A Way Forward – Treatment Mechanisms

Tol, WA, Komproe, IH, Jordans, MJD, Susanty, D, Macy, RD & De Jong, JTVM. The Role of Coping, Social Support and Family Connectedness in a School-Based Psychosocial Intervention for Children Affected by Political Violence *In preparation*
ABSTRACT

Introduction: a few rigorous studies have addressed treatment outcomes of mental health and psychosocial support for children and adolescents affected by political violence. These studies demonstrate a need for further improvements to address the full range of mental health and psychosocial outcomes in treatment for both boys and girls. This study aimed at examining moderators and mediators of a classroom-based intervention for children affected by political violence in Indonesia, including the role of coping, social support and family connectedness.

Methods: the study was organized as a cluster randomized trial. Children (mean age 9.9, SD=1.2) attending schools in the most violence-affected areas of Central Sulawesi were randomly assigned to either a 15-session classroom-based intervention, combining cognitive-behavioral and creative-expressive techniques, or a waitlist control condition. Assessments took place before, one week after, and 6 months after treatment. We identified a set of mediators and moderators through univariate analyses, applying an ecological resilience framework, which we subsequently examined through structural equation modeling (multivariate analyses).

Results: Analyses of changes in mean scores on coping, social support and family connectedness revealed few differences between the treatment and waitlist condition with small effect sizes. Univariate analyses revealed changes in hope, material and play support mediated treatment effects, whereas gender, household size, and baseline levels of coping, and play support moderated treatment effects. Subsequent multivariate testing of these mediators and moderators, however, resulted in a different model, in which function impairment mediated treatment effects. Although coping and social support influenced changes on the outcome variables, treatment did not have an effect on hypothesized mediating variables. Family connectedness was not related to treatment outcomes in this model.

Discussion: the most likely best fitting (multivariate) model identified a central role for changes in function impairment, which facilitated change in Posttraumatic Stress Disorder (PTSD) symptoms and hope. Gender and size of household were found to moderate treatment effects on longer-term changes in function impairment. No mediating effects were identified for hypothesized variables, but baseline levels of coping and social support did predict changes on outcome variables separate from treatment. Function impairment was found to partly mediate changes in PTSD and hope. Implications for improvement of treatment and further theoretical development are discussed.
INTRODUCTION

A recent review pointed to the paucity of research on emergency-related mental health interventions in low- and middle-income countries [1], in spite of a larger body of research regarding the impact of political violence on child mental health and psychosocial wellbeing [2,3,4]. Only recently a number of rigorous studies have addressed treatment outcome of psychosocial and mental health support for children affected by political violence.

Four randomized controlled trials have been published, focused on children in Bosnia and Herzegovina [5,6], Northern Uganda [7] and Sulawesi, Indonesia [8] (for a systematic review see [9]). Dybdahl [5] reported the findings of weekly semi-structured group discussion meetings with internally displaced mothers of 5 to 6 year old children over a 5-month period. Compared with a control group (n=45) receiving basic medical care, mothers and children receiving the psychosocial intervention and basic medical care (n=42) evidenced greater reduction in maternal posttraumatic stress symptoms, psychologist-rated emotional distress, and improvements on children’s weight gain. Layne and colleagues [6] studied the efficacy of a 17-session school-based trauma and grief-focused component therapy (TGCT) with children and adolescents aged 13 to 19 years. Participants in the treatment condition (TGCT and a classroom-based psychosocial and skills intervention, n=66) and comparison condition (only the psychosocial and skills intervention, n=61) showed significant reductions in post-treatment and 4-month follow-up on PTSD (individuals who showed significant change: treatment condition 81%, comparison condition 48%) and depression symptoms (idem: treatment 61%, comparison condition 47%).

