

# **Posttraumatic stress in preschool children in foster care: The influence of the foster parents**

A cumulative dissertation submitted to  
the University of Bremen, Germany, Faculty 11  
for the partial fulfillment of the requirements for the  
Doctorate in Psychology (Dr. rer. nat.)

by  
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Submitted: 03.08.2017  
Oral defence: 20.12.2017

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## Acknowledgments

First of all, I want to express my deepest appreciation to my supervisor Prof. Dr. Franz Petermann for giving me the opportunity to work on this exciting topic and for supporting me in my research career. He stood up for me and was always available to discuss my questions and difficulties. All of his feedback was insightful and strengthened the project.

I would like to express my gratitude to my reviewers Prof. Dr. Ulrike Petermann and Prof. Dr. Jörg M. Fegert for agreeing to review my doctoral thesis. Particularly, I thank Prof. Ulrike Petermann for the professional discussions, for sharing her experience with me, and for expressing confidence in me.

Furthermore, I owe a debt of gratitude to Projekt PETRA for the financial support in the first year of my doctoral project.

Here, I would like to thank my talented colleagues at the Center for Clinical Psychology and Rehabilitation, especially Dr. Tilman Reinelt, Dr. Dennis Nitkowski, and Dr. Hanna Weber for the fruitful discussions and for enhancing my excitement of the research field. I appreciate the help of the diligent interns Meike Pfennig, Sofie Krüger, and Yvonne Langer who helped me to recruit child welfare agencies and foster parents to participate in the project.

Advice and comments given by my friend and talented young professional Anke de Haan from the University of Zurich have been a great help for me.

I thank Anton for helping me with the data entry, for calming me down in difficult moments, and giving me a sense of balance for a long time during the project.

My greatest gratitude is towards my family. I am deeply grateful to my parents, Elena and Nikolay, for their unending support. Also, I thank my sister Anna for being such a great model for me and for expressing her confidence in me. I thank Philip who always cheered me up with his smile and sense of humor, even in the most stressful periods of the project. I am grateful to my cousin Ioanna for her help with the English language.

Last but not least, I would also like to express my gratitude to all foster parents and child welfare agencies who participated in the study.

## Abstract

*Introduction.* It can be argued that preschool children in foster care are at high risk for developing posttraumatic stress disorder (PTSD) and further mental health problems as consequence of the high exposure to potentially traumatic events. However, a systematic literature review (Publication I) showed that PTSD in this population has not been investigated yet. Previous studies have demonstrated that foster parents' characteristics, such as foster parents' stress, parenting, and family functioning, affect foster children's mental health in general, without considering the consequences of trauma exposure. The aim of the current dissertation project was to explore the distribution of PTSD in preschool children in foster care and to investigate how foster parents impact children's PTSD, further mental health symptoms, and therapeutic service utilization following trauma exposure. Finally, a meta-model integrating the impact of foster parents as well as the association between the children's outcomes PTSD and further mental health problems was developed and tested.

*Method.* Data were collected in Germany using a cross-sectional design. Foster parents of 324 children aged 3 to 7 years completed online or paper-and-pencil questionnaires about children's PTSD, internalizing and externalizing symptoms, therapeutic service utilization, foster parents' stress levels, parenting in disciplinary situations, and family functioning. Frequency analyses, regression models, and structural equation modeling were applied.

*Results.* Approximately 45.4% of preschool children in foster care experienced potentially traumatic events. The prevalence of PTSD was estimated between 7.1% and 15.4% using a PTSD screening, the DSM-5, and the ICD-11 criteria. Foster parents' stress was associated with children's PTSD (Publication II), further mental health problems (Publication III), and perceived need for therapy for the child (Publication IV). The findings concerning parenting were inconsistent, showing some evidence that laxness and verbosity as parenting styles moderate the impact of trauma exposure on externalizing symptoms (Publication III). Furthermore, an integrative meta-model excluding parenting in disciplinary situations fit the empirical data.

*Conclusions.* The findings demonstrate the high mental health needs of trauma-exposed children in foster care. They also suggest that foster parents have an important and complex impact in the way children cope with trauma. Hence, child welfare agencies should properly prepare and support foster parents by enhancing their stress regulation and coping strategies. Further research is needed to identify dimensions of foster parents' parenting behavior that are important for the posttraumatic adaption of preschool children in foster care.

## German abstract

*Hintergrund.* Auf Grund häufiger traumatischer Erlebnisse haben Pflegekinder ein hohes Risiko für die Entwicklung einer posttraumatischen Belastungsstörung (PTBS) und weiterer psychischer Auffälligkeiten. Die systematische Literaturrecherche (Publikation I), zeigte, dass es noch keine Studien gibt, die die PTBS in dieser Population erforschen. Frühere Studien verdeutlichen, dass Merkmale der Pflegeeltern wie elterliche Stressbelastung, Erziehungsverhalten und Familienfunktionsniveau die psychische Gesundheit des Kindes beeinflussen, ohne aber die Folgen traumatischer Erfahrungen zu berücksichtigen. Ziel der vorliegenden Arbeit war zum einen die Verbreitung der PTBS bei Pflegekindern im Vorschulalter einzuschätzen. Zum anderen wurde untersucht, inwieweit die Pflegeeltern die PTBS, weitere psychische Auffälligkeiten und die Inanspruchnahme therapeutischer Leistungen der Kinder beeinflussten. Zusätzlich wurde ein Metamodell entwickelt und getestet, das sowohl den Einfluss der Pflegefamilie als auch die Wechselwirkung zwischen der PTBS und weiterer psychischer Auffälligkeiten der Kinder berücksichtigt.

*Methode.* Die Daten der vorliegenden Dissertation wurden im Rahmen eines querschnittlichen Designs in Deutschland erhoben. Pflegeeltern von 324 Kindern zwischen 3 und 7 Jahren beantworteten online oder in einer Papierfassung Fragen zu Symptomen einer PTBS, internalisierenden und externalisierenden Symptomen des Kindes, der Inanspruchnahme therapeutischer Leistungen, elterlicher Stressbelastung, Erziehungsverhalten in Konfliktsituationen und Familienfunktionsniveau. Es wurden Verteilungs- und Regressionsanalysen durchgeführt und Strukturgleichungsmodelle berechnet.

*Ergebnisse.* Ungefähr 45.4% der Pflegekinder hatten traumatische Erfahrungen. Die Prävalenz der PTBS wurde zwischen 7.1% und 15.4% anhand eines PTBS Screening sowie der DSM-5 und der ICD-11 Kriterien eingeschätzt. Die elterliche Stressbelastung hing mit der PTBS (Publikation II) und weiteren psychischen Auffälligkeiten des Kindes (Publikation III) sowie mit dem subjektiv wahrgenommenen Bedürfnis der Pflegeeltern nach therapeutischer Unterstützung für das Kind (Publikation IV) zusammen. Die Ergebnisse waren uneinheitlich bezüglich des Erziehungsverhaltens und unterstützten zum Teil die Hypothese, dass Nachsichtigkeit und Weitschweifigkeit als Erziehungsstile den Einfluss traumatischer Erfahrungen auf die externalisierenden Probleme des Kindes moderierten (Publikation III). Außerdem bestätigte die empirische Datenstruktur ein Metamodell ohne das Erziehungsverhalten der Eltern in disziplinären Situationen.

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*Schlussfolgerung.* Diese Ergebnisse betonen die erhöhten psychischen Bedürfnisse von Pflegekindern mit traumatischen Erfahrungen. Außerdem zeigen sie, dass die Pflegeeltern einen komplexen Einfluss auf die Traumabewältigung von Vorschulkindern ausüben. Deswegen sollten Pflegeeltern durch Verbesserung ihrer Stressregulationsfähigkeiten und Problemlösestrategien entsprechend vorbereitet und unterstützt werden. Weitere Studien sollten sich mit der Frage beschäftigen, welche Dimensionen des Erziehungsverhaltens der Pflegeeltern die Traumabewältigung der Kinder beeinflussen.

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## List of abbreviations

APA	American Psychiatric Association
CFI	Comparative Fit Index
DSM	Diagnostic and Statistical Manual of Mental Disorders
FAD	Family Assessment Device
ICD	International Classification of Diseases and Related Health Problems
MCMC	Markov Chain Monte Carlo
PFAD	Bundesverband der Pflege- und Adoptivfamilien
PS	Parenting Scale
PSQ	Parental Stress Questionnaire
PTSD	Posttraumatic Stress Disorder
PTSS	Posttraumatic Stress Symptoms
RMSEA	Root Mean Square Error of Approximation
SDQ	Strengths and Difficulties Questionnaire
SEM	Structural Equation Model
TLI	Tucker-Lewis Index
VIF	Variance Inflation Factor
YCPC	Young Child PTSD Checklist

## List of publications as part of the doctoral thesis

### Publication I

Vasileva, M., & Petermann, F. (2016). Attachment, development, and mental health in abused and neglected preschool children in foster care: A meta-analysis. *Trauma, Violence, & Abuse*, 1-16. doi: 10.1177/1524838016669503

### Publication II

Vasileva, M., & Petermann, F. (in press). Posttraumatic stress symptoms in preschool children in foster care: The influence of placement and foster family environment. *Journal of Traumatic Stress*, 30, 472-481. doi: 10.1002/jts.22217

### Publication III

Vasileva, M., & Petermann, F. (in press). Psychische Gesundheit von Pflegekindern im Vorschulalter: Wie stark hängt die Bewältigung traumatischer Erfahrungen von der Pflegefamilie ab? [Mental health of preschool foster care children: How do foster families influence the way children cope with trauma?]. *Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie*, 1-9. doi. 0.1024/1422-4917/a000539

### Publication IV

Vasileva, M., & Petermann, F. (2017). Mental health needs and therapeutic service utilization of young children in foster care in Germany. *Children and Youth Services Review*, 75, 69-76. doi: 10.1016/j.childyouth.2017.02.022

## List of further contributions

### Publications

Reinelt, T., Vasileva, M., & Petermann, F. (2016). Psychische Auffälligkeiten von Flüchtlingskindern. Eine Blickverengung durch die Posttraumatische Belastungsstörung? [Refugee children's mental health problems: Beyond posttraumatic stress disorder]. *Kindheit und Entwicklung*, 25, 231-237. doi: 10.1026/0942-5403/a000207

Vasileva, M., Fegert, J. M., & Petermann, F. (2015). Posttraumatische Belastungsstörungen bei Kindern in der Heimerziehung und in Pflegeverhältnissen [Posttraumatic stress disorder in out-of home care]. *Nervenheilkunde*, 34, 34-42.

### Conference talks and posters

Vasileva, M., & Petermann, F. (2016, November). *Trauma and posttraumatic stress symptoms in preschool foster care children: The influence of placement history and foster family environment*. Poster presented at the 32th meeting of the ISTSS, Dallas, TX.

Vasileva, M., & Petermann, F. (2017, February). *Symptome des Wiedererlebens von Pflegekindern im Vorschulalter: Die Rolle der Pflegefamilie*. [Symptoms of re-experiencing in preschool children in foster care: The role of the foster family]. Poster presented at the 17th meeting of the DeGPT, Zurich, Switzerland.

Vasileva, M., & Petermann, F. (2017, Juni). Posttraumatic stress symptoms in young foster care children after interpersonal trauma: The influence of foster parental stress and parenting style. In M. Landolt (Chair), *Traumatic stress in preschoolers: novel findings on outcomes and interventions*. Symposium conducted at the 15th meeting of the ESTSS, Odense, Denmark.

### Upcoming talks

Vasileva, M., & Petermann, F. (2017, November). Posttraumatic stress disorder in young children: Overlap between DSM-5 and ICD-11. In M. Landolt (Chair), *Traumatic stress in preschoolers: Novel findings on assessment, outcomes, and interventions*. Symposium accepted for the 33<sup>th</sup> meeting of the ISTSS, Chicago, IL.

## 1 Introduction

“It is almost impossible to love a traumatized foster child  
although one really wants to...”

Mrs. S., a foster parent

For a long time, there was skepticism that preschool children can develop symptoms of posttraumatic stress disorder (PTSD; Benedek, 1985). The common opinion was that they are protected by limited cognitive resources, such as perception abilities and memory capacities. For instance, it was assumed that a very young child may not appraise an event as life-threatening. Today, as a result of a growing body of evidence in the field, it is no more debatable that preschool children suffer from the consequences of trauma exposure, show posttraumatic stress symptoms (PTSS), and can develop a posttraumatic stress disorder (PTSD; Scheeringa, Myers, Putnam, & Zeanah, 2012). However, in young children, PTSS may manifest differently than in older children and adults: Young children often express their recollections of the traumatic event as reenactments when playing and usually do not show symptoms of avoidance in an obvious way (Scheeringa, 2011). Research groups have investigated PTSS in preschool children exposed to different traumatic events – burn injury (Graf, Schiestl, & Landolt, 2011), life-threatening illness (Graf, Bergstraesser, & Landolt, 2013), natural disaster (Scheeringa & Zeanah, 2008), or witnessing intimate partner violence between parents (Levendosky, Bogat, & Martinez-Torteya, 2013). However, a highly vulnerable population has still been left outside the research interest: Preschool children in foster care often had traumatic experiences, such as physical abuse in their biological families, and could be further exposed to traumatic events in the new foster family. Therefore, it can be argued that they are at high risk of developing PTSS.

Placing children in foster care is a step of the child welfare agencies aiming at providing safe, family-like environment that should prevent further trauma exposure and deterioration in children’s mental health symptoms. According to the last report of the German Federal Statistical Office, there were 10 682 children aged 3 to 6 years in foster care in Germany at the end of 2015. Preschoolers were most frequently newly placed in foster care compared to younger and older age groups. The most common main reasons for placement were physical, sexual abuse, or neglect ