

**Strengthening Parental Self-Efficacy and Resilience:  
A Within-Subject Experimental Study with Refugee Parents of Adolescents**

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## Abstract

Post-migration stress and parenting adolescents can reduce parental self-efficacy. This study tested the effects of strengthening parental self-efficacy in refugee parents of adolescents and whether this makes parental self-efficacy less impacted by post-migration stressors. Using a within-subject experimental design, experience sampling data were collected in 2019 from 53 refugee parents of adolescents ( $M_{age} = 39.7$ ,  $SD_{age} = 5.59$ , 73% Syrian, 70% mothers) in the Netherlands. Data were analyzed by dynamic structural equation modeling using interrupted time-series analysis. The single-session personalized intervention strengthened parental self-efficacy (small effect: Between Case Standardized Mean Difference = 0.09) and made refugee parents less vulnerable to post-migration stressors. Findings suggest that parental self-efficacy is malleable and strengthening it fosters refugee parents' resilience. Replications with longer-term follow-ups are needed.

*Keywords:* within-subject experimental design, parental self-efficacy, refugee post-migration stress, experience sampling method, dynamic structural equation modeling.

## **Strengthening Parental Self-Efficacy and Resilience:**

### **A Within-Subject Experimental Study with Refugee Parents of Adolescents**

Parental self-efficacy is a context-dependent construct, meaning that external factors can enhance or thwart it. Among refugee parents, stressors such as language difficulties, adapting to a new culture, and discrimination can be such external factors that thwart parental self-efficacy (e.g., Ali, 2008; Eltanamly et al., under review; Boruszak-Kiziukiewicz & Kmita, 2020). Also, children's transition to adolescence, and its associated renegotiation of power dynamics within a family, can reduce parental self-efficacy (Glatz & Buchanan, 2015a). Refugee parents of adolescents are, therefore, at an increased risk of reductions to their self-efficacy, which are linked to suboptimal parenting practices (Eltanamly et al., under review; Jones & Prinz, 2005), delinquent behavior, and substance use in adolescents (Kapetanovic et al., 2019). It is therefore important to find ways to strengthen parental self-efficacy in refugee families. In the present study, we aimed 1) to test whether we can strengthen parental self-efficacy in refugee parents using a brief, focused intervention, and 2) whether this intervention makes parental self-efficacy less impacted by post-migration stressors. We conducted this study primarily with Syrian refugee parents of adolescents who have recently resettled in the Netherlands.

Parental feelings of self-efficacy are essential for parents in every stage of children's development, including adolescence (Slagt et al., 2012). According to Bandura's social cognitive theory, self-efficacy influences human functioning by impacting several cognitive, choice, and motivational processes (1999). Higher self-efficacy would therefore relate to greater cognitive flexibility, weighing of multiple options, and more perseverance in implementing the chosen path of action, even in the face of challenges (Bandura, 1999). In fact, parental self-efficacy relates to parents being more likely to plan and exercise control over their behavior when

encountering parenting challenges (Jones & Prinz, 2005). Parents with higher self-efficacy tend to be warmer, more involved, and engage more in monitoring their child and adolescent's behavior (Shumow & Lomax, 2002; Teti & Gelfand, 1991). Furthermore, increases in parental self-efficacy predict increases in supportive parenting and decreases in inept discipline over time (e.g., Deković et al, 2010), which are factors associated with favorable child and adolescent adjustment (e.g., Bandura, 1977; Jones & Prinz, 2005; Meunier & Roskam, 2009). Adolescence is a turning point for the onset of problematic functioning (Kapetanovic et al., 2019; Loughheed, 2020). Therefore uncovering simple techniques that could be used to strengthen parents' perseverance in the face of parenting challenges is very crucial, particularly, in populations at risk of reductions in their parental self-efficacy, such as refugee parents of adolescents.

### **Parental Self-Efficacy Among Refugee Parents of Adolescents**

Becoming a refugee can be a disempowering experience (Bowie et al., 2017). On top of exposure to life-threatening conditions, war refugees often go through multiple displacements before they resettle in countries that allow them to apply for asylum, eventually becoming refugees (Williams, 2010). In the process, many people lose their social structures, cultural values, and above all, their self-identity (Aroian et al., 2008; Samarasinghe & Arvidsson, 2002). Such losses are related to feeling incapable of managing the new circumstances among different refugee populations (Sulaiman-Hill & Thompson, 2013; Tran, 1993; Vromans, et al., 2018). In fact, evidence is building that refugee populations experience reductions in their self-efficacy (e.g., Hoffman et al., 2020; Tran, 1993).

Specifically, post-migration stress is known to reduce parental self-efficacy in refugee parents (e.g., Ali, 2008; Boruszak-Kiziukiewicz & Kmita, 2020). Part of post-migration stress is having to constantly deal with novel and changing situations, which necessitate seeking the help

of others (Aroian et al., 2008), sometimes even one's own children. A parent's role, as someone who can guide their children through different situations, is then jeopardized and refugee parents sometimes feel that they have "failed their children" (Ali, 2008, p. 156). One's experience of failing could be particularly harmful if it happens before a sense of efficacy is firmly established, such as in the case of families going through multiple transitions (Bandura, 1998). Many parents also experience lower agency in their parenting as misconceptions about child protection services in resettlement countries can contribute to their fear of having their children removed from their custody, if they adopt some of the parenting practices they used in their homeland (Bowie et al., 2017; Hoffman et al., 2020). In other words, a disruption in their perceptions of their ability to fulfill their parental roles coupled with a minimized agency in parenting (Merry et al., 2017), may put their parental self-efficacy at risk. In fact, a sense of loss, problems dealing with new situations, language difficulties, not feeling at home, and discrimination were found to compromise parental self-efficacy in Syrian refugee populations (Eltanamy et al., under review).

Furthermore, children's transition to adolescence can reduce parental self-efficacy (Glatz & Buchanan, 2015a). An inherent part of adolescent development is the increased demand for autonomy (Wray-Lake et al., 2010). Adolescents' autonomy striving redefines the relational dynamics with parents, which goes hand-in-hand with temporary increases in conflicts between parents and children (De Goede et al., 2009). These changes might feel particularly threatening for refugee parents as they might view their children's need to develop their own identities as an indication of their own inability to compete with the host culture. They might therefore doubt whether their parenting efforts are successful in sustaining family cohesion, a vital issue for immigrant and refugee families (Boruszak-Kiziukiewicz & Kmita, 2020). Research with migrant populations (e.g., Asians) reveals that, adolescents are granted more autonomy than their parents

would like to give them, due to immigration (Russell et al., 2010). Refugee parents could feel reduced agency in their parenting and fewer mastery experiences, which are key sources of self-efficacy (Bandura, 1977; Glatz & Buchanan, 2015b; Jones & Prinz, 2005). Thus, the re-organization of parent-child interaction patterns that typically occurs as children transition to adolescence (Granic et al., 2003) can be an added source of stress for refugee parents who are already dealing with post-migration challenges.

### **Can We Promote Parental Self-Efficacy? Evidence for Malleability**

There is evidence that interventions to support parents can improve parental self-efficacy in ways that predict meaningful changes in parenting behavior. For example, it was found that individual and group parenting interventions improve parental self-efficacy (Amin et al., 2018; Mouton, 2018b; Wittkowski et al., 2016), and explain improvements in parenting behavior in community samples (Deković et al., 2010). Such interventions vary in length, where some are as brief as a single session (Wittkowski et al., 2016). Self-efficacy seems to be enhanced by teaching specific parenting techniques (e.g., positive, non-violent child management techniques) and in combination with cognitive skills (e.g., understanding one's emotional reactions to children's behaviors, parental self-regulation, and parental attributions of children's behaviors; Mouton et al., 2018b). The effectiveness of these approaches provide evidence for the malleability of parental self-efficacy, even in a single session.

