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# Effectiveness of Psychological Interventions on Young Refugees' Social Adjustment: A Meta-analysis

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The purpose of this study was to evaluate the effectiveness of existing psychological interventions on the social adjustment of young refugees. From 51 peer-reviewed articles identified in the literature, 11 studies with 25 therapeutic effect sizes met criteria for inclusion ( $N = 1,736$ ). Hedges'  $g$  was used to measure effect sizes and a random-effects model was conducted. The number of sessions and participant age were considered as potential moderator variables in moderator analyses through meta-regression. The effect sizes of the included studies were compared based on the type of intervention. The results showed that the aggregated effect size for all included interventions was significant, computed as  $g = 0.14$ ,  $p < 0.01$ , 95% confidence interval [0.06, 0.21]. The effect size is considered small, based on Cohen's (1992) guidelines. The results of the meta-regression showed that the effectiveness of the included psychological interventions on social adjustment was not moderated by either the number of sessions ( $b = 0.006$   $p = 0.035$ ) or age ( $b = -0.008$ ,  $p = 0.59$ ). Furthermore, there were no significant differences between different therapeutic approaches ( $Q = 7.37$ ,  $df(Q) = 6$ ;  $p = 0.28$ ). This meta-analysis demonstrates that mental-health interventions in young refugees mildly improve their social adjustment. Due to the importance of social adjustment in refugees, we suggest that existing interventions place greater specific focus on improving social adjustment. The details of implications for future studies are discussed.

**Keywords:** Young refugees, meta-analysis, psychological interventions, social adjustment, trauma

## **Introduction**

Recent international conflicts, wars and political changes have caused a dramatic increase in total refugee numbers around the world. Refugees are individuals who have had to leave their home countries due to a lack of basic rights and needs (e.g. food, safety, fleeing persecution) and are accepted by other countries for social and economic protection (Loescher and Milner 2007). Unfortunately, in recent decades, the number of refugees has been increasing each year. Based on recent statistics presented by the United Nations High Commissioner for Refugees (UNHCR), there are 21.3 million refugees worldwide, with more than half under the age of 18 (UNHCR 2016).

Refugees are a vulnerable population in terms of their mental health (Schweitzer *et al.* 2006). Experiencing war-related trauma, in addition to post-migration problems related to acculturative stress (i.e. difficulties that accompany psychological, somatic and social adaptation to a new culture), can lead to complicated psycho-social maladjustment (Berry and Sam 1997; Birman and Tran 2008; Murray *et al.* 2010). Some mental-health issues and psycho-social maladjustments documented among refugees include post-traumatic stress disorder, depressive and anxiety disorders (Lindert *et al.* 2009; Nickerson *et al.* 2014; Hocking *et al.* 2015), emotional dysregulation (Nickerson *et al.* 2015), conduct disorder (Betanncourt *et al.* 2015) and poor socio-cultural adaptation (Um *et al.* 2015). These psychological problems are especially likely for child and adolescent refugees, and can hinder their long-term psycho-social functioning in their host society (Kovacev and Shute 2004; Bronstein and Montgomery 2011).

For most refugee children and adolescents, at least in the first years of their residency, it is difficult to adjust to new cultural and social norms (Kovacev and Shute 2004). Reaching appropriate levels of psycho-social adjustment is harder and more complicated than usual because pre-migration traumatic events and acculturative stress may hamper their abilities to develop appropriate psycho-social adjustments (Berry and Sam 1997; Birman and Tran 2008). Most interventions addressing mental health among refugee children and adolescents have predominantly focused on mood disorders or post-traumatic stress disorder (PTSD), with little attention paid to social adjustment (Gwozdziwycz and Mehl-Madrona 2013; Lambert and Alhassoon 2014; Tyrer and Fazel 2014). While meta-analyses have been undertaken to elucidate advantages and disadvantages of current interventions on refugees' mood disorders and PTSD (Gwozdziwycz and Mehl-Madrona 2013; Lambert and Alhassoon 2014), there is no meta-analytical investigation on the effectiveness of these interventions in addressing social adjustment among refugees.