Bolton and his team [7] examined the efficacy of creative play and group interpersonal psychotherapy with internally displaced adolescent survivors (age 14 to 17 years) of war and displacement in Northern Uganda. They found significantly greater reduction in depressive symptoms for female adolescents receiving group interpersonal psychotherapy (n=105), but no changes in anxiety, conduct problems and functioning, compared to a waitlist control condition (n=104). Adolescents receiving creative play (n=105) did not evidence change in these outcome measures. In a recent study in Indonesia, children aged 8 to 12 years participating in a 15-session classroom-based psychosocial intervention (n=183) were compared with a waitlist control condition (n=221). This study reported significantly greater lessening of PTSD symptoms, function impairment and retained hope for girls and retained hope for boys receiving the intervention. No differences at 6-month follow-up were observed for a traumatic-stress idiom, depressive and anxiety symptoms [8].

In conclusion, rigorous evaluations of diverse mental health and psychosocial interventions for children affected by political violence show promising improvements, but
only in a limited number of the total amount of outcome instruments assessed, with two studies showing greater effects for girls. These studies therefore point to the need to improve interventions, in order to address the full range of negative mental health and psychosocial consequences of political violence for both genders. Though the above studies are essential in building an evidence base for a relatively young and debated field of practice and research, they provide little direction on how such improvement could be realized. Randomized controlled trials in this field, as in high-income settings [10], have focused mainly on demonstrating effects on indicators of psychosocial wellbeing, whereas further adaptation and improvement of psychosocial programs for children affected by war necessitates an additional focus on underlying treatment mechanisms, i.e. a focus on the moderators and mediators of treatment.

Such research would benefit from further theoretical development concerning the protective and vulnerability mechanisms through which political violence affects mental health and psychosocial wellbeing. Though researchers are beginning to address these issues (see e.g. the work of Punamäki et al [11,12,13,14]), this is generally an under-researched area [2,15,16]. However, researchers can build on studies with children in high-income settings exposed to adversity, including community violence. Such research has increasingly applied a resilience perspective, in which researchers have studied resilience as a “dynamic process encompassing positive adaptation within the context of significant adversity” ([17]; p. 543). Early research in this tradition identified a ‘short list’ of attributes correlated with good outcomes in the face of adversity, including “connections to competent and caring adults in the family and community, cognitive and self-regulation skills, positive views of self, and motivation to be effective in the environment” ([18]; p. 236).

Currently, resilience research has entered a new phase characterized by a view of resilience as a ‘systems concept’, i.e. encompassing processes at multiple levels, from the molecular to the global, including gene-environment interactions and individual-social interactions [19]. Rather than focus on a short list of attributes, such research has aimed at identifying the dynamic process involving protective and vulnerability factors at different levels of psychological and social functioning, which might explain good psychosocial wellbeing in spite of severe adversity. In a similar line of reasoning, Tol and colleagues have described an ‘ecological resilience’ approach to psychosocial programming for children affected by armed conflict (chapter 8). This approach focuses on assets and processes associated with good outcomes after exposure to political violence, and views ecological resilience as a reservoir of factors at different social-ecological levels (individual, family, peer, school, and neighborhood) that can help to retain or enhance psychosocial wellbeing.

Aimed at filling this gap in the literature, the main objective of this paper is to examine moderating and mediating factors of a psychosocial treatment for children affected by
political violence in order to provide recommendations to enhance efficacy. A secondary objective, because of the gap in knowledge related to resilience as a process concept for children affected by war, our aim is to apply a theoretical framework of ecological resilience, by examining the role of individual and social-ecological factors in relation to psychosocial wellbeing, while these factors were (hypothetically) influenced by a school-based psychosocial intervention. More specifically, we focused on the role of coping, social support and family connectedness in longitudinal changes of posttraumatic stress disorder (PTSD) symptoms, hope, and function impairment associated with the Class-room Based Intervention [20]. We chose these variables as they are among the best studied mediators of psychosocial wellbeing in research on children in adversity in high- [21,22,23] and low- and middle-income settings [13,24,25]. Outcome variables (PTSD, hope, function impairment) were chosen because change on these variables was observed in the above mentioned study in Indonesia, in contrast to other outcome variables [8].