According to Bandura's self-efficacy theory (1977), mastery experiences are the most effective way to strengthen someone's sense of efficacy, which is followed by verbal feedback and social comparisons (1989). Parents' sense of competence thus depends on those moments when they have experienced success despite parenting challenges (e.g., Verhage et al., 2013). It also depends on positive feedback that appreciates parents' efforts—especially when this

feedback is given by “authority figures” (e.g., university researchers; Cassé et al., 2015; Mouton et al., 2018a), and is framed in terms of a social comparison that suggests that parents are doing a good job relative to other parents (e.g., Mouton & Roskam, 2015). For example, a procedure to manipulate parental self-efficacy developed by Mouton and Roskam (2015) was tested in a quasi-experimental micro-trial with 42 mothers. In this study, the experimenters presented themselves as university researchers to be perceived by participants as experts in the field and gave participants positive feedback on their parenting skills, referring to questionnaires they had filled out at a previous time point, and compared their performance to others. This manipulation proved effective in boosting mothers’ perceived parental self-efficacy. Thus, the findings from Mouton and colleagues (2018a) indicate that elements of social learning theory can be successfully applied to strengthen parental self-efficacy. However, whether elements of social learning theory can also be effective in strengthening parental self-efficacy in refugee populations is not known yet, and therefore investigated in the present study.

There is preliminary evidence that parental self-efficacy can also be enhanced in refugee populations. For example, Morina and colleagues (2018) used mastery experiences to strengthen self-efficacy among a Turkish sample of refugees resettled in Switzerland. In addition, parenting interventions aimed at supporting refugee parents seem to contribute to strengthening parental self-efficacy in Syrian, Karen, Rohingya, and Afghan refugee families (El-Khani et al., 2018; Hoffman et al., 2020; Shaw et al., 2020). Until now, however, studies primarily focused on the feasibility and acceptability of programs in those populations, and the field is less developed in terms of the specific effects that these programs yield. Given the importance of parental self-efficacy for refugee parents, it is important to develop and rigorously evaluate simple techniques that can be used by professionals working with these parents to strengthen parental self-efficacy.

## **Does Increased Parental Self-Efficacy Fuel Resilience?**

A high sense of efficacy is related to well-being. For example, higher self-efficacy is related to better recovery from trauma in war-affected populations (Benight & Bandura, 2004) and to higher levels of positive affect, over time, among a diverse sample of refugees resettled in the UK (Tip et al., 2020). However, these studies used static measures of well-being which fail to capture the dynamic nature of self-efficacy that tends to fluctuate in response to the social context (Eltanamy et al., under review; Bandura, 1999). Previous work that tried to capture the dynamic nature of parental self-efficacy shows that the way refugee parents constantly reappraise their competence is impacted by fluctuations in post-migration stressors that they experience during the day (Eltanamy et al., under review). However, strengthening parental self-efficacy does not necessarily mean that it will become less impacted by post-migration stress. Self-efficacy can actually be higher after an intervention aimed at strengthening it, yet still show a dynamic pattern where it fluctuates in response to post-migration stress (Eltanamy et al., under review). We therefore defined resilience in this study as momentary increases in post-migration stress that are not followed by reductions in parental self-efficacy (Kuranova et al., 2020). In the present study, we tested the effect of strengthening parental self-efficacy of refugee parents in an authentic real-life context and thereby fostered our understanding of real time parental cognitions and how they are shaped by environmental stimuli in refugee populations.

According to social cognitive theory, perceiving one's environment as stressful is not only a function of objective stressors, but also of how people view their efficacy regarding managing the stressor (Bandura, 1997; 1999). By strengthening refugee parents' self-efficacy, they may feel less challenged by difficult parenting situations and also less challenged by everyday demands. Indeed, higher self-efficacy is related to appraising challenges less negatively, both in



community (Schulz et al., 2019) and immigrant samples (Dumka et al., 1996). As such, promoting refugee parents' self-efficacy likely reduces their perceptions of stress and how challenged they feel by difficult parenting situations, which are—to a great extent—occurring as a consequence of post-migration stress (Miao et al., 2018; Ochocka & Janzen, 2008).

### **The Present Study**

We aimed to address two goals in this preregistered confirmatory study (<https://osf.io/34fwy>; Eltanamly et al., 2019). First, to test whether a brief, focused intervention can strengthen momentary parental self-efficacy among recently resettled refugee parents. Second, to test whether the intervention makes parental self-efficacy less impacted by post-migration stressors. The intervention includes a personalized component delivered within a standardized structure. Through the intervention, participants are given feedback on their parenting, which is delivered in a way that taps into the three sources of self-efficacy: mastery experiences, verbal persuasion, and social comparison.

To reach our study goals we conducted a within-subject experimental study. To do that, we employed a randomized multiple baseline design using the experience sampling method (ESM). This design has several advantages: first, it allows for sound evaluation of an intervention with fewer participants (compared to a traditional between-person experiment), making the design particularly suitable for hard-to-reach populations such as refugee families (Biglan et al., 2000). Second, randomization of the intervention timing makes sure that threats to internal validity such as history and maturation (i.e., factors that could occur during the course of an experiment and that would bias results) do not interact with the treatment effects (Edgington, 1996). The use of ESM also has several advantages: first, it reduces recall bias, increasing ecological validity as participants' experiences were assessed as they occurred (Larson & Csikszentmihalyi, 2014).

Second, it allows the collection of a large number of data points from each participant, increasing the within-person power. Third, ESM allowed us to chart fluctuations in post-migration stress and parental self-efficacy as they happen throughout the day (Larson & Csikszentmihalyi, 2014). We were, therefore, able to capture the dynamics between parental self-efficacy and post-migration stress on a momentary basis, allowing us to test whether the intervention buffers against the negative impact of minor, yet recurring stressors, on parental self-efficacy. Finally, combining ESM with a randomized multiple baseline design afforded us the scientific rigor to make definitive conclusions about the effectiveness of our intervention (Kazdin, 2019). We expected the intervention to (1) improve mean within-person levels of parental self-efficacy, and (2) weaken the negative link between post-migration stress<sub>(t-1)</sub> on parental self-efficacy<sub>(t)</sub>.

## **Methods**

### **Design**

We used a within-subject experimental design which uses each participant as their own control condition, and therefore inferences about within-person effects can be made (Kazdin, 2019). The impact of the intervention can, therefore, be assessed in relation to each participant's functioning before the intervention. In this design, the use of repeated assessments before (i.e., baseline) and post-intervention are fundamental. Data from the baseline period can be used to (1) describe functioning before the intervention; and (2) to predict functioning in the immediate future, if no intervention had been delivered. Data from the post-intervention phase can be used to test whether functioning post-intervention is different from the projected functioning, if no intervention had been delivered (Kazdin, 2019). Combining the within-subject design with randomized multiple baselines strengthens the scientific rigor of the design, allowing us to test whether change in parental self-efficacy is a function of an experimental manipulation

(Edgington, 1996; Tate et al., 2008). Specifically, the different participants who are randomly assigned to different baseline phases serve as control conditions to test whether changes in parental self-efficacy can occur without delivering the intervention. Using a multiple baseline design can demonstrate that intervention effects happen “when and only when” the intervention is delivered (Kazdin, 2019, p. 7).