A few studies have considered components of social adjustment in the psychological interventions among young refugees, although they have reported inconsistent results in terms of their efficacy. Therefore, it is not clear whether existing interventions targeting social adjustment in young

refugees are effective and whether some types of interventions are more effective than others in enhancing social adjustment. We argue that a meta-analysis in this area is important for evaluating such interventions more broadly. If it turns out that existing interventions—despite effectively reducing PTSD and mood disorders—are not sufficiently effective in enhancing young refugees' social adjustment, then there may be scope to revisit the design of these interventions. Thus, it is important to review and compare the efficacy of the various interventions, not only in terms of typical outcomes of trauma (e.g. PTSD, emotional issues), but also in terms of the equally important yet comparatively understudied outcome of social adjustment in young refugees.

The term *social adjustment* refers to a psychological or mental-health variable that relates to functioning in interpersonal settings such as peer, marital or family relationships. It also refers to a lack of hostile and aggressive behaviours (Weissman 1975; Weissman *et al.* 1981). In our study, therefore, we define 'social adjustment' as a variable related to healthy functioning in interpersonal and social situations. In addition, the term 'young refugee' in this study refers to refugees who are children or adolescents (e.g. under the age of 18). In the current study, therefore, all published interventions targeting and measuring at least one component of social adjustment in young refugees were considered for inclusion in the meta-analysis. Based on our search, most of the interventions could be categorized into one of three well-known therapeutic approaches: (i) narrative exposure therapy (NET; Catani *et al.* 2009; Ruf *et al.* 2010), (ii) cognitive-behavioural therapies (O'Shea *et al.* 2000; Ehntholt *et al.* 2005; Beehler *et al.* 2012) and (iii) art therapies (Baker and Jones 2005; Rousseau *et al.* 2005; Baker and Jones 2006; Rousseau *et al.* 2007, 2009; Quinlan *et al.* 2016).

Studies that have evaluated NET in the context of young refugee interventions have used intensive, short-term interventions that utilize between six and 10 sessions to treat trauma and improve social adjustment (Catani *et al.* 2009; Ruf *et al.* 2010). NET is a therapeutic technique that incorporates a chronological narration of one's own life with an emphasis on details of traumatic events occurred in both the native and host countries. The narration of traumatic experiences in NET is not limited to verbal narration, but also involves various forms of expression, including writing, role playing and painting. These different methods of narration theoretically result in a less confrontational and easier expression of traumatic memories and negative suppressed emotions than typical forms of exposure therapy. Overall, the therapy should help clients to achieve a coherent autobiographical narration of their traumatic memories and to ultimately resolve related aversive emotions or avoidant behaviours (Schauer *et al.* 2017).

Studies that have evaluated CBT interventions in the context of young refugees' social adjustment have utilized both short-term and multi-stage forms of therapy (O'Shea *et al.* 2000; Ehntholt *et al.* 2005; Beehler *et al.* 2012). In these interventions, participants initially receive an early psycho-education, which

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includes normalizing trauma-related symptoms and common psychological reactions to war experiences. Following this, participants/clients undergo a range of standard CBT therapeutic techniques. Specifically, they work with health professionals to confront their traumatic memories and related emotions using a range of cognitive and behavioural techniques including visualizing, painting and writing. Typically, these studies utilize interventions that encourage clients to discuss their trauma-related cognitions and teach clients to challenge dysfunctional or irrational thoughts related to their traumatic experiences or symptoms. Additionally, these interventions focus on teaching clients to relax when they experience severe negative emotions or bodily arousal.

Studies that have evaluated art therapy in the context of young refugee interventions have tended to be more heterogeneous than the other two approaches reviewed. The core similarity between these interventions, however, is that they all use several kinds of art to resolve psychological and emotional issues relating to trauma and social adjustment. In some of these interventions, music therapy has been conducted with an emphasis on improving creativity, peer relationships, self-identity, social skills and adjustment, acculturation and impulse control (Baker and Jones 2005, 2006). A number of published art-therapy interventions conducted in the context of young refugees have focused on school-based expression workshops. These interventions have involved the use of visual art, singing, music, dancing, reading, using puppets, drama and sand playing through group works. The aims of these interventions were to improve self-esteem, emotional expression and problem-solving (Rousseau *et al.* 2005, 2009; Quinlan *et al.* 2016). In addition, one of the studies utilizing art therapy incorporated a drama-therapy programme that encouraged participants to share their stories in groups and taught participants expressive methods to improve a coherent personal meaning and identity. This occurred generally through role playing either based on real personal stories or restructuring them (Rousseau *et al.* 2007).

