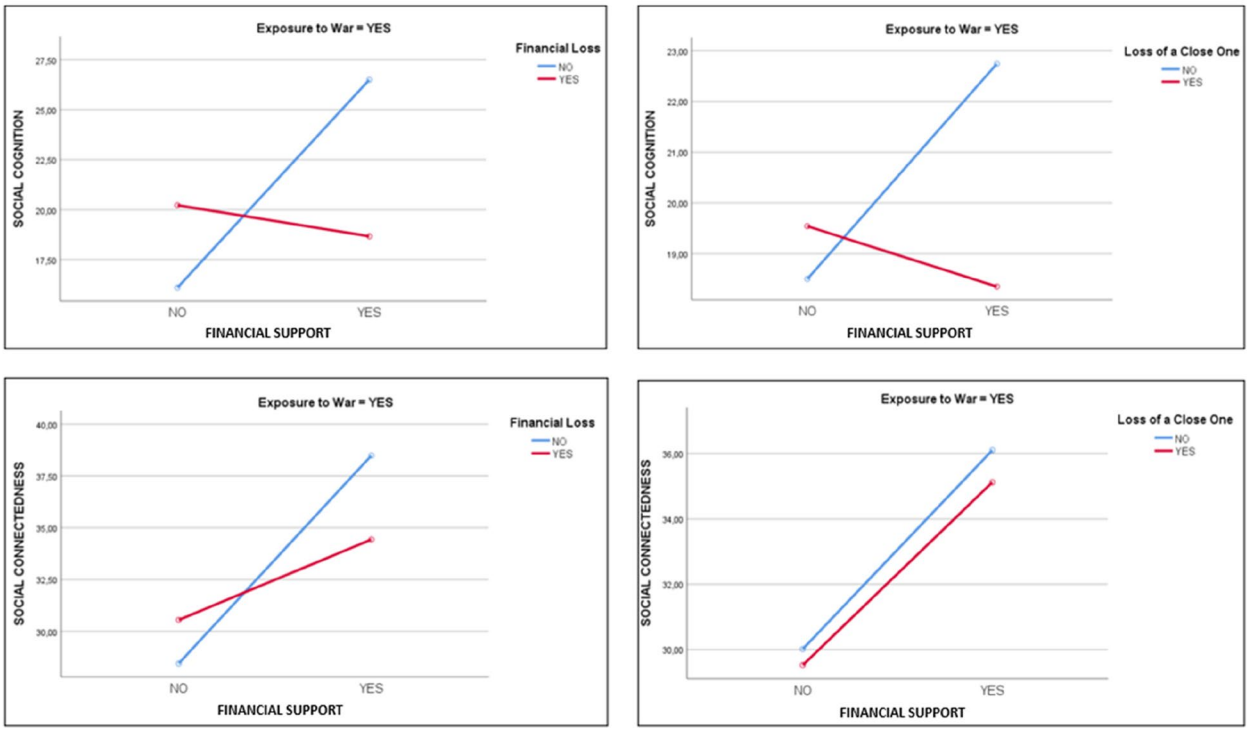

Fig. 3 Interaction effects of financial support, loss of a close one, and financial loss on social cognition and social connectedness in case of exposure to war

the state", and "loss of a close one" ($F(1, 482) = 0.008$, $p = 0.929$, $\eta^2 = 0.000$), and "exposure to war", "receiving financial support from the state", and "financial loss" ($F(1, 482) = 3.049$, $p = 0.081$, $\eta^2 = 0.001$) were also not significant. These findings indicate that the interactions had no significant effect on social connectedness (Figs. 3 and 4).

Discussion

This study aimed to investigate the levels of social cognition and social connectedness among refugees who migrated to Türkiye due to the civil war that began in Syria in 2011. There are a limited number of studies in the literature evaluating social cognition and social connectedness in refugees. Therefore, this study seeks to broaden the scope of existing research by using a comparative study design with a large sample group. The main finding of the current study is that the Syrian refugees had lower levels of social cognition and social connectedness than the Turkish participants. In keeping with terminology commonly used in the literature, as in previous sections of the study, we will refer to Syrians in Turkey as refugees rather than individuals under temporary protection. Additionally, Türkiye does not officially recognize Syrians in the country as refugees. The definition of "refugee" in Türkiye is based on Article 61 of Law No. 6458 on Foreigners and International Protection, based on the Geneva Convention, and applies only to those arriving from Europe. Therefore, Syrians are not officially granted refugee status. Instead, they are considered under "temporary protection." However, the fact that Syrians came to Türkiye as a mass migration, their arrival was based on political grounds such as opposition to the regime, their temporary protection status was granted at the initiative of the government, they have no current plans or intentions to return, and they are currently stateless, justifies defining them as refugees. Therefore, the choice of the term "refugee" in this study is consistent with both the general usage in the literature and the actual situation of the Syrians.

Before moving on to the discussion of social cognition and social connectedness in the study, we would like to address the trauma findings of the refugee group. Childhood trauma scores (physical abuse, and emotional and physical neglect) of refugees were statistically significantly higher than among Turkish participants. In relation to this finding, 63.1% of the refugees reported that they were exposed to war, 50.6% lost a relative due to war, and 92.8% experienced financial loss. Previous studies showed that many Syrian refugees had been exposed to traumatic life experiences during the civil war, such as bombing, imprisonment, torture, witnessing the killing of family and/or friends, separation from family,

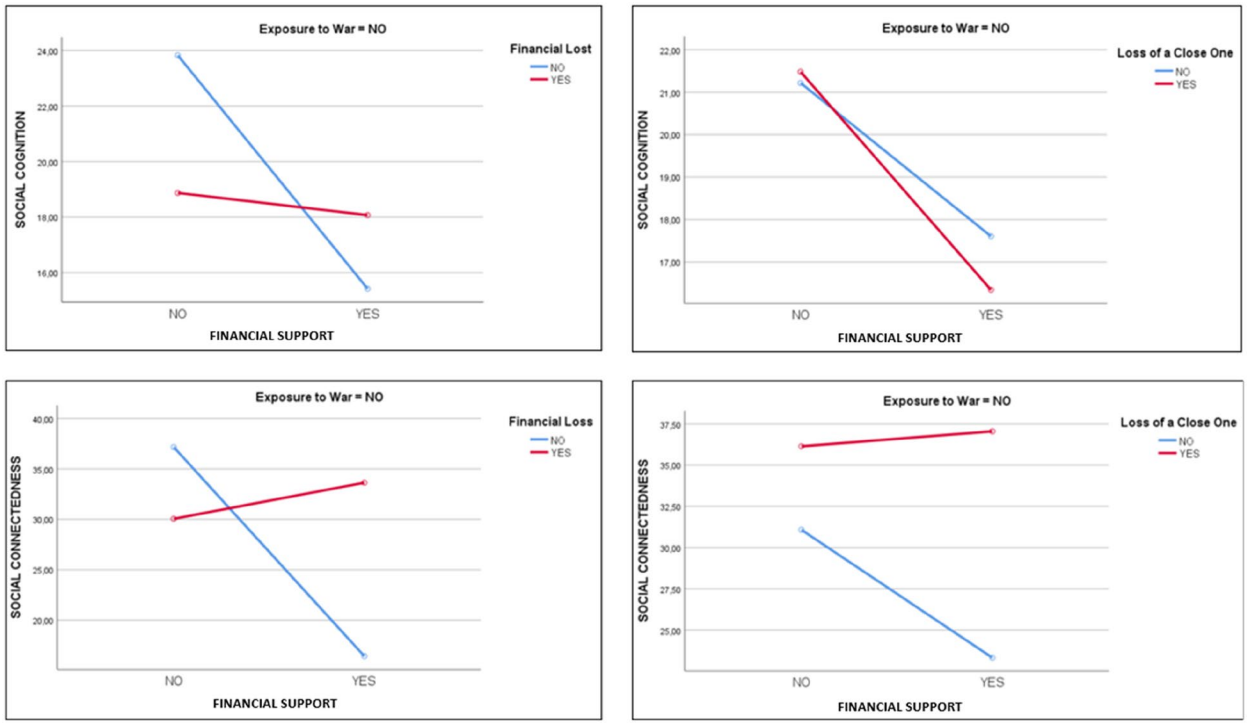

Fig. 4 Interaction effects of financial support, loss of a close one, and financial loss on social cognition and social connectedness in case of no exposure to war

destruction of homes, and the banning of funerals [12, 43, 44]. In studies conducted with Syrian refugees residing in Türkiye, life-threatening traumatic situations before migration and harm to a loved one were found to be important determinants of PTSD [14, 15]. In a study conducted with Syrian refugees residing in Germany, the presence of pre-migration traumatic experiences was found to be the most important determinant of post-migration psychological stress [10]. Given the findings in the literature on refugees, it is not surprising that our participants reported high scores for childhood trauma.