## **Participants**

Seventy-three refugee parents based in the Netherlands enrolled in the study ( $M_{age} = 39.70$ ,  $SD_{age} = 5.59$ ), primarily mothers (70%). Parents had at least one adolescent child ( $M_{age} = 12.60$ ,  $SD_{age} = 1.72$ ), were refugees of war, spoke Arabic, and were primarily Syrian (73%). Participants had, on average, 13.86 years of education, slightly higher than the expected 9 years of education in Syria (Central Intelligence Agency [CIA], 2018), but comparable to the average education level of Syrians in the Netherlands (Dagevos et al., 2018). Parents lived in the Netherlands for over three years ( $M_{months} = 41$ ;  $SD = 13.79$ ) at the time of enrollment in the study, see Appendix A: Table 1A for demographic information. All participants were offered aid in seeking therapeutic support for any bad memories triggered, and for any mental health problems more generally. None of the parents felt that this was necessary. More details about the sample and the momentary fluctuations in post-migration stress and parental self-efficacy are reported in [Eltanamly et al., under review].

Our final sample for this study consisted of 53 participants (see Figure 1). Two participants dropped out: one because of personal problems and one because the study triggered bad memories. Two participants were removed from the analyses: one participant expressed that she randomly chose one of her children to report on for each assessment instead of consistently reporting on her parenting of the same child. The other participant had to be referred to

professional help because of signs of dysfunctional family dynamics (i.e., parentification). In addition, we excluded participants ( $n = 17$ ) with low adherence percentages (i.e., less than 25% of their data points) because participants with a few data points did not allow the model to converge (details for the rationale for using this percentage as a cut-off are available in Appendix B). Participants included in the analyses responded to an average of 40 assessments in the baseline phase (59.4% adherence) and 44 assessments post-intervention (59.0% adherence). When comparing participants who had low adherence percentages to participants who had more than 25% of their data points filled in, no differences were reported in positive parenting, post-traumatic stress symptoms, and on most sociodemographic variables. More importantly for the study purposes, they did not differ in their parental self-efficacy. Nevertheless, participants with low adherence percentages were more likely to be older ( $t(68) = -2.91, p = 0.005$ ), male ( $t(68) = 3.14, p = 0.002$ ), have more children ( $t(68) = -2.76, p = 0.007$ ), and slightly older children ( $t(68) = -2.25, p = 0.028$ ).

Figure 1 around here.

## **Procedure**

The study was approved by the institutional review board of the University of Amsterdam. We preregistered our protocol and data analysis plan prospectively on Open Science Framework, under <https://osf.io/34fwy> (Eltanamy et al., 2019), additionally, all study procedures were done in Arabic. Based on a priori power analyses, in order to detect a small mean level change at the within-person level with a probability of .80, a total of 50 participants with 50 data points—during baseline and post-intervention each—would be required (Schmiedek & Neubauer, 2020). We oversampled the number of participants ( $N = 73$ ) and assessments ( $T = 75$  per phase) to

account for potential drop-outs and possible low adherence percentages. Data were collected between April and November 2019.

Participants were recruited through language schools and via Facebook groups created by and for refugees. We placed multiple posts on different Facebook groups with a total of 57,392 members who were invited to take part in the study. We asked for permission to contact interested parents and 145 permitted us to contact them, of which 73 parents started the study, resulting in a final sample of 53 parents (see Figure 1 for the flow of participants in the study). Upon recruitment, participants were randomly assigned to an intervention day (day 7, 8, or 9) using the random number generator function in MS Excel. Participants were blind to the randomization of the baseline period before the intervention, and they were unaware of the specific aims of the research and were told that the study investigated how their new surroundings might be influencing their children's adjustment. Participants were visited at home three times by a contact person (i.e., either the first author or a trained research assistant).

***First: Psychological Measures and Parenting Interview.*** At the first data collection point, parents provided written informed consent and filled in demographic information. If participants had more than one child in the age range between 10 and 15, we randomly chose a child for the parents to report on using the random number generator function in MS Excel. Participants were asked to report on their parenting of that particular child and also filled in The Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5; Blevins et al., 2015; Ibrahim et al., 2018) to measure trauma symptoms. Furthermore, participants took part in a semi-structured interview guided by the Alabama Parenting Questionnaire (APQ; Frick, 1991), which was audio recorded.

***Second: Start of Baseline ESM Assessment.*** At least four weeks later, we installed the Ethica App to collect ESM data on participants' smartphones. Participants were shown how the

app works and responded to a sample questionnaire in the presence of the research assistant. Those responses were later removed in the data cleaning process. The spacing of four weeks was intended to make sure participants' responses to the questionnaires and the parenting interview did not influence their momentary assessments. The following fifteen days (i.e., 6-8 days baseline and 6-8 days post-intervention, depending on intervention day), participants received notifications on their phones ten times a day signaling momentary questionnaires to be filled in. Notifications were sent at quasi-random moments between 7:30 am and 10:30 pm. One day after the start of the ESM data collection, participants were contacted by phone to make sure the smartphone application worked correctly and participants were encouraged to get in touch with the research assistant, should any technical problems arise.

***Third: Intervention and Update.*** The day before the intervention, the family's contact person called the parent to confirm the appointment. To mask the aim of the visit, participants were told that this visit aimed to update the smartphone application. To simulate an application update, participants' phones were used to synchronize their data, something that happens automatically, but can be manually activated. The actual goal of the third visit was the delivery of the intervention (see Intervention). On the day following the intervention, participants were contacted again to make sure the smartphone application worked after the update.

***Finally:*** After the ESM data collection was over, participants received gift cards as a thank you for their participation. The amount of money on the gift cards increased when more ESM questionnaires were completed, with a minimum amount of €15 and a maximum of €75.

## **Intervention**

The intervention aimed to strengthen parental self-efficacy in a single session. Specifically, we intended to help parents draw the connection between their positive parenting behavior and

the positive impact it had on their children. We did this using personalized feedback within a standardized structure. Specifically, we targeted different components of self-efficacy: a mastery experience based on a true story, verbal persuasion, and positive social comparison.

*Personalized Component.* Personal feedback was based on parents' answers to the positive parenting subscale of the APQ which they gave in a semi-structured interview format during the first data collection point. The first and fourth authors (a clinical psychologist) coded the interviews independently. In cases ( $n = 1$ ) where dysfunctional family dynamics were suspected, it was deemed unethical to conduct the research. We, therefore, referred families for further help and did not deliver the intervention.

Based on translated transcripts of the audio recordings, we selected parents' statements about positive parenting behavior scoring highest on (1) mastery (i.e., the parent perceived it as a result of their action); (2) impact (i.e., the parent mentioned a positive impact on the child); (3) detail: (i.e., whether there was enough detail to build a story); and (4) clarity. If more than one statement had the same score, one of those statements was randomly selected. Statements were selected with high interrater agreement (89.2%).

*Standardized Structure.* The standardized structure was guided by the intervention conducted by Mouton and Roskam (2015) and tapped into the three sources of self-efficacy (Bandura, 1989): mastery experience, verbal persuasion, and social comparison. The participant was told that their data were analyzed at the lab of the University of Amsterdam and offered to view preliminary results. This way, the feedback was perceived as being based on sound scientific research, hence increasing the impact of verbal persuasion. In addition to the feedback on their positive parenting skills, participants were socially compared to other participants in the study using a graph on which the participant ranked highly on positive parenting. This way, all

participants received personalized messages, which were provided using a standard structure. For example, below is a transcript of a chosen statement from one of the interviews which was woven into the standardized structure to show the parent how their positive parenting related to positive child outcomes:

Parent: *“Once we had visitors over, parents of her brother’s school friends. She did everything and helped me with translation. I forgot to serve something, and she brought it while the guests were still there. After they left, I told her that I had really appreciated that.”*

Interviewer: *“And how did your daughter react?”*

Parent: *“You can see that she feels powerful and strong. Self-confident. That she is no longer the shy girl that she used to be.”*

Personalized component: *“During the first interview you told [interviewer] of that day when you had visitors over and [child’s name] helped out with serving food for the guests, and how she helped you out with translation. That day you told her that you appreciated what she had done. You saw the positive impact it had on her. She feels powerful and strong. She is self-confident and she is no longer the shy girl that she used to be.”*

This way, we helped parents recognize how their positive parenting behavior had a positive impact on their child. Therefore, in a single session, we aimed to strengthen parental self-efficacy relying on personalized mastery experiences, the strongest source of parental self-efficacy (Bandura, 1989).