A final set of studies not meeting criteria for the three categories previously described were also considered for inclusion in the current meta-analysis. These studies had no specific well-known psychotherapeutic approach, but utilized more holistic approaches. For example, one study (Fazel *et al.* 2009) titled their intervention 'mental health intervention' and focused on specific psychological needs of each client. Annan *et al.* (2017) used a parenting and family skills intervention called the Happy Families Program (HFP), which focused on improving some psychological skills amongst both care-givers and children. These skills included effective interpersonal interactions, behavioural modification, problem-solving and emotion regulation. Similarly, Yankey and Biswas (2012) used a skills-training intervention based on the World Health Organization (WHO)'s recommendations. These skills included decision-making, problem-solving, effective social and interpersonal interactions, empathy, effective emotion regulation, as well as creative and critical thinking and self-awareness. Moreover, Panter-Brick *et al.* (2018) conducted an

intervention called Profound Stress Attunement (PSA), which was focused on specific psycho-social needs of traumatized children and adolescents, improving social interaction and effective coping with stress.

As mentioned previously, the studies included in the current meta-analysis focused on interventions that can be categorized according to various themes. Therefore, in this meta-analysis, the effect sizes of the included studies were compared based on the type of intervention. By assessing intervention type as a potential moderator, the results can be helpful to recognize which types of interventions are significantly more effective on social adjustment of young refugees. In addition, mean ages of participants were considerably different amongst the included studies. The participants of the included studies were in various developmental stages of childhood and adolescence. Since the developmental characteristics of each age may affect therapeutic outcomes of interventions (Shapiro 2015), age was considered a potential continuous moderator in our study. Finally, the number of sessions was considered as another potential continuous moderator. Research has suggested that considerable differences in the number of sessions may moderate therapeutic outcomes, so that a higher number of sessions can lead to more effectiveness (Hansen *et al.* 2002; Lambert and Alhassoon 2014). Since the set of studies included in the meta-analysis varied substantially in the number of sessions, this variable could also be assessed as a potential moderator.

Overall, most mental-health interventions in refugees have specifically targeted the trauma experienced by refugees or general mental-health issues, and consequently have based their interventions around empirically supported treatments for PTSD and/or general mental-health skills. In addition, they expected an improvement in some aspects of social adjustment as a results of their interventions and therefore included related assessments. Indeed, the posited increase in social adjustment is based on the assumption that the effective resolution of traumas and general improvements in emotional regulation and mental-health functioning should enhance social adjustment of refugees. However, many studies performed in this field have reported several non-significant therapeutic effects on social adjustment. Therefore, the purpose of this study was to investigate the efficacy of psychological interventions conducted amongst young refugees, on the specific outcome of social adjustment. The results of this meta-analysis in addition to the moderator analyses can be helpful to evaluate and improve the effectiveness of existing psychological interventions in terms of enhancing the social adjustment of young refugees.

## **Methods**

### *Literature Search*

Multiple databases and search engines were searched to identify studies for potential inclusion in the current meta-analyses. These databases/search

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engines included PsychINFO, MEDLINE, PILOTS, ProQuest, ScienceDirect, Embase, Wiley Online, SpringerLink, Sage Journals and Google Scholar. We note that we only searched among published articles in peer-reviewed scientific journals. Although this method limits the number of studies analysed, it also ensures that studies included have been assessed in terms of scientific merit. This decision is consistent with recommendations by Borenstein *et al.* (2011), who emphasize the need to reduce bias in meta-analyses.

All related keywords were considered in the search including *psychological intervention, treatment, psychotherapy, social adjustment, social adaptation, young/child/adolescent refugees, youth with refugee background, refugee youth*. To minimize the chances that we could overlook relevant studies, we also checked the reference lists of relevant articles as well as their citation histories.