**Figure 1.** Conceptual model
To guide our hypotheses we constructed a conceptual model (see figure 1). This figure, in line with an ecological resilience approach, defines psychosocial wellbeing of children affected by political violence at two levels; an individual (intra-individual psychological variables) and contextual level (social/relational variables). In this paper, relevant outcome measures were PTSD symptoms, hope, and function impairment, with the latter including function impairment in the family environment, in relation to peers, and at school (see chapter 7). The model also specifies moderators and mediators of treatment effects. We followed the conceptualization of moderators and mediators as described by Holmbeck [26]. In this conceptualization a moderator is a variable that affects the relationship between two variables, in our case between treatment status and change on PTSD symptoms, hope and functioning. I.e., a moderator variable specifies “the condition under which an effect occurs, as well as the conditions under which the direction or strength of an effect vary” [26], p. 599] (see figure 2). In contrast, a mediator variables is a variable that specifies “how a given effect occurs” [26; p. 599]). In our study, a mediator variable was a variable which we hypothesized would be affected by treatment status, and subsequently affect treatment outcome. Hypothesized mediators were coping, social support, and family connectedness. We tested hope both as an outcome measure, as well as a possible mediator of change on PTSD and function impairment (cf. [27]).

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Based on this conceptual model, we specified two main research questions. First, we were interested in the mediating role of coping (repertoire and satisfaction), social support and family connectedness for established treatment effects on PTSD symptoms, hope, and function impairment. Second, we wanted to examine possible moderating
roles of gender, age, political violence exposure, displacement status, religion, and household size.

METHODS

Design, sampling, participants, and intervention

We refer to Tol et al [8] for a detailed description of the methodology and sample of the study. In short, we employed a cluster randomized trial with a waitlist control condition. Fourteen out of 21 eligible schools in the most affected areas of Central Sulawesi, an area suffering political violence between Christian and Muslim groups since 1998, were randomly assigned to either a treatment (7 schools, n=182) or a waitlist control condition (7 schools, n=221). In these schools we screened 495 children in grades 4 and 5 for exposure to political violence events (1 or more), PTSD symptoms (cut-off 11), and anxiety (cut-off 5), using standardized checklists, and included 403 children. These outcome measures were judged relevant based on previous qualitative research in the area [28]. Children were excluded if they were assessed to be unable to function in a group setting and/or showed signs of severe psychiatric problems (e.g. mutism, dissociation, substance abuse) (n=3). Non-blinded assessments took place before, one week after, and 6 months after treatment by 4 independent assessors trained in a 5-week course. Children and parents provided written informed consent.

Intervention consisted of 15 sessions over 5 weeks of a manualized classroom-based intervention [20], combining cognitive-behavioral and creative-expressive techniques in a structured format. Interventionists were para-professionals, without former mental health backgrounds, trained over two-weeks to administer the intervention. Fidelity to the treatment manual was scored by the research assessors, using a structured checklist, and evaluated as excellent (90%). Previous mixed-method regression analyses revealed the efficacy of the intervention for girls in relation to PTSD symptoms, hope, and function impairment, and for boys in relation to hope [8].

The sample consisted of 207 boys (51.4%) and 196 girls (48.6%) between the ages of 7 and 15 years (mean age 9.9, SD=1.2). One hundred thirty-three children were Muslim (31.1%), 189 Protestant (46.9%), 52 Hindu (12.9%), 7 Catholic (1.7%) and 21 of other religions (5.2%). Comparisons between the treatment and waitlist conditions at baseline revealed differences on age (treatment group was 4 months older), gender (more girls in the treatment condition), displacement (more displacement in the waitlist condition), and parent-rated aggression (higher level in the waitlist condition). These differences between study conditions can likely be attributed to the small amount of clusters (n schools=14).
Instruments