## **General Measures**

*Post-Traumatic Stress Disorder.* We used the Arabic version of the *Posttraumatic Stress Disorder Checklist* for DSM-5 (PCL-5; Blevins et al., 2015; Ibrahim et al., 2018). The PCL-5 has 20 items. Participants rated the extent to which they experienced different trauma-related



symptoms in the previous month (e.g., repeated, disturbing, and unwanted memories of the stressful experience) on a 5-point scale (range 0–4). A score higher than 33 indicates a possible clinical diagnosis. The scale had good internal consistency in previous research (Cronbach's  $\alpha = .94$ ; Blevnis et al., 2015) and in our sample (Cronbach's  $\alpha = .87$ ).

*Positive Parenting.* We used the positive parenting subscale of the *Alabama Parenting Questionnaire* (APQ; Frick, 1991). The subscale has 6 items reflecting positive parenting. Participants rated how much they agreed with different statements (e.g., you let your child know when he/she is doing a good job with something) on a 5-point scale (range = 1–5). The scale has acceptable internal consistency (Cronbach's  $\alpha = .68$ ; Frick, 1991) and the positive parenting subscale had acceptable internal consistency in our sample (Cronbach's  $\alpha = .66$ ).

## **ESM Measures**

More details on the process of adapting existing questionnaire items to state items for use in ESM can be found in Appendix C.

*State Post-Migration Stress.* We used six items adapted from five subscales of the Demands of Immigration Scale (DIS; Aroian et al., 2008; Aroian, et al., 1998) to assess state post-migration stress. Loss: (1) “*Right now, I miss the people I left behind in my original country,*” (2) “*Right now, I miss special places back home.*” Novelty: (3) “*Right now, I am dependent on others to show or teach me how some things are done here.*” Language: (4) “*Right now, I have difficulty doing ordinary things because of a language barrier.*” Discrimination: (5) “*Right now, Dutch people are treating me as an outsider.*” And Not at home: (6) “*Right now, I do not feel that the Netherlands is my true home.*” Parents responded on an 11-point visual analog sliding scale from 0–10. The within-person omega reliability was .49 (Geldhof et al., 2014).

*State Parental Self-Efficacy.* We used four items adapted from two subscales of the Measure of Parenting Agency (MaaP; Hamilton et al., 2015). Self-efficacy: (1) “*Right now, I feel confident as a parent,*” (2) “*Right now, my parenting skills are effective.*” Agency: (3) “*Right now, I feel helpless about my child’s behavior,*” and (4) “*Right now, my child is getting their own way, so why try?*” Parents responded on an 11–point visual analog sliding scale from 0–10. The within-person omega reliability was .53 (Geldhof et al., 2014).

### **Data Analysis Strategy**

We used Dynamic Structural Equation Modeling (DSEM) in Mplus version 8.4, which combines time series analysis with multilevel data (Hamaker et al., 2018). DSEM has several features that make it suitable for ESM data. First, it takes the nested structure of the data into consideration (as assessments are nested within participants). Second, it considers the unequal spacing of assessments using the TINTERVAL option (as participants were triggered at random points per day but not during the night). Third, it deals with missing data using Bayesian statistics by modeling parameter for the missing data in the Markov Chain Monte Carlo (MCMC) algorithm (McNeish & Hamaker, 2019). We used at least 45,000 iterations in Mplus and two MCMC chains. Because the first half of each chain is discarded as burn-in, and because we used a thinning rate of every 10<sup>th</sup> iterations (meaning that only 1 in 10 iterations is saved), our results here are based on 4500 iterations (see Gelman et al., 2014). We checked model convergence by checking that potential scale reduction factor (PSR) stayed below 1.1. We checked for signs of lack of convergence by checking the trace plots for spikes or the two chains drifting away from each other. In such case we would use a thinning rate of every 5<sup>th</sup> iteration. We had at least 6 days of data (i.e., 60 assessments) before the single-session intervention (i.e., baseline phase) and at least 6 days of data after the intervention (i.e., post-intervention phase).

We tested our first research question—whether the intervention increased parental self-efficacy—in two steps. First, we had to check whether there was any change in parental self-efficacy during the baseline phase, and whether any change in parental self-efficacy post-intervention was gradual or abrupt. To do that, we used Interrupted Time Series Analyses (ITSA) within a DSEM framework by including time trends in the model, following recommendations by Huitema and Mckean (2000). We, therefore, created a serial variable (1, 2, 3...) that denoted the assessment point (i.e., slope); we created a dummy variable for the phase (i.e., baseline versus post-intervention); and we created a second serial variable starting at the assessment moment following the intervention (0, 0, 0... for the baseline phase and 0, 1, 2, 3... for the post-intervention phase) noting the assessment points post-intervention (i.e., slope change). We estimated the linear change in parental self-efficacy during baseline (i.e., using the slope variable) and the change in this slope post-intervention (i.e., using the slope change variable). We were therefore able to examine whether participants reported a gradual change in parental self-efficacy, both, during baseline and post-intervention. Second, if there was no gradual change in parental self-efficacy over time, we would test the intervention effect without controlling for slopes (i.e., we would not include time trends in the model). In this case, we would then use the dummy variable for the phase to investigate the differences in mean levels of parental self-efficacy between both phases (i.e., mean level change) as a random effect. In this model, the estimate for level change in parental self-efficacy represents the change in mean level as caused by the intervention. The effect of mean level change was specified as random because we expected the effect of the intervention to vary across individuals. We re-ran the analyses controlling for child's age, parent's education level, and parent's gender.

We computed the between-case standardized mean difference (BC-SMD; Valentine et al., 2016) using a web-based calculator version 0.4.2.9300. This gave an overall estimate of change in parental self-efficacy from baseline to post-intervention on a group level. BC-SMD is an effect size designed for single-case experimental studies with multiple participants and is comparable to between-group experimental studies. BC-SMD accounts for a nested data structure, repeated assessments, and for between and within-subject variances. BC-SMD allows for modeling up to sixth degree polynomial trends for each phase. If the ITSA results show no trends (i.e., gradual changes) in parental self-efficacy before and post-intervention, we would calculate the BC-SMD assuming no-trends. To calculate the BC-SMD, we used restricted maximum likelihood estimation allowing for random effects during baseline and post-intervention. This allowed participants to vary in their initial baseline scores and in their rates of change in parental self-efficacy post-intervention. Effect size was interpreted as small (0.2), medium (0.5), or large (0.8; Cohen, 1992).

We tested our second research question—whether the intervention buffered against the negative impact of post-migration stress<sub>(t-1)</sub> on parental self-efficacy<sub>(t)</sub>—by means of an interaction. Specifically, we examined whether the effect of post-migration stress<sub>(t-1)</sub> on parental self-efficacy<sub>(t)</sub> changed from baseline to post-intervention. To do this, we created a lagged variable (lag -1) for post-migration stress to create an interaction variable of phase (baseline versus post-intervention) × lagged post-migration stress. To facilitate interpretation, post-migration stress was group-mean centered before computing the interaction term. We then modeled the interaction effect of phase (baseline versus post-intervention) × lagged post-migration stress on parental self-efficacy, as a random effect. Using this model, we tested whether the intervention weakened the association between post-migration stress and later

parental self-efficacy. The slope of lagged post-migration stress was specified as random because we expected its association with parental self-efficacy to vary across individuals. To obtain the significance of the beta for  $PMS_{t-1}$  on PSE post-intervention we re-ran the analysis with phase reverse-coded (1 = pre-intervention, 0 = post-intervention).

## Results

### Does the Intervention Increase Parental Self-Efficacy?

We carried out two steps to answer this question. First, we checked whether there were any gradual changes in parental self-efficacy within the baseline and post-intervention periods. This was not the case, neither for the baseline phase ( $\beta = -0.02$ , 95% CI [-0.06, 0.01]) nor for the post-intervention phase ( $\beta = 0.02$ , 95% CI [-0.02, 0.06]). We, therefore, did not need to control for slopes in our analyses. At the assessment point immediately following the intervention, change in parental self-efficacy was not significant ( $\beta = 1.19$ , 95% CI [-0.20, 2.60], see Table 1).

Second, to test whether the intervention increased parental self-efficacy, we tested the mean difference in parental self-efficacy between baseline and post-intervention. Self-efficacy indeed increased from baseline to post-intervention (Mean change  $B = 0.69$ , 95% CI [0.04, 1.34]). On average, parental self-efficacy increased from 27.82 during the baseline phase (on a scale of 0–40) to 28.51 during the post-intervention phase. The BC-SMD effect size was small (0.089; 95% CI [0.01, 0.17]). Importantly, participants varied in the extent to which they experienced an increase in parental self-efficacy (Variance<sub>PSE</sub> = 4.44, 95% CI [2.73, 7.32] see Figure 2).

Figure 2 around here.

As per our preregistration, we controlled for child's age, parent's years of education, and parent's gender to see if they would change our findings. None of the covariates were significant

and interpretation of results stayed the same. This means that the intervention strengthened parental self-efficacy regardless of how old children in the sample were, how well educated parents were and regardless of whether mothers or fathers were participating (Figure 3 shows the momentary fluctuations in parental self-efficacy along the course of the study for three different participants randomized to different baselines).

Figure 3 around here.

### **Does Strengthening Parental Self-Efficacy Buffer Against Post-Migration Stress?**

To test whether the intervention buffered against the negative association between post-migration stress and parental self-efficacy, we modeled the interaction of phase  $\times$  post-migration stress on parental self-efficacy. Parental self-efficacy became less dependent upon post-migration stress after the intervention. While post-migration stress had a negative impact on parental self-efficacy during baseline phase ( $\beta = -0.08$ , 95% CI  $[-0.14, -0.03]$ ), this link weakened post-intervention ( $\beta = 0.09$ , 95% CI  $[0.03, 0.15]$ ), rendering the net effect of post-migration stress on parental self-efficacy non-significant ( $\beta = -0.05$ , 95% CI  $[-0.12, 0.04]$ ; see Table 2). Again, there was significant variability between participants ( $\text{Variance}_{\text{interaction effect}} = 0.03$ , 95% CI  $[0.01, 0.06]$ ).

### **Sensitivity Analyses**

As per our preregistration, we tested whether the results were dependent on the person delivering the intervention and on the type of contact participants had with the research team.

*Person Delivering the Intervention.* To test whether our results were dependent on the person delivering the intervention (i.e., the first author versus a trained research assistant), we reran the analyses controlling for the person giving the intervention. Results remained unchanged,

which means that regardless of the person delivering the intervention, parental self-efficacy was higher post-intervention ( $\beta = 0.67$ , 95% CI [0.05, 1.33]).

*Type of Contact.* Likewise, to test whether our results were dependent on type of contact with the research team (i.e., having the same research assistant contacting the participant throughout different phases or having different research assistants at different visits), we re-ran the analyses controlling for the type of contact with the research team. Interpretation of our findings remained unchanged, which means that regardless of whether the participant had contact with the same research assistant throughout the entire study or not, parental self-efficacy was higher post-intervention ( $\beta = 0.69$ , 95% CI [0.05, 1.33]).

### **Post-Hoc Analyses**

In order to understand the heterogeneity in intervention effects, we examined individual family level change patterns based on: diversity of area of residence in the Netherlands, parent's age and gender, marital status, number of children, age and gender of chosen child, parental education, refugee status, baseline positive parenting, and parental PTSD symptoms. As can be seen in the forest plot (Figure 2), 29% of the families showed a significant increase in self-efficacy, 66% showed no effect and 5% showed a decrease in self-efficacy. Using an ANOVA, we compared these groups (i.e., positive, neutral, and negative trends). Results showed that participants who benefited from the intervention had significantly higher levels of PTSD ( $M = 37.00$ ,  $SD = 16.20$ ) at baseline, unlike participants who either did not benefit ( $M = 27.78$ ,  $SD = 11.98$ ) or showed a negative response ( $M = 21.00$ ,  $SD = 8.72$ ,  $F(2) = 3.31$ ,  $p = .045$ ). We re-ran our main analyses using Trait PTSD symptoms to predict whether parents experienced a positive, neutral or negative intervention effect and we found that more trauma symptoms indeed predicted intervention effects such that parents with more trauma symptoms were more likely to

experience a positive intervention effect ( $\beta = 8.64$ , 95% CI [1.81, 15.41]). No patterns emerged for any of the other sociodemographic, baseline characteristics, or baseline positive parenting.

In addition, we estimated the mean level change in post-migration stress. Analysis showed that participants experienced a significant reduction in post-migration stress ( $\beta = -1.18$ ,  $p = .032$ ) from the baseline phase to the post-intervention phase.

### **Deviations from Preregistration**

To answer whether the intervention effect differed based on (1) person delivering the intervention (i.e., which researcher delivered the intervention), and (2) type of contact (i.e., whether the participants had sustained contact with the same research assistant throughout the study), we originally planned to apply sub-group analyses. However, this approach is not ideal because it estimates all model parameters freely for two very small subsamples, which would leave us with very little power to detect an effect (Schmiedek & Neubauer, 2020).

### **Discussion**

Post-migration stress may challenge refugee parents' thoughts and feelings about their capability of raising their adolescent children in their new environment (Eltanamy et al., under review). We adopted a within-subject experimental design to test whether we can strengthen parental self-efficacy; and whether we can make parental self-efficacy less impacted by post-migration stressors. We found that a personalized brief intervention strengthened momentary parental self-efficacy in refugee families and that this fueled resilience by buffering against the negative impact of post-migration stress on parental self-efficacy.

Our study answers calls from the field to expand interventions with war-affected populations by fostering protective resources (e.g., Miller & Jordans, 2016). Specifically, the call invites researchers to design and test interventions that aim to improve the conditions (e.g.,



parenting) in which war-affected children live. Parental self-efficacy is a key construct affecting parenting behavior and child adjustment (Jones & Prinz, 2005), also among refugee populations (Eltanamy et al., under review). The personalized brief intervention we tested, strengthened momentary parental self-efficacy and made refugee parents more resilient—their self-efficacy became less impacted by post-migration stressors. In our study, we found evidence for the proposition that interventions for refugee parents can buffer against the momentary negative effects of non-modifiable stressors facing caregivers (Puffer et al., 2017).

Our findings show that giving parents personalized feedback on their positive parenting and helping them draw the connection between their behavior and the positive impact it had on their children can improve their momentary self-efficacy and how much agency they think they can exercise in the parenting realm. While Mouton and Roskam (2015) relied on false feedback in their study, allowing them to provide all parents with the exact same feedback, we based our feedback on stories parents had shared with us during the first data collection moment. Our study advances the field of parenting interventions by showing that manipulation of a single aspect of parenting—in this case parental self-efficacy—can have an immediate impact on parents' momentary cognitions.

Our findings also show that higher self-efficacy and having a stronger will to exercise agency with one's children seem to buffer against the negative impact of post-migration stress on momentary parental cognitions. It might be that higher self-efficacy made parents feel better about themselves and therefore appraised their contexts as less challenging. In other words, as parents' self-efficacy was enhanced, they might have associated more positive meanings to their momentary stressors, fostering their resiliency (Bandura, 1997; Ryan & Deci, 2001). In addition, changes in momentary parental self-efficacy might have changed parents' perceived post-

migration stress. For example, if the intervention reassures parents that they are doing a good job raising their children, situations in which parents need to rely on their children (e.g., for their language skills) may become less stressful. It could be, for example, that increased feelings of self-efficacy change parents' perception from feeling inadequate (e.g., struggling with a new language) to attributing their children's abilities to their own efforts as parents. In line with this, our post-hoc analyses show that parents reported lower post-migration stress post-intervention.

Although we found support for our hypotheses, they have to be interpreted with caution. First, there may have been a selection bias in the parents who were willing to participate in the study. Because we could not collect data on parents invited but unwilling to participate, we do not know if they differed from the parents who participated in the study. It could be the case, however, that especially parents with an interest in or conscious of challenges in their everyday parenting situations may have been inclined to participate, relating to a higher motivation for change. Importantly, parents varied substantially in how they responded to the intervention. This finding is not unique. Parenting intervention effects are often driven by a smaller percentage who reap large intervention gains (e.g., van Aar et al., 2017). This is also the case in the current study, in which the intervention effect was driven by about 30% of the participants, a percentage comparable to individuals identified as especially sensitive to environmental stimuli, including interventions (20%–30%; Pluess, 2015). Who are those ones who benefited the most? Post-hoc analyses revealed that participants who benefited the most from the intervention had reported significantly more post-traumatic stress symptoms prior to the intervention, and those whose self-efficacy dropped post-intervention ( $n = 3$ ) had reported somewhat higher momentary parental self-efficacy during baseline ( $M = 30.57$ , compared to  $M = 28.64$  in those who benefited). Interestingly, in our sample, higher post-traumatic stress symptoms were associated

with lower trait parental self-efficacy. Findings pertaining to PTSD need to be interpreted with caution, however, given the small sample size on which they are based (i.e., 15 responders). Still, they seem to echo previous findings that indeed report that the families who benefit the most from interventions are the ones who need it the most (Leijten et al., 2018; van Aar et al., 2017).

Our findings are not without limitations. Maybe the most obvious limitation is the absence of a control group that does not receive the intervention. While our design uses each participant as their own control condition, we cannot exclude the fact that the intervention effect might have not been induced by the intervention, but rather because participants received some form of praise. Future studies might test such potential effects by including a control group with participants who do not receive the intervention, yet are given positive feedback on non-parenting questions. A second limitation is that the study was demanding, which could have resulted in the low adherence percentages among older parents and those with more children. A third limitation is that we did not test whether strengthening parental self-efficacy had any spill-over effects on parenting behavior and child outcomes. While we know that the more efficacious parents feel, the better they parent, and the more their children benefit (e.g., Glatz & Buchanan, 2015b; Jones & Prinz, 2005; Mouton et al 2018a)), we neither know whether this is the case for momentary parenting behavior nor if strengthening momentary parental self-efficacy has any effects on children.

Despite these limitations, several strengths give us confidence in our findings. First, the use of a randomized within-subject experimental design utilizing novel data collection methods (ESM) and analysis techniques (DSEM) allowed us to draw causal conclusions, avoiding the downsides associated with large-scale randomized controlled trials, especially with hard-to-reach populations such as refugee parents (Edgington, 1996; Tate et al., 2008). In addition, our

sensitivity analyses give us greater confidence that the way we designed the intervention is the driver behind the change rather than who delivered the intervention or whether the participant had sustained contact with the same research assistant. Finally, the brevity of our intervention is especially relevant for at-risk populations, such as refugee parents, who might find it challenging to engage in longer interventions.

Our findings show that it is possible to strengthen parental self-efficacy in refugee populations using personalized positive feedback, which, if replicated with longer-term follow-ups, can be easily implemented in clinical and intervention settings. In simple terms, using stories that parents share about successful parenting moments to help them see the positive effect it had on their children can enhance their parental self-efficacy. Important to mention, the effect size of the intervention was small. This might be explained by the nature of the intervention being a very brief single-session intervention. This was also the case in similar single-session interventions aimed at strengthening self-efficacy in war veterans and Turkish refugees, where small effects on self-efficacy and on distress were reported respectively (Brown et al., 2016; Morina et al., 2018). Especially relevant for scaling up and optimizing the intervention, future research can build on the present study to test whether a more structured intervention with repeated sessions would yield stronger effect sizes. Specifically, how self-efficacy increases over time, should more sessions be offered (Murray et al., 2020). Similarly, future research should test the effects of the intervention on real-time parenting behavior and on children.

While our study did not assess whether the momentary effects translated into sustained changes in parenting and child outcomes, our findings add a valuable piece to a greater puzzle. Namely, they show that parental cognitions fluctuate in response to post-migration stress, but that through intervention they can be made less responsive to stressors such as discrimination,

language difficulties and marginalization. We expand previous work by showing how protective factors in at-risk families can be strengthened, an approach that allows vulnerable families to capitalize on their strengths to build resilience.

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**Table 1**

*Differences in Estimates of Level and Slope Changes in Parental Self-Efficacy, Before and After the Intervention*

	Unstandardized Beta	Posterior SD	95% Credible Interval
<i>Model 1: Controlling for slopes</i>			
PSE intercept	28.75	.199	[28.34, 29.14]
PSE slope baseline phase	-.021	.018	[-0.06, 0.01]
PSE slope change after the intervention	0.02	.020	[-0.02, 0.06]
PSE change immediately after intervention	1.19	.710	[-0.20, 2.60]
<i>Model 2: Without controlling for slopes</i>			
PSE intercept	27.82	.859	[26.13, 29.51]
PSE mean change after intervention	0.69	.329	[0.04, 1.34]

*Note.* PSE = Parental Self-Efficacy. Model 1 controls for slopes during the baseline and post-intervention phases. To calculate the slope in the post-intervention phase, the coefficients for the slope during the baseline phase and the slope change should be summed. PSE mean level change in this model represents the increase in PSE at the single assessment immediately following the intervention. Model 2 does not control for slopes during the baseline and post-intervention phases. The mean change in PSE represents the mean change in PSE after the intervention. The mean of PSE after the intervention can be computed by summing the intercept with the mean change.