In this meta-analysis, only studies utilizing control groups (with any type of experimental or quasi-experimental design) were included. This requirement is typical in meta-analytical studies because the presence of control groups produces a less biased aggregated effect size based on Hedges' *g* (Hedges and Vevea 1998). Several past studies that we reviewed for potential inclusion in the meta-analysis did not utilize control groups and/or did not report sufficient statistics for their control groups. Therefore, a limited number of studies could be included in the meta-analysis.

The inclusion criteria for the meta-analysis were as follows: (i) participants were child and adolescent refugees (i.e. younger than 18 years old), (ii) the interventions consisted of psychological therapeutic or education-based methods, (iii) studies utilized control groups (with experimental or quasi-experimental designs), (iv) studies were reported in peer-reviewed articles, (v) interventions were evaluated using quantitative methods, (vi) valid and reliable instruments were used to assess at least one component of social adjustment and (vii) sufficient statistics to compute the effect size based on Hedges' *g* were reported.

The process of data extraction is presented in Figure 1. Initially, 51 manuscripts were identified through the search. By reviewing the full articles carefully, 33 of them were excluded because they were either qualitative, included participants other than young refugees or they did not use a psychological intervention. Of the remaining 18 manuscripts, seven articles were removed. These studies were removed because they either did not report appropriate statistics to compute effect sizes, they did not have a control group or they did not use a valid and reliable and/or related instrument to assess social adjustment. Finally, 11 studies, with 25 effect sizes, were included in the meta-analysis ( $N = 1,736$  individuals).

### *Coding of Studies*

Two independent coders coded each study included in this meta-analysis and inconsistencies between the two coders were resolved by consensus. Studies

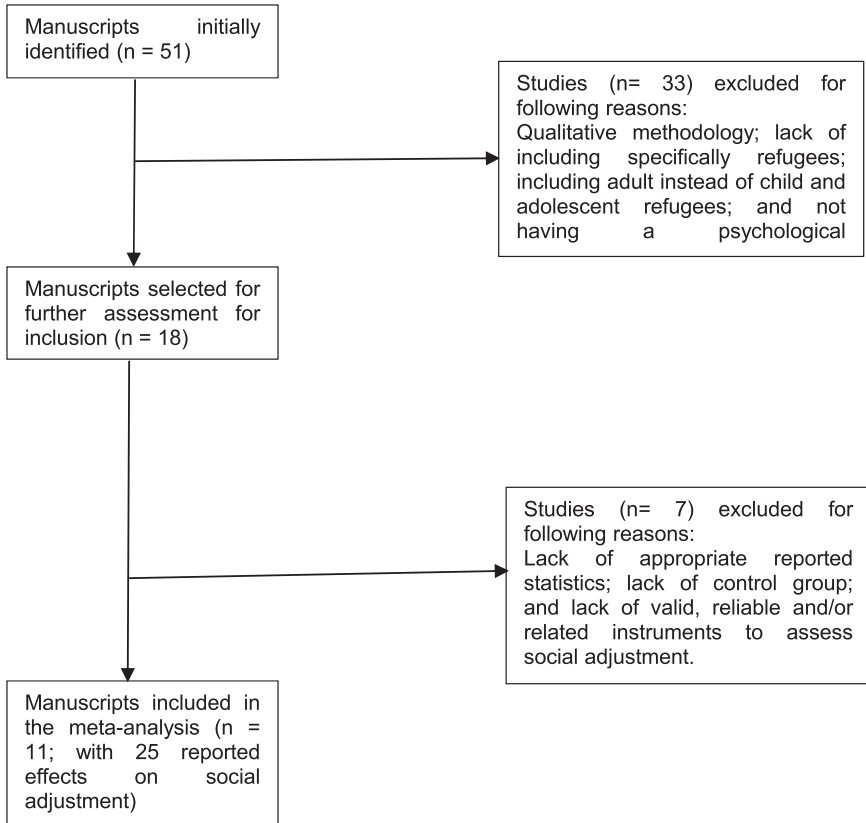


Figure 1.

### Flow Diagram of the Study Selection Process

were coded based on: (i) the type of intervention, (ii) the number of sessions, (iii) the instrument used and (iv) participant age. In studies that did not use a specialized questionnaire measuring social adjustment, components of social adjustment measured through subscales of other related questionnaires were used. Therefore, we conducted a heterogeneity analysis (Borenstein *et al.* 2011) to ensure that all these assessments of social adjustment were consistent. Most included studies used the Strengths and Difficulties Questionnaire (SDQ). Other measures included the UCLA PTSD Index for DSM-IV (in Ruf *et al.* 2010), Behaviour Assessment System for Children (BASC) (in Baker and Jones 2006), Piers-Harris Children's Self-Concept Scale (CSCS) (the subscale of popularity) (in Rousseau *et al.* 2005), Achenbach Child Behavior Checklist (CBCL), Child Psychosocial Protective Factors Scale (in Annan *et al.* 2017) and Problem Questionnaire (in Yankey and Biswas 2012).

For methodological quality assessment, all included studies in the meta-analysis were coded based on a well-known and valid scale (Jadad *et al.*

Table 1

<b>Methodological Quality of Studies Included in the Meta-analysis</b>					
Study	Described as randomized	Details of randomization are described	Described as double blind	The method of double blinding are described	withdrawal and dropouts are described
Quinlan <i>et al.</i> (2016)	No	No	No	No	Yes
Rousseau <i>et al.</i> (2005)	No	No	No	No	Yes
Rousseau <i>et al.</i> (2007)	Yes	No	No	Yes	Yes
Rousseau <i>et al.</i> (2009)	Yes	No	Yes	Yes	Yes
Baker and Jones (2006)	Yes	Yes	No	No	Yes
Ehnholt <i>et al.</i> (2005)	No	No	No	No	Yes
Ruf <i>et al.</i> (2010)	Yes	Yes	No	Yes	Yes
Fazel <i>et al.</i> (2009)	No	No	No	No	Yes
Annan <i>et al.</i> (2017)	Yes	Yes	No	Yes	Yes
Panter-Brick <i>et al.</i> (2018)	Yes	Yes	Yes	Yes	Yes
Yankey and Biswas (2012)	Yes	No	No	No	No

1996). The results are presented in Table 1. These results show that some of the included studies did not achieve high scores based on the scale of quality assessments for randomized control trials (RCTs), with five studies (Ehnholt *et al.* 2005; Rousseau *et al.* 2005; Fazel *et al.* 2009; Yankey and Biswas 2012; Quinlan *et al.* 2016) from the 11 only achieving a score of 1 from a potential score of 5 and only one study (Panter-Brick *et al.* 2018) achieving a complete score of 5. Therefore, although all of these studies are appropriate for the meta-analysis based on the inclusion criteria of our study, we note that some of them cannot be considered rigorous RCTs.

In terms of country of origin, the included studies had participants from various countries and continents, including the Middle East, East Asia, Africa, Europe, India, Pakistan, Bangladesh, Sri Lanka, the Caribbean, South America, Russia and Georgia. The studies included in the meta-analysis did not report separate statistics based on gender, racial identities and



length of time in the host country. Therefore, we could not include racial and gender differences in our analyses.

### *Statistical Analysis*

The meta-analysis conducted in this study is based on Hedges'  $g$  (corrected statistics). This statistic is calculated using mean differences and pooled standard deviations. Mean difference effect sizes through a random-effects model was used to compute effect sizes and potential moderators. Random-effects analysis is recommended when the results of several random samples should be generalized to a broader population (Hedges and Vevea 1998).

We used meta-regression using the random-effects model (method of moments) to evaluate all the proposed moderators (Borenstein *et al.* 2011). Comprehensive Meta-Analysis (CMA; Biostat 2018), Version 3, was used for the analyses of our study. Moreover, for assessing the heterogeneity of effect sizes, we calculated  $Q$  statistics and, for examining the drawer effect, we used Classic Fail safe  $N$  (Rosenthal 1979, 1991).

### **Results**

The characteristics of all included studies are presented in Table 2. The test of heterogeneity indicated that there was no heterogeneity among the assessments ( $Q = 26.62$ ,  $p > 0.05$ ). This allowed us to consider all the assessments as being related to the same dependant variable of social adjustment.