Assessments took place using structured checklists for (a) exposure to political violence, (b) symptomatology: PTSD, depressive, anxiety symptoms, local trauma-related idioms, aggression, (c) hope, (d) function impairment, and (e) coping, social support and family connectedness. For the purpose of these analyses we chose to focus on changes in PTSD symptoms, hope, and function impairment since the classroom-based intervention showed effects on these variables. All standardized measures were translated using methodology proposed by Van Ommeren and colleagues [29]. PTSD symptoms were measured using the child-rated Child PTSD Symptom Scale (CPSS; [30]), which contains 17 items scored on a 4-point scale (range 0-51, higher score indicates more PTSD symptoms, Cronbach Alpha .847, test-retest reliability .650). We assessed hope using the Children's Hope Scale (CHS; [31]), a child-rated checklist of 6 items scored on a 5-point scale (range 6-36, higher score indicates more hope, Cronbach Alpha .622, test-retest reliability .667). Function impairment was scored with a child-rated checklist constructed locally through qualitative research methods [32]. This checklist contains 10 questions concerning impairment in individual (hygiene, sleep, eating, praying), family (household chores, social interaction with family members), peer (play, social interaction with peers), and school functioning (studying, school chores), scored on a 4-point scale (range 10-40, Cronbach Alpha .772, test-retest reliability .783). Exposure was assessed using a child-rated checklist of 9 dichotomous items referring to political violence events constructed locally through a free listing exercise (range 0-9, test-retest reliability .612). For the purpose of this study we divided the political violence events into more ‘direct’ (witnessing the burning of houses/ attacks on people/ bomb blasts/ sniper attacks) and ‘indirect’ exposure (hearing about bomb blasts, sniper attacks, having been displaced and losing family members) to examine possible differential effects of these exposure types on changes over time.

We assessed coping repertoire and satisfaction with the use of the child-rated Kidcope – Younger Version (ages 7 to 12) [33]. The Kidcope contains 15 questions concerning 10 coping strategies, which were assessed in relation to an imagined school problem (working hard but receiving bad grades), by asking which coping strategies were used (dichotomous items), and how children rate the effectiveness of employed coping methods (3-point scale). We obtained two composite scores from the Kidcope: (a) coping repertoire (adding the dichotomous items, range 0-10) and (b) coping satisfaction (adding the evaluation items, range 0-30, Cronbach Alpha .692). Social support was measured with the child-rated Social Support Inventarization Scheme (SSIS) [34]. This measure asks children if they did or did not receive material support (range 0-5), emotional support (range 0-5), guidance support (range 0-5), and play support (range 0-5) from up to 5 self-chosen persons. Besides analyses per social support type, we derived a total social
support measure by adding the 4 types of social support (range 0-20, Cronbach Alpha .766). Finally, we assessed family connectedness (FC) through an adapted version of a measure developed by Betancourt [25] for use with Chechen refugee adolescents. Our measure consisted of 11 items, rated by parents on a 3-point scale, asking about such issues as the quality of relations in the family, attitudes toward the child, and care for the child (range 11-33, Cronbach Alpha .723).

Statistics

To address our two research questions we employed three analytic strategies. First, as an exploratory strategy, we compared changes of the treatment and waitlist condition on mean scores of coping, social support types, and family connectedness between baseline (T1), first follow-up (T2: 1 week after intervention) and second follow-up (T3: 6 months after intervention) using independent sample t-tests on pure change scores (i.e. T1-T2, T1-T3), following an intent-to-treat analysis. Missing values were replaced through the last value carried forward method. We calculated effect sizes to aid in interpretation of the statistically significant differences in change on outcome variables between study conditions [35].

Second, we performed specific analyses to examine mediating and moderating roles of variables. We tested mediating relationships by assessing the following requirements: (a) a statistically significant relation between the predictor (treatment status) and the outcome variables (PTSD symptoms, hope, and function impairment), (b) a statistically significant relation between a mediating variable (coping repertoire, coping satisfaction, social support types, total social support and family connectedness) and outcome variables, (c) a statistically significant relation between the predictor and mediating variables, and (d) an effect of treatment through the mediating variable. Relations for (a), (b), and (c) were tested with bi-variate Pearson correlations. To assess (d), we employed hierarchical regression analyses; in a first step treatment status was entered as the independent variable, and in a second step we entered both treatment status and the mediating variables as independent variables. If the predictive value of treatment status changed in the second step, a mediating effect was regarded as confirmed [36].

Moderating analyses were also tested through hierarchical regression analyses. In the first step we entered treatment status and the possible moderating variables as independent variables. In the second step we added the interaction term for the predictor and moderator (treatment X moderator). We centered possible moderating variables around means (z-scores) to correct for multi-collinearity.

Subsequent to the identification of moderating and mediating roles of variables (combined in figure 3), we tested relationships between variables through structural equation modeling (SEM). SEM analyses have the advantage that they can simultaneously take into
account the relations between the predictor and the range of moderating/mediating and outcome variables (multivariate analyses), while regression analyses only provide an opportunity to test relations on one outcome variable at a time (univariate analyses). Significant relationships between study variables were specified in a non-recursive regression model and this model was evaluated with LISREL 8 (Joreskog and Sorbom, 1993). Goodness of fit measures used in this study were: (1) the $\chi^2$ test as a measure of the discrepancy between the variance–covariance matrix of the variables used in the model and the variance–covariance matrix derived from the specified relationships in the model. A non-significant $\chi^2$ refers to the validity of the specified relationships in a model as interpretations of the (co)variances in the data matrix; (2) root mean square error of approximation (RMSEA). This estimate refers to the difference between the data variance–covariance matrix and the model-based matrix fit to the data, per degree of freedom. This estimate should be $<0.05$ to indicate close fit (Browne and Cudeck, 1993); and (3) non-normed fit index (NNFI), a value $>0.90$ indicates a good fit (Byrne, 1998; Joreskog and Sorbom, 1993). On the basis of the modification indices provided by LISREL, we specified sequential hierarchically nested models (not shown) and evaluated the models by means of the goodness of fit measures. We only specified relationships

**Figure 3.** Model describing moderators and mediators of treatment (univariate)
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that resulted in an improvement of the χ² value of successive models, with at least 5
units (e.g., modification index >5). The final model (figure 4) only contains estimated
paths with t>2.00, thus only paths with a significance of p<.05. Our final model was
obtained from a sequential χ² difference tests procedure: the χ² of the model of interest
was significant different from a less saturated model but not significant different from a
more saturated model (Anderson and Gerbing, 1988).

Figure 4. Multivariate model

χ² (131) = 153.03, p = 0.091
RSMEA = 0.021, 90% CI RSMEA = 0.0 – 0.033
NNFI= 0.99

Arrows with straight lines represent statistically significant relations (p<.05); arrows with dashed lines
represent statistically non-significant relations
All estimates in the models were standardized and reversed to aid in interpretation.
RESULTS

Changes in coping, social support and family connectedness

Comparison of changes in coping, social support, and family connectedness between treatment and waitlist condition are provided in table 1. In general, we found few differences between the study conditions. Between baseline and first follow-up we identified significant differences in change on coping satisfaction (an increase in satisfaction in the treatment condition vs. decrease in the waitlist condition), material social support (no change in the treatment condition vs. an increase in material support in the waitlist condition), and family connectedness (a decrease in family connectedness in the treatment condition vs. an increase in the waitlist condition). At the second follow-up only the difference on changes in coping satisfaction remained and became larger. Furthermore, the difference in change on play social support between study conditions reached statistical significance (a stronger increase in play social support in the treatment group). In general effect sizes of these differences were small (ranging from .20 - .27).

Mediators of treatment outcome

After testing for necessary correlations between (a) treatment status and change in PTSD symptoms, (b) changes in hope/ coping/ social support types/ family connectedness and change in PTSD symptoms, and (c) treatment status and changes in hope/ coping/ social support types/ family connectedness, only changes on material social support between baseline and first follow-up and changes in play social support between baseline and second follow-up remained as potential mediators for changes in PTSD symptoms. Hierarchical regression analyses confirmed small mediating effects for both material and play social support (see table 2). Changes in material support amplified treatment effect, whereas changes in play social support undermined treatment effect.

We tested the same required statistical relations between hypothesized mediators and function impairment and hope. Regarding function impairment, only changes in hope between baseline and first follow-up were identified as possible mediators of treatment effect between baseline and both first and second follow-up. Hierarchical regression analyses showed that changes in hope faintly strengthened beneficial changes in function impairment at both follow-up measurements (see table 2). For hope, no mediators were identified.
Moderating effects were found for a variety of variables. In accordance with previous analyses [8], we found moderating effects of gender on changes in PTSD symptoms and function impairment (both from baseline to second follow-up). Moreover, we identified a moderating effect of household size on function impairment changes between baseline and second follow-up. Coping repertoire at baseline did not moderate PTSD and function impairment changes, but it did moderate changes in hope; coping repertoire
moderated changes between baseline and both follow-ups, and coping satisfaction at baseline moderated changes on hope between baseline and first-follow-up. Regarding social support, we only found moderating effects of play social support. Baseline levels of social support moderated changes in PTSD and function impairment between baseline and first follow-up. No moderating effects for family connectedness were identified.

Though we did not find moderating effects of coping on PTSD and function impairment, the other social support types, displacement and exposure, regression analyses did show that these variables influenced changes over time. Based on the above (univariate) findings, we developed an empirical model (see figure 3), incorporating mediating, moderating and direct effects of variables in changes of PTSD symptoms, function impairment and hope over time. We subsequently tested this model with Structural Equation Modeling (SEM).

Structural equation modeling

Figure 4 represents the final model, including relations between mediating, moderating, and other variables influencing changes in PTSD symptoms, function impairment and hope. When testing simultaneously for relations between variables (multivariate analyses), none of the mediating relations identified in the univariate analyses reached significance (see table 3 for a comparison of model fit). Rather, function impairment changes played a more central role in mediating changes on PTSD symptoms and hope. Function impairment changes between baseline and first follow-up facilitated beneficial changes in PTSD symptoms between baseline and second follow-up. Changes in function impairment in the short term inhibited changes in PTSD symptoms in the longer-term. In general, treatment had a direct effect on changes in PTSD symptoms and function impairment only between baseline and first follow-up, whereas it had effects on hope between baseline and both follow-up periods. In summary, treatment had effects on PTSD symptoms and function impairment in the short-term and hope in the short- and longer-term. Effects on function impairment in the longer term facilitated beneficial changes on PTSD in the short-term but not in the longer-term, whereas they facilitate changes in hope only in the longer-term. In addition, changes in hope between baseline and first-follow up increased the likelihood of change on PTSD symptoms between baseline and second follow-up.

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<th>Table 3: Comparison of tested models</th>
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<td>Model 1 (figure 3)</td>
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<td>Model 2 (figure 4)</td>
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** p<.0001
The only moderating variables remaining from the univariate empirical model were household size (inhibiting changes in function impairment between baseline and second follow-up) and gender (girls showed more improvement in function impairment in the longer-term).

Though we did not find hypothesized mediating effects for coping, social support and family connectedness, we did find effects of baseline levels of coping (repertoire and satisfaction) and social support (all types except emotional social support) on changes in outcome variables. Coping repertoire at baseline facilitated larger changes in PTSD symptoms in the longer term. However, coping satisfaction at baseline predicted smaller changes in hope between baseline and first follow-up. Similarly, baseline levels of play social support inhibited changes in hope in the short term. Total social support at baseline, however, had a small beneficial effect on changes in hope on the longer-term. Guidance social support at baseline predicted better changes in function impairment between baseline and second follow-up. In addition, changes in material social support were positively related to changes on PTSD symptoms between baseline and first follow-up. Changes in material support themselves were predicted by the number of people in children’s household (the more people in one’s household the less change in material social support), but mostly by material social support levels at baseline. Finally, family connectedness was not related to changes in the outcome variables.

The model showed good fit, with $\chi^2(131)/153.03=1.17$ (p=.091), RMSEA<.05 and NNFI approximated 1, and can therefore be assumed to be a good representation of the covariance structure between variables. Model 2 (figure 4) represents a statistically significant improvement in comparison with model 1 (figure 3; $\Delta\chi^2(45)=1074.67$; p<.0001).

**DISCUSSION**

The objective of this paper was to examine moderators and mediators of a school-based psychosocial intervention for children affected by political violence. Analyses were guided by a conceptual framework which specified coping, social support and family connectedness as the main mediators of treatment and gender, age, household size, political violence exposure and displacement as moderators.

However, in exploratory analyses based on changes in mean scores we did not identify strong effects of treatment on coping, social support and family connectedness, a prerequisite for specifying these variables as mediating variables. Furthermore, in the final (multivariate) model none of the hypothesized mediating relations were identified. Though none of the hypothesized variables influenced changes in outcome variables through treatment, coping and several social support types did influence changes in outcome variables separate from treatment effects. Family support, however, did not
influence change in outcome variables. In addition, moderating effects were found for gender and household size, but not for age, political violence exposure and displacement.

Implications for intervention improvement

These findings have implications for efforts aimed at enhancing treatment effects. First, changes in outcome variables were enhanced by baseline levels of coping repertoire and material social support, but treatment had no effects on these variables. Treatment effects could thus be hypothesized to increase if treatment were able to change coping and social support. More structured activities to address coping repertoire, e.g. through discussion and practice of coping methods (cf. cognitive behavioral therapy), could help sustain changes in PTSD symptoms in the longer term according to the current model. Similarly, treatment effect could be enhanced if treatment was able to address the identified relations between changes in material social support and PTSD symptoms. To this end, the school-based intervention could be implemented as part of inter-sectoral efforts aimed at poverty alleviation. These efforts should focus especially on assisting families as these most commonly provide material support.

Second, a number of hypothesized mediating variables were identified which inhibited change in outcome measures; household size negatively moderated treatment effects on function impairment, and higher levels of play social support and coping satisfaction predicted smaller changes on hope. These relations can be interpreted as showing that children with higher baseline levels of support have smaller chances of increasing their wellbeing. Stated in reverse, children with smaller levels of support show a higher propensity for change. This mechanism confirms the current focus of screening on both symptom levels and availability of a support network (see [37]). In addition, treatment could aim to increase social networks of children, also outside the school setting, e.g. by linking children with smaller support networks to children in their neighborhood with larger networks.

Third, we found no effects of family connectedness on our outcome variables. This is in contrast to available literature that has emphasized the importance of family-level variables for the psychosocial wellbeing of children affected by war [24,25]. Besides possibilities that our family connectedness measure might have lacked construct validity in this setting (see limitations section below), it could be hypothesized that (disturbed) family connectedness is less important in mediating or moderating the outcome variables that this intervention was able to influence (PTSD, hope, function impairment. It could be that family connectedness does play a role in symptoms which the school-based intervention did not affect (traumatic stress idiom, depressive and anxiety symptoms). Further research should be aimed at answering these questions.
Fourth, we found a mediating effect of treatment through changes in function impairment, as well as direct effects of treatment on PTSD symptoms and hope. Treatment effects through function impairment were approximately as strong as direct effects of treatment on PTSD and hope. As described above, function impairment was assessed at several social-ecological levels, including activities in the individual, family, peer, and school domains. These activities were identified through previous qualitative research. Apparently, improving in a number of contextually important activities over a number of domains facilitates the possibility of children to change in more specific constructs such as PTSD symptoms and hope (defined as the ability to find solutions to problems and the evaluation that one can implement these solutions), though changes in PTSD symptoms in the longer term were inhibited by earlier change on function impairment. This finding could be interpreted as support for the generally held belief in trauma-focused psychotherapy that before addressing symptoms a phase of stabilization in functioning is necessary (e.g. [38]). Alternatively, initial improvement in functioning could be hypothesized to challenge children’s cognitions regarding the inevitability of suffering and the impossibility to improve functioning, which paves the way for children to improve in other areas (cf. Ehlers & Clark, 2000; Vickers, 2005). In addition, the inhibition of short-term change in function impairment on longer-term change in PTSD symptoms might indicate that when children are able to improve their functioning, specific mental health symptoms become less of a priority for change.

Finally, though our model showed good fit, we did not find an explanation for the direct treatment effects on outcome variables. Changes could have been caused by factors ranging from general effects related to attention for children in distress to above mentioned hypothesized cognitive mechanisms (see e.g. [10]) specific to treatment. Further research should ideally address these possible cognitive mechanisms on e.g. political convictions [14] as mediators of change in addition to the variables we assessed. Further qualitative research, asking children and facilitators what they perceived the mechanisms of change were, could be done to inform the choice of these variables.

Ecological resilience

Concerning our secondary aim (applying an ecological resilience framework), we can generally confirm that wellbeing of children in political violence-affected settings is influenced both by individual level and contextual factors, in a dynamic manner. For instance, we found that changes in material social support, independent of treatment, influenced changes in PTSD symptoms. Similarly, we have shown that individual coping repertoire and satisfaction with coping affected the possibility to change in terms of PTSD symptoms and hope. This study thereby echoes recent calls to study mental health
and psychosocial wellbeing of children as a dynamic multi-level process, which was possible through the use of structural equation modeling techniques (cf. [39]).

Furthermore, we found that changes in function impairment facilitated change in PTSD symptoms (short-term) and hope (longer-term). Moreover, changes in hope on the short-term facilitated changes in PTSD symptoms in the longer-term. These findings confirm the interrelatedness of symptoms (PTSD), resilience variables (hope) and general functioning. Also, they show that an initial strategy to affect wellbeing of children in war situations by a focus on impairment of functioning, rather than a focus on symptomatology per se, can pave the way to addressing symptomatology. However, changes in function impairment in the short term inhibited changes in PTSD symptoms in the longer term. This latter finding could be interpreted either as a mechanisms through which higher treatment gains in the beginning result in smaller treatment gains in the longer term, or as proof that initial attention away from addressing symptoms leads to an avoidance of dealing with specific symptomatology. Further research is necessary to address this important question.

Limitations

Besides previously specified limitations to this study (non-blinded assessors, findings generalizable only to the Indonesian school setting [8]), we would like to draw attention to three additional limitations. First, in contrast to qualitative research aimed at constructing and adapting symptom-related instrumentation, we did not focus as much attention on adapting the resilience measures. Though effects are shown for coping and social support, it could be that effects would have been stronger if measures had been locally constructed through more detailed qualitative enquiry. Similarly, it might have been possible to show effects of family connectedness. For variables as contextually influenced as family functioning and social support, the use of standardized (universal) instruments might not be ideal. Recommendations for further study thus include the need to select or construct resilience measures through research aimed at identifying specific contextual ways in which children cope with situations of political violence, social support is conceptualized, and ideal family functioning is defined.

Second, family connectedness was rated by parents. In previous reporting of qualitative research we drew attention to the inability of many parents in this setting to provide as much care for their children as they wished, because of the necessity to rebuild livelihoods [28]. It is possible that parents, more than children, felt uncomfortable to disclose disrupted family relations, and that thereby measurement validity of parent reports was threatened by a tendency towards social desirability. Future research could aim to study quality of family relations both from parents’ and children’s perspectives.
Third, as described above, we did not assess a number of other variables which could have mediated treatment changes, e.g. trauma-related cognitions (e.g. feelings of current safety, feelings of justice), intelligence and other socio-cultural variables (e.g. socio-economic status).

In conclusion, through structural equation modeling we identified a number of underlying mechanisms affecting changes on PTSD symptoms, hope and function impairment. Identification of these mechanisms can lead to necessary improvement of intervention and further elucidation of the complex dynamic process of (influencing) resilience of children affected by war at multiple levels.
REFERENCES