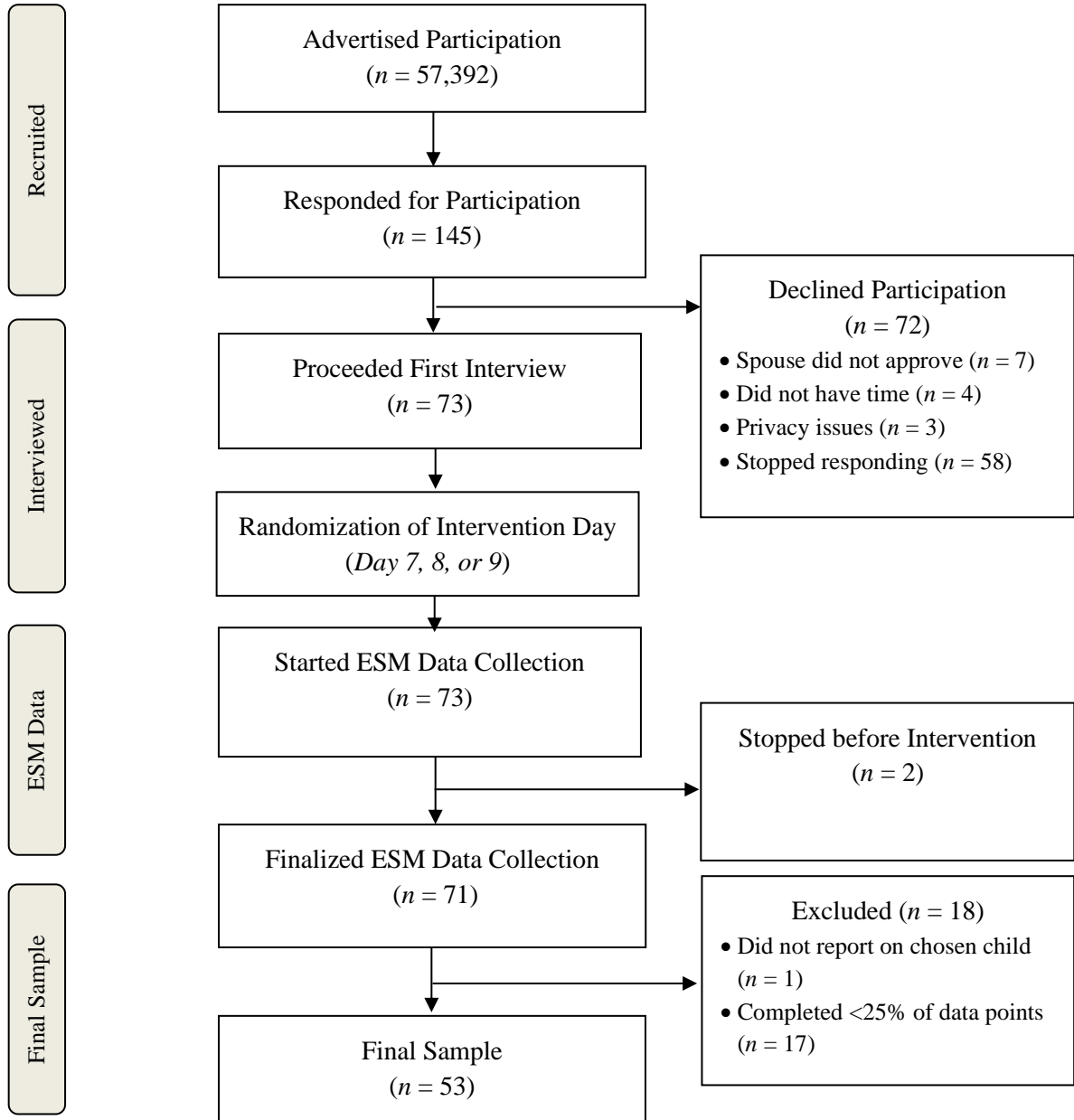
**Table 2***Buffering Effect*

	Unstandardized	Posterior	95%
	Beta	SD	Credible Interval
PSE intercept	27.88	.861	[26.13, 29.51]
PMS <sub>t-1</sub> on PSE <sub>t</sub>	-0.08	.028	[-0.14, -0.03]
Phase on PSE <sub>t</sub>	0.65	.323	[0.01, 1.28]
Phase x PMS <sub>t-1</sub> on PSE <sub>t</sub>	0.09	.030	[0.03, 0.15]

*Note.* PSE = parental self-efficacy, PMS = post-migration stress. Lagged variables were computed in SPSS. Post-migration stress was group-mean centered prior to computing the interaction effect. PMS<sub>t-1</sub> on PSE<sub>t post intervention</sub>  $\beta = -0.05$ , 95% CI [-0.12, 0.04].

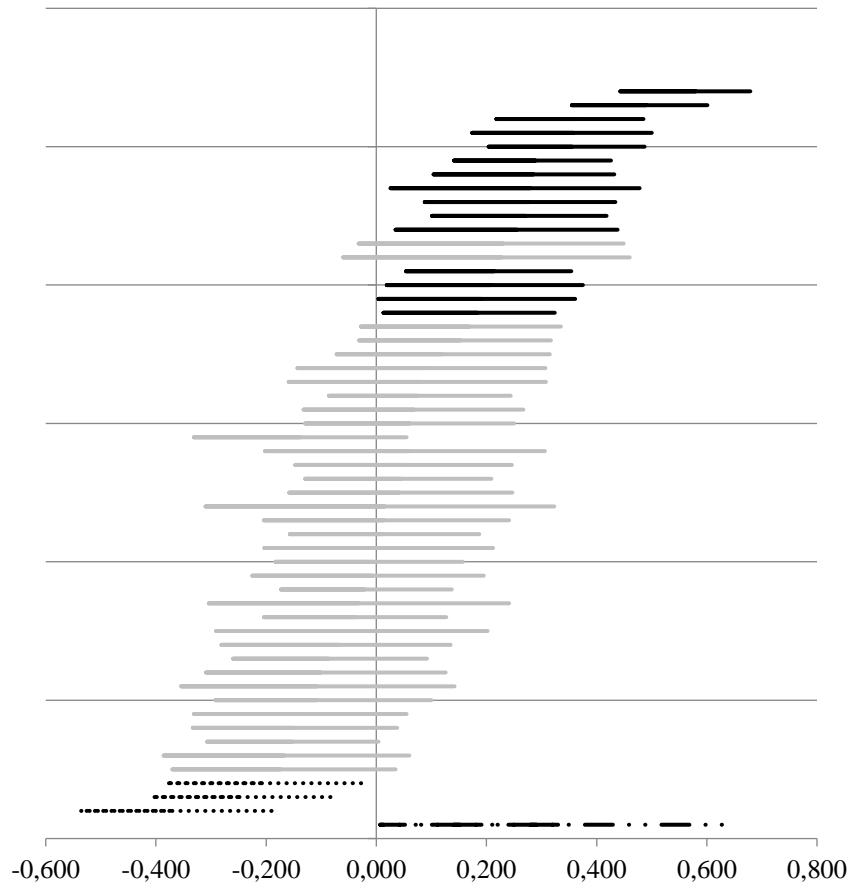
**Figure 1**

*Participant Flowchart*



**Figure 2**

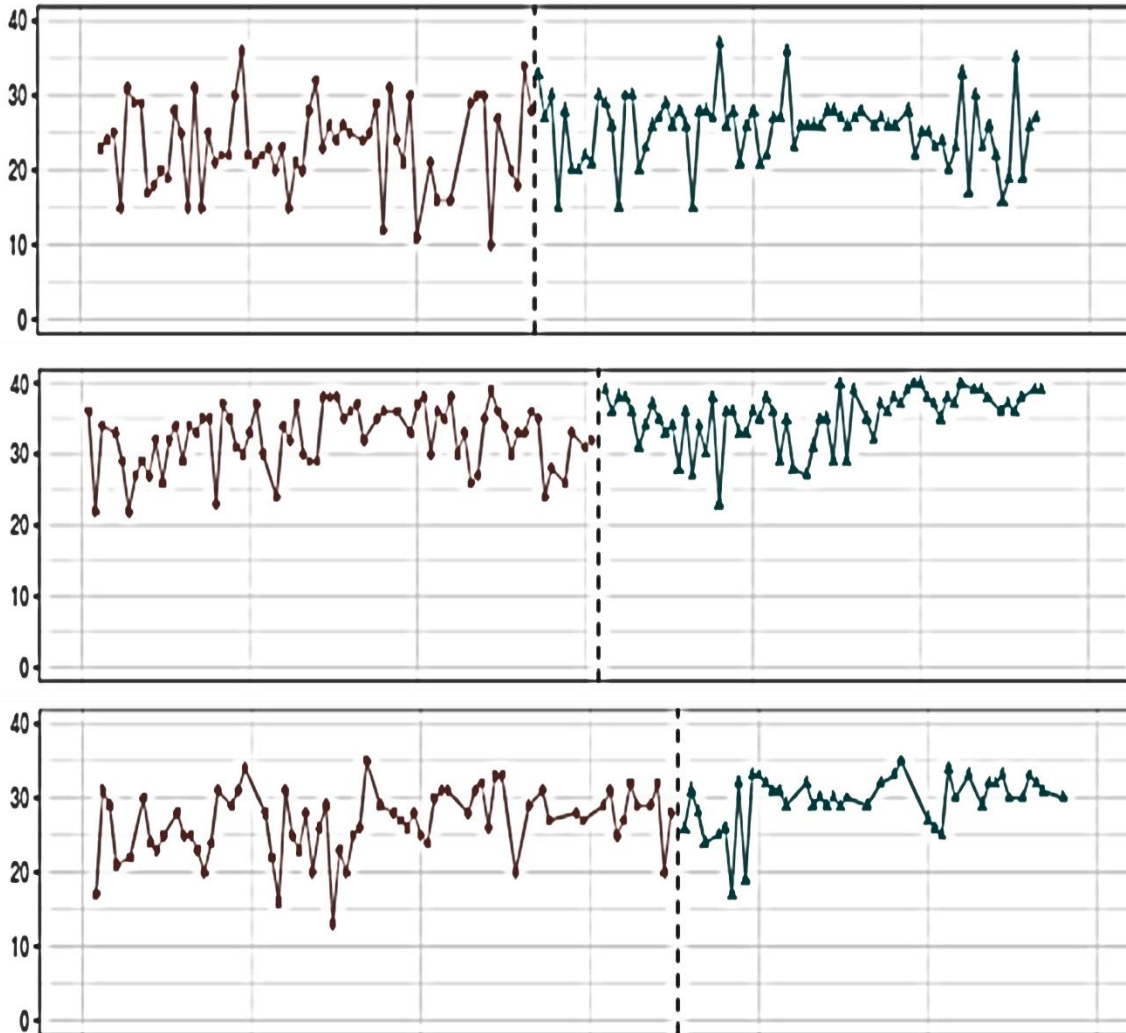
*Forest Plot: Standardized Level Change for Parental Self-Efficacy*



*Note.* This chart shows the credible intervals for each participant. The solid black lines represent participants whose parental self-efficacy significantly increased post-intervention. The dotted black lines represent participants whose parental self-efficacy significantly decreased post-intervention. The solid gray lines cross ‘zero’ and therefore represent participants whose change was not significant. The dashed black line represents the standardized change in parental self-efficacy averaged over individual participants.

**Figure 3**

*Momentary Fluctuations in Parental Self-Efficacy for Three Participants With Different Baselines.*



*Note.* Those three participants had higher average levels of parental self-efficacy post-intervention. The graph shows momentary assessments of parental self-efficacy. The dashed vertical lines show the moment of the intervention highlighting the multiple base-lines to which participants were randomized. The lines before the dashed lines chart out the baseline phase. The lines post the dashes lines chart out the post-intervention phase. Graphs were created with the help of the online application: <https://jepusto.shinyapps.io/scdhlm>

## Appendix A

**Table 1A**

*Demographic Variables for Study Participants*

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Parent Gender (Female)	69.9%
Child Gender (Female)	50.8%
Parent Age (M (SD))	39.7 (5.59)
Child Age (M (SD))	12.6 (1.72)
Parent PTSD	29.45 (13.16)
Time in [country name masked for peer review] in months (M (SD))	41 (13.79)
Marital Status	
Married	86.3%
Divorced	12.3%
Widowed	1.4%
Education	
Primary school	15.4%
Vocational school	9.7%
Secondary school	34.0%
University of applied sciences	7.0%
University	33.8%
Ethnicity	
Syrian	79.5%
Palestinian	19.2%
Libyan	1.4%
Religion	
Sunni Islam	93.2%
Shiite/Alawy Islam	1.4%
Christianity	4.1%
Non-Believers	1.4%

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*Note.* Trait PTSD = Post-traumatic stress disorder as assessed one month prior to ESM data collection. Scores higher than 33 represent a possible clinical diagnosis according to the screening questionnaire PLC-5.

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## **Appendix B: Adherence Percentage and Excluding Participants**

In our pre-registration, we did not plan on excluding participants based on adherence percentages, however, participants with too few responses were causing the model not to converge. A recent simulation study shows that the model functions well with up to 85% missing data points (Asparouhov et al., 2018). Just like in the simulation study, participants in our study received assessments at unequal time intervals (e.g., there was a particularly large gap during the night as participants were not triggered to respond to questionnaires. This means that there was a much larger gap between the last assessment at night and the next assessment in the morning than between two assessments during daytime). In Mplus, we set the TINTERVAL option to 90 minutes (the time-span from which a random moment was selected for a notification to be sent to participants requesting response to a questionnaire). This resulted in 6 extra missed assessments for the night lag, which were not actually part of the data. In other words, we “induced” 6 missing data points every day to make up for the night lag, representing “induced” missing data of 37.5% for all parents. Thus, to make sure that the total percentage of missing data does not exceed 85%, data were analyzed for participants who had missed up to 75% of the daytime assessments. We therefore excluded participants ( $n = 17$ ) who completed less than 25% of the questionnaires from our analyses.

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## Appendix C: Creation of ESM Questionnaires

### Trait to State Measures

In order to create questions to use for the momentary assessments we selected questions from validated trait questionnaires and modified them to reflect a parent's current state. The state items held the content of the trait items, but related to a much shorter duration (cf. Blackie et al., 2017). This means that items were rephrased in a way that indicated participants' current state. Conversion of trait into state items was done in two steps and was done using the English items, as only the first author spoke Arabic. First, we selected the item per subscale that had the highest factor loading on its subscale from each trait questionnaire. Exceptions were made when the item demanded the participants reflective thinking, which would not be suitable to reflect a momentary response (e.g., "when something goes wrong between me and my child there is little I can do to fix it"). In those cases, we used the item with the second-highest factor loading. Second, we changed wording that indicated a general tendency to feel or behave in a specific way to make it reflective of a momentary state. For example, the item "my child usually ends up getting their own way, so why try" was changed to "right now, my child is getting their own way, so why try?."

Trait items for post-migration stress were available in Arabic (Aroian et al., 2008; Aroian et al., 1998). The Arabic trait items were adapted to Arabic state items (instead of translating the English state items to Arabic). This way we stayed as close as possible to the original Arabic trait items. Trait items for parental self-efficacy were not available in Arabic (Hamilton et al., 2015). Here the first author translated the English trait items to Arabic. We used the translated Arabic trait items to create Arabic state items. All translations were checked by a native Syrian librarian to make sure the meaning of the questions was retained. An independent translator blind to the

English items back translated the Arabic state items to the English. No changes were made based on the back translations.

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