Based on all studies included in the meta-analysis, the aggregated effect size was computed as  $g = 0.14$ ,  $p < 0.01$ , 95% confidence interval [0.06, 0.21] (see Figure 2 for a forest plot including all the included studies). This effect size is considered small based on Cohen's guidelines (Cohen 1992). For investigating the potential effect of publication bias, we used fail-safe  $N$  analysis (Rosenthal 1979, 1991). The results showed that 87 studies with non-significant effect sizes would be required to decrease this effect size to a non-significant value ( $p > 0.05$ ). As such, publication bias cannot meaningfully account for the significance of the computed results. Overall, the results of the meta-analysis indicate a slight, but statistically significant, general efficacy of the included interventions in improving the social adjustment of young refugees.

We compared the effect sizes of the included studies based on their therapeutic approaches and the results showed that there are no significant differences between different therapeutic approaches ( $Q = 7.37$ ,  $df(Q) = 6$ ;  $p = 0.28$ ). Furthermore, the results of the meta-regression analysis showed no significant moderating effect for the number of therapeutic sessions ( $b = 0.006$ ,  $SE = 0.007$ ,  $p = 0.35$ ) and age ( $b = -0.008$ ,  $SE = 0.01$ ,  $p = 0.59$ ).

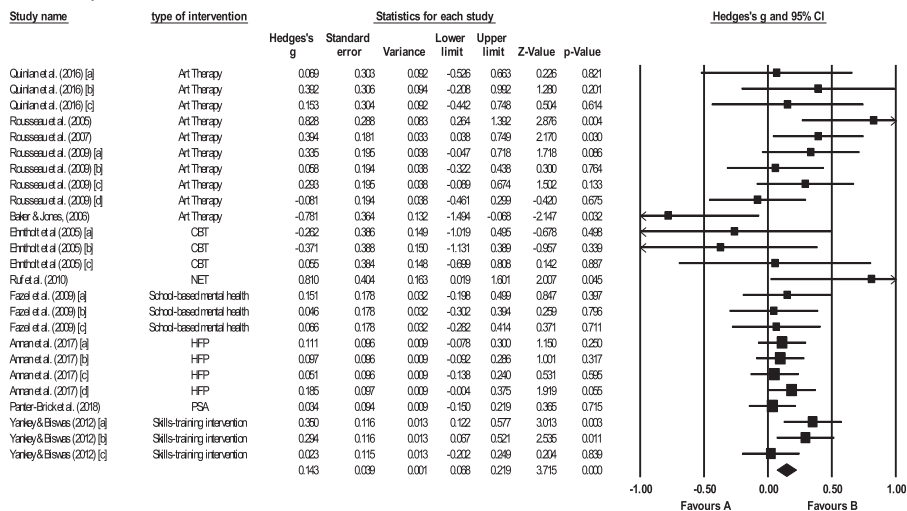
Table 2

The Effect Sizes of Included Studies Based on All Inclusion Criteria of the Meta-analysis						
Type of intervention	Study	Instruments used	Number of sessions	Age mean	Sample size	<i>g</i>
Art therapy	Quinlan <i>et al.</i> (2016) [a]	SDQ-conduct problems (teacher-report)	10	15.42	42	0.06
	Quinlan <i>et al.</i> (2016) [b]	SDQ-peer relationship problems (teacher-report)	10	15.42	42	0.19
	Quinlan <i>et al.</i> (2016) [c]	SDQ-pro-social behaviours (teacher-report)	10	15.42	42	0.15
	Rousseau <i>et al.</i> (2005)	CSCS-popularity	12	8.90	51	0.82
	Rousseau <i>et al.</i> (2007)	SDQ-impaired friendship	9	14.50	123	0.39
	Rousseau <i>et al.</i> (2009) [a]	SDQ-relational symptoms (parent-report)	10	5.30	105	0.20
	Rousseau <i>et al.</i> (2009) [b]	SDQ-pro-social behaviours (parent-report)	10	5.30	105	0.33
	Rousseau <i>et al.</i> (2009) [c]	SDQ-relational symptoms (teacher-report)	10	5.30	105	0.29
	Rousseau <i>et al.</i> (2009) [d]	SDQ-pro-social behaviours (teacher-report)	10	5.30	105	0.08
	Baker and Jones, 2006	BASC-adaptive skills	40	13.93	31	0.73
CBT	Ehnholt <i>et al.</i> (2005) [a]	SDQ-peer relationship problems (teacher-report)	6	12.96	26	0.26
	Ehnholt <i>et al.</i> (2005) [b]	SDQ-conduct problems (teacher-report)	6	12.96	26	0.37
	Ehnholt <i>et al.</i> (2005) [c]	SDQ-pro-social behaviours (teacher-report)	6	12.96	26	0.05
NET	Ruf <i>et al.</i> (2010)	UCLA PTSD Index for DSM-IV	8	11.45	25	0.81

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School-based mental-health intervention	Fazel <i>et al.</i> (2009) [a]	SDQ-conduct problems (parent-report)	Has not been mentioned	11.50	141	0.11
	Fazel <i>et al.</i> (2009) [b]	SDQ-peer relationship problems (teacher-report)	Has not been mentioned	11.50	141	0.16
	Fazel <i>et al.</i> (2009) [c]	SDQ-pro-social behaviours (teacher-report)	Has not been mentioned	11.50	141	0.05
Happy Families Program (HFP)	Annan <i>et al.</i> (2017) [a]	CBCL-externalizing problems (care-giver report)	12	10.35	429	0.11
	Annan <i>et al.</i> (2017) [b]	Child Psychosocial Protective Factors Scale (care-giver report)	12	10.35	429	0.09
	Annan <i>et al.</i> (2017) [c]	CBCL-externalizing problems (child report)	12	10.35	429	0.05
	Annan <i>et al.</i> (2017) [d]	Child Psychosocial Protective Factors Scale (child report)	12	10.35	429	0.18
Profound Stress Attunement (PSA)	Panter-Brick <i>et al.</i> (2018)	SDQ-pro-social behaviours	16	14.37	463	0.03
Skills-training intervention	Yankey and Biswas (2012) [a]	Problem Questionnaire-school stress	30	16	300	0.35
	Yankey and Biswas (2012) [a]	Problem Questionnaire-peer stress	30	16	300	0.29
	Yankey and Biswas (2012) [a]	Problem Questionnaire-opposite sex	30	16	300	0.02

g statistics in the table are the corrected statistics of effect size for each study to minimize bias assessments. SDQ, Strengths and Difficulties Questionnaire; CSCS, Children's Self-Concept Scale; BASC, Behaviour Assessment System for Children; CBCL, Achenbach Child Behavior Checklist.



**Figure 2.**  
**Forest Plot for the Included Studies**

## Discussion

This is the first meta-analysis to investigate the effects of different psychological interventions on the social adjustment of child and adolescent refugees. Although significant, the overall effect size was low, indicating a trivial effectiveness of the psychological interventions on social adjustment of child and adolescent refugees.

A previous meta-analysis, conducted among refugees (Lambert and Alhassoon 2014), reported large significant effects of 13 trauma-focused RCTs (including NET, CBT and EMDR) on PTSD and depression. Similarly, Gwozdziwycz and Mehl-Madrona (2013) found a medium effect size for the effectiveness of NET interventions ( $n=7$ ) on PTSD amongst refugee populations. Collectively, the results of the current and previous meta-analyses show that, while interventions targeting trauma in young refugees are effective in reducing PTSD and mood disorders, they only have limited effectiveness in improving social adjustment.

A major difference between the current study, investigating the effectiveness of psychological interventions on social adjustment, with the above-mentioned meta-analyses is that, in the former meta-analyses, there was a very close alignment between the outcome variables with the content of the interventions and implemented techniques (i.e. PTSD, depression). For example, they targeted the resolution of trauma based on empirically supported PTSD interventions. However, in the current meta-analysis, we were to investigate social adjustment in the included studies where the outcome variable was not a direct focus of all the interventions. Although social adjustment in refugees

was arguably the ultimate long-term goal of these interventions, most of these interventions had been designed to target post-traumatic stress or other psychopathologies. These interventions were then expected to enhance social adjustment as a likely outcome alongside other targeted-dependent factors. These interventions failed to design and contemplate their interventions specifically to the concept of social adjustment in view of this specific population.