Refugees may face various psychosocial problems after migration and this may negatively affect their mental health. Legal problems related to migration procedures in refugee-hosting countries, inappropriate housing conditions, unemployment, social isolation, discrimination, fear of refoulement, and limited access to psychiatric/psychological treatments are among the main difficulties experienced. In the present study, 31.3% of Syrian refugees stated that they had mental problems due to the war, and 83.5% stated that they did not receive psychological/psychiatric treatment after the war. A study conducted with Syrian refugees residing in Türkiye investigated the effects of pre- and post-migration traumatic experiences and life difficulties on the development of PTSD [15] and the rate of PTSD in refugees was found as 55.5%. A study conducted in Jordan reported a high rate of traumatic symptoms in Syrian refugees (86.2%) [44]. A systematic review of 28 studies assessing the burden of mental disorders among Syrian refugees in Syria and neighbouring countries found PTSD levels between 16 and 84%. The common risk factors of the studies were exposure to trauma and having a personal or family history of mental disorders [45]. A study regarding Syrian refugees with a residence permit in Germany showed that despite partially improved living conditions, psychological problems remained consistently high over time [10]. A recent study of older refugees in Türkiye found that a significant number of participants had severe depression and anxiety [46]. These findings from the literature suggest that trauma symptoms can persist in refugees, and continue to progress at a high rate even years after the initial trauma. Although refugees can access mental health services in their countries of residence, the majority do not seek professional psychological assistance. Studies suggest that the main barriers to refugees seeking psychiatric/psychological treatment are cultural factors and concerns about stigmatization related to mental illness [8, 15, 45]. A recent study conducted with Middle Eastern refugee women living in Türkiye showed that cultural factors and concerns about stigma

caused difficulties in accessing psychiatric treatment and significantly hindered help-seeking for other medical issues (such as cervical cancer screening and access to HPV vaccination services) [47].

In the present study, Syrian refugees performed statistically worse than Turkish participants in the RMET, which assesses ToM, and emotion recognition abilities. When depression and alexithymia variables were fixed, the difference between the groups remained significant. However, when the childhood trauma variable was fixed, the significant difference between the two groups disappeared. This pattern suggests that childhood trauma may be a key variable associated with Syrian refugees' lower performance on the RMET, and may partially account for the observed differences between the two groups in ToM and emotion recognition. Based on these findings, we suggest that refugees exposed to war trauma may have difficulties recognizing social signals as effectively as non-refugees, potentially leading to less appropriate responses to these signals. The correlation analysis suggests a negative correlation between Syrian refugees' RMET performance, CTQ-emotional neglect, and physical neglect. A recent study evaluating social cognition skills in children aged 6–18 years among Syrian refugees residing in Türkiye demonstarted that mothers' high levels of post-traumatic stress negatively affected children's emotional processing abilities [43]. A history of childhood trauma (especially emotional abuse, emotional, and physical neglect) has been associated with slower recognition of emotions and difficulty distinguishing different emotions in speech [48]. Individuals with a high level of childhood trauma history were more likely to interpret neutral facial expressions as signs of humiliation and anger [49]. Findings of our study support and extend previous research demonstrating that childhood trauma history negatively affects social cognition. However, unlike our study findings, there are also studies showing that individuals who have been exposed to trauma but do not have PTSD may have an advantage in social cognition [50]. In a study conducted by Schmidt et al. in Denmark on individuals exposed to torture and war-related trauma, 16 Bosnian refugees with PTSD, 16 Bosnian refugees without PTSD, and 50 Danes without PTSD were compared. RMET performance was assessed as impaired only in refugees diagnosed as having PTSD [51].

Our further analyses investigating interaction effects on ToM revealed that the interaction effect of being exposed to war, receiving financial support from the state, and financial loss was significant. These results show that, even when covariates are held constant, the interaction between the main variables continues to be significantly related to social cognition, suggesting a meaningful pattern of association. Among refugees, it is observed that social cognition tends to decrease in individuals who have been exposed to war, lost a relative, experienced financial loss, and those who receive financial support from the state due to these losses (Figs. 3 and 4). It is particularly noteworthy that individuals who receive financial support have lower levels of social cognition, which suggests that receiving financial support alone may not act as a protective factor. Previous research has shown that individuals living in poverty and receiving social/financial support often feel stigmatized, belittled, devalued, humiliated, isolated, and looked down upon [52–55]. Mani et al. showed that poverty negatively affected cognitive functions such as attention, decision-making, and perceiving social cues by depleting the mental resources of individuals [56]. Similarly, Miller and Rasmussen stated that economic hardships experienced in addition to war trauma could have negative effects on the psychological and social functioning of individuals [57]. Receiving financial support may indicate that an individual is still in financial difficulties and that their capacity to interact healthily with the social environment is negatively affected. Therefore, the effect of financial support is contextual and higher-level cognitive processes such as social cognition should be evaluated together with economic support, the quality of this support, and the individual's general living conditions. The triple interaction between war experience, material loss, and material support observed in our study shows that social cognition is shaped by multidimensional determinants and indicates that interventions in this regard should not be limited to economic support alone.

Difficulties in social cognition observed among refugees may be related to adverse childhood experiences rather than solely to their refugee status. Our study did not involve a clinical sample, but the refugee participants had been compelled to migrate due to harm or persecution. Many had encountered environments where making eye contact could present risks. At the same time, they may have made less eye contact because they considered themselves as foreigners in the country they settled in. Traumatised individuals often perceive direct eye contact as a threat [58]. We believe that these should also be taken into account while evaluating the findings.

When analyzing social connectedness values between groups, it was found that the SCS scores for the Syrian refugees were statistically significantly lower than those of the Turkish participants. In the correlation analysis, low social connectedness was strongly associated with high depression, alexithymia, and childhood trauma scores. However, when alexithymia, depression, and childhood trauma scores were fixed, the significant difference between the groups disappeared. A low score on this scale means having a low sense of belonging and

social connectedness. The results of our analyses suggest that refugees' lower levels of social connectedness are largely associated with the covariates controlled for in the model. There are few studies examining social connectedness in refugees. In one of these studies, in parallel with the findings of our study, low social connectedness was found to be associated with higher levels of depression in refugees [59]. In a study conducted with immigrants living in Belgium, it was found that immigrants with high levels of perceived social support also had high psychological resilience [60]. Our study demonstrates that those who were exposed to war, those who lost a relative, those who experienced financial losses, and those who received financial support from the state as a result of these losses had higher levels of social connectedness (see Figs. 3 and 4). A similar study conducted in 2018 on refugees residing in Germany showed that there was a positive correlation between the social inclusion of refugees in areas such as housing, health, employment, education, and culture, and their social ties with Germans [23].

Studies with non-refugee but potentially vulnerable samples, such as war victims, homeless people, and those adjusting to a new environment or country show that social connectedness is low in these populations. In a study conducted by Schwart and Shrira in 2019 with the older people who were exposed to war, it was found that older people with high levels of social connectedness experienced fewer mental and physical health problems related to exposure to war [61]. A large sample study of 601 homeless youths in the United Staes of America showed that youths with high social connectedness were significantly less likely to meet the criteria for depressive disorder [62]. Social connectedness may help to reduce the negative effects of depression in a multicultural context. Studies conducted with foreign university students consistently found a negative relationship between social connectedness and depression [63, 64]. In this regard, our findings align with studies conducted on non-refugee populations related to adaptation to new environments or countries.

Connecting with others has been linked to physical and psychological well-being [65]. Increases in social connectedness have been associated with improvements in psychological well-being, and decreases in social connectedness are associated with declines in well-being over time [66]. Individuals with a high sense of social connectedness can participate in new social environments more easily and cope with negative emotions, whereas those with low social connectedness may have difficulty in managing their emotions and may experience anxiety and depression [67]. In the context of migration, social connectedness may serve as a buffer mitigating the impact of post-migration life difficulties and depression [59] Social connectedness has also been found to have a buffering effect on the association of adverse childhood experiences with anxiety, stress, and depression [68]. It plays a direct mediating role in the process of adaptation to a new environment, and an indirect mediating role in reducing the effect of adaptation difficulties on loneliness [69].

Accordingly, we consider social cognition and social connectedness to be crucial themes for a successful post-migration integration. At the same time, these two concepts are variables that affect each other at many points. Individuals with strong social connectedness have better cognitive health, and social relationships slow cognitive decline [65]. People with strong social connections are generally able to build relationships more easily, participate in social activities, and develop social cognition abilities in this network of relationships. In contrast, individuals with fewer social connections are likely to have less frequent social contacts, and thus less opportunity to develop sensitisation to social visual cues. Studies in the field of neuroscience have found that the diversity of social contacts, the size of the social network, and the quality of these relationships are positively correlated with the diversity in brain structure [70–72]. There are correlations between the size of an individual's social network and grey matter density in regions of the brain involved in social cognition [73] Also, poor social connectivity may have negative effects on the brain [72, 73]. The relationship between the individuals and their social environment is determined by both the quality of the social environment and the individuals' perception and understanding of the information conveyed by other people in their environment [50]. At this point, the human face is an important source of information about the mental state of others, giving individuals important clues about how to interpret the behavior of others and how to regulate their own behavior accordingly [74]. Satisfactory interpersonal interaction requires understanding of the facial expressions of others. Impairments in this area cause problems such as difficulty in empathizing, incomplete or incorrect processing of social stimuli, and affect an individuals' relationships with others [75].

Childhood traumas seem to be a very important factor that negatively affects both social cognition skills and social connectedness levels of Syrian refugees. Furthermore, childhood traumas are known to have a negative impact on mental health in adulthood [76]. Due to its long-lasting effects, childhood trauma has become the focus of numerous studies. There is growing interest in studying the changes that occur in the brain as a result of exposure to trauma. There are studies showing potential changes in brain function in people who have experienced trauma [77–79]. Imaging studies in affected individuals or

adults with a history of childhood trauma have also found that severe psychological trauma leads to changes in brain structure and function, particularly in brain regions known to be important in the perception and regulation of emotions and social interaction [80–82]. Individuals with both PTSD and combat exposure but no PTSD show greater amygdala activation to all faces and shapes compared with healthy controls [83]. Neuroimaging studies on PTSD reveal that limbic and midbrain regions may show strong activation even to low-level social threats, which may be the cause of social cognition deficits [50]. In this context, it should be taken into consideration that traumatic situations can have long-term and profound effects on individual mental health, social cognitive functions, and interpersonal interactions.

Limitations and future research directions

The findings of our study should be interpreted with consideration of various limitations. The most important limitation is that the tests and scales used were not written in Arabic and their validity and reliability for the Syrian dialect was not performed. However, the Cronbach's Alpha values of all scales used in our study correspond very well to the normative values reported in Turkish society, which supports the validity of our results. In addition, our refugee participants had been living in Türkiye for over 10 years. They received their secondary, high school, and university education in Türkiye and were educated in Turkish. Practices were perfomed one-to-one, and when needed, Syrian psychology students who were fluent in Turkish and Arabic received language support from the study assistants. Before the interview, we assessed whether the language used in the scale and test questions was comprehensible to Syrians. In addition, participants who did not have basic Turkish proficiency were not included in the study. As a second limitation is that the data were collected in Istanbul and taken from refugees not staying in camps. Therefore, the results cannot be generalized to all Syrian refugees. At the same time, despite the assurance of anonymity in the responses during the data collection process, the participants may have answered the questions unrealistically with the concern of acceptability. Another limitation of the study is the uncertainty regarding whether refugees who have been integrated into Türkiye for a long time and live outside of official camps exhibit different levels of social cognitive processes, and social connectedness compared to other groups, such as migrants. Lastly, the cross-sectional design of this study constitutes an important methodologic limitation. Causal inferences cannot be made because data were collected at a single point in time. Accordingly, all reported relationships should be interpreted as associations rather than causal effects. Despite the existing limitations, the sample size is creditable because it is challenging to reach and include refugees in research studies.

The present findings highlight several important directions for future research. First, future studies may further clarify the link between trauma and social cognition and social connectedness using a structured clinical interview that can diagnose PTSD. Moreover, other components of social cognition such as emotion recognition and social perception should be examined in refugees. Second, longitudinal studies are needed to trace how social cognition and social connectedness evolve over time among refugees. Longitudinal studies comparing refugee groups with different levels of integration or studies examining the impact of intervention programs on social cognition and cohesion would broaden the scope of the research regarding refugees in Türkiye and other countries. Such research designs would help scholars and those who are interested in refugee studies better understand whether damage linked to trauma continues, lessens, or changes with prolonged residence in the host country. These studies would also allow them to recognise protective factors such as social connectedness and support, education, language proficiency, and employment, which may impact the post-traumatic lives and emotions.

Third, to understand and clarify the underlying mechanisms, future work should employ qualitative approaches such as structured or semi-structured clinical interviews and then support or validate the results using neurobiologic or neuroimaging methods. These mixed methodologies will allow researchers to identify both the clinical and neural findings that link trauma to difficulties in emotion recognition and theory of mind. Fourth, to evaluate the effectiveness of resilience-building group programs, culturally adapted psychotherapy techniques, and community-level activities that foster social engagement, it would be beneficial to systematically assess their impact on improving social cognition and connectivity among refugees. Finally, through examining diverse refugee groups, host nation contexts, and living conditions (such as temporary protection and permanent residency), researchers can comprehend and explain the structural and cultural elements that impact refugee adaptation.

Conclusion

Our results demonstrate that Syrian refugees living in Turkish society performed statistically worse in social cognition compared to Turkish participants. Childhood trauma was found to be associated with lower levels of social cognition among refugees. In terms of social cognition, the most vulnerable group includes those who have been exposed to war, lost a relative, suffered financial loss, and receive financial support from the state as a result.

Our findings show that refugees also have a low sense of social connectedness. Lower levels of social connectedness were found to coincide with higher levels of alexithymia, depression, and childhood trauma. State support was related to higher levels of social cohesion in vulnerable groups such as those exposed to war, those who had lost a relative, and those who had experienced financial loss. It is important to note, however, that due to the cross-sectional nature of the study, these associations should not be interpreted as causal. We believe that during this challenging period for refugees, our study offers promising findings that could significantly aid in their integration. Refugees face many post-migration challenges such as racism, negative political discourse and stigmatisation. In light of this, it is of utmost importance to take into account the post-migration challenges faced by this vulnerable population, who have already endured severe traumatic experiences prior to migration. As the world becomes increasingly interconnected, it is necessary to develop economic, health and social policies that facilitate the integration of refugees. Providing opportunities for social interaction and connection may be beneficial in alleviating acculturation stress among refugees. Individuals who reported multiple traumatic experiences appeared to be particularly vulnerable and might require special attention in the development of support policies. These findings underscore the importance of psychotherapeutic interventions for Syrian refugees, particularly in light of their challenges in accessing psychosocial support systems.

Abbreviations

ASD	Autism Spectrum Disorder
BDI	Beck Depression Inventory
CTQ	Childhood Trauma Questionnaire
IDF	Inverse Distribution Function
KR-20	Kuder-Richardson Formula 20
MANCOVA	Multivariate Analysis of Covariance
PTSD	Post-Traumatic Stress Disorder
RMET	Reading the Mind in the Eyes Test
SCS	Social Connectedness Scale
SPSS	Statistical Package for the Social Sciences
TAS-20	Toronto Alexithymia Scale - 20 Item Version
ToM	Theory of Mind

Acknowledgements
We would like to thank all the participants in this study, as well as the Syrian research assistants Nur Fadıloğlu and Zehra Kaplan.

Disclosure statement
The authors declare that they have no conflicts of interest.

Ethical publication statement
We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

Authors' contributions
Contributors. H.D.: Conceptualization, methodology, data collection, writing – original draft, writing - review and editing. E.G.: Conceptualization, data collection, writing – original draft, writing - review and editing. S.S.G.: Data collection, writing - review and editing. G.B.: Analysis of data, data collection, writing – original draft, writing - review and editing.

Funding
This work received no funding.

Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
This research was approved by the Ethics Committee of the University of Health Sciences, Hamidiye Scientific Research Ethics Committee (Registration Number: 536/2023). All procedures performed in this study were in accordance with the ethical standards of institutional and/or national research committee, including the 1964 Helsinki declaration and its later amendments. All participants in this research were informed about their rights, about the data analysis and planned publication of the data. Informed consent was obtained from all individual participants included in the study. The participants were free to withdraw from the study at any stage of the research.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Received: 17 March 2025 Accepted: 25 August 2025
Published online: 26 September 2025

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