Although social adjustment was not the direct focus in several of the studies used in our meta-analysis, it was nevertheless a primary focus in some of them (Baker and Jones 2006; Yankey and Biswas 2012; Annan *et al.* 2017). Unfortunately, however, these programmes had only limited benefit on the social adjustment of young refugees. It is possible that these limited benefits can be attributed to the simplistic design of many of the programmes. Although these programmes tended to include activities designed to improve social skills of young refugees, they largely focused on conventional skills. The therapeutic techniques were not designed to consider or address the complicated effects of trauma, most likely multiple trauma, on social adjustment in refugee populations. We therefore argue that interventions targeting social adjustment in refugees will be more effective when taking into account the specific challenges faced by those who have recently experienced trauma. This consideration is relevant to all therapeutic approaches considered here, because the type of therapeutic approach was not found to be a moderator in this study.

The age and number of sessions were other potential moderators considered in the meta-analysis. The moderating effect of age was not significant, indicating that the aggregated effect size can be generalized to all the ages included in this meta-analysis. The moderating effect of the number of sessions also was not significant. This result demonstrated that the limited number of sessions does not explain the small aggregated effect size. In other words, a larger aggregated effect size might not be expected if more sessions were included in therapeutic plans. This result is inconsistent with the meta-analysis of Lambert and Alhassoon (2014), who reported a small moderating effect of the number of sessions in the effectiveness of psychological interventions on PTSD in refugees. They concluded that interventions tend to be more effective when there are a greater number of therapeutic sessions. We suggest that our null result regarding the number of sessions reflects the milder effects of interventions on social adjustment. It is likely that, since the included interventions did not include therapeutic techniques that substantially enhance social adjustment, a greater number of interventions did little to improve the effectiveness of these programmes on social adjustment.

There are a number of limitations to this study that restrict the interpretation and implications of the current set of results. A limitation of this study was the relatively small number of studies meeting the criteria for inclusion in the meta-analysis. We note, however, that this number is comparable to other

meta-analyses focusing on PTSD and mood disorders. Nevertheless, the lack of high-quality RCTs is a limitation in this field more generally. A further limitation is that we are unable to comment on the likely moderating effect of gender and socio-cultural factors on social adjustment, as they were not adequately investigated or reported in the included studies. Future research would benefit from taking into account the effect of gender and socio-cultural factors while studying social adjustment. Finally, heterogeneity in assessing social adjustment can be considered a limitation of this meta-analysis. As highlighted in the previous section, all assessments included in this meta-analysis were consistent with our definition of social adjustment and our statistical assessments of heterogeneity allowed us to consider all the assessments as one variable (i.e. social adjustment). Our results would have been more precise, however, if all instruments used had specifically assessed the general concept of social adjustment. There are a few valid and reliable scales of social adjustment that are appropriate for refugee populations (e.g. Social Adaptation Self-evaluation Scale (SASS), Bosc *et al.* 1997; Renner and Salem 2009). Therefore, we recommend that future studies focusing on improving social adjustment of refugees use scales that are specifically designed for assessing social adjustment, instead of assessing only some aspects of this variable.

Overall, the results of this meta-analysis clearly highlight the importance of paying specific attention to the social adjustment of young refugees. Given the importance of effective social adjustment, we believe that social adjustment should be a main indicator of intervention success in future studies. The results of this meta-analysis demonstrate that current interventions do not perform well in terms of enhancing social adjustment and consequently could be modified to better target social adjustment in young refugees. Although previous research has demonstrated that psychological interventions have been generally effective for PTSD and mood disorders, the current study indicates that such interventions tend to have little effect on enhancing the social adjustment of young refugees. We believe the interventions targeting social adjustment in refugees need to adopt/amend/contemplate empirically supported techniques to improve social adjustment. As such, we suggest that a sufficient number of RCT studies planning and investigating new specific interventions for social adjustment of young refugees are necessary as the next steps of the research literature in this field. Although our meta-analysis was focused on young refugees, the same recommendations can be proposed for research in the general field of social adjustment of traumatized children and adolescents. The reason is that trauma in general can have complicated effects on social adjustment in young populations (McLean *et al.* 2013) and a comprehensive understanding of these effects may be necessary for designing effective therapeutic plans to improve the social adjustment of traumatized young individuals.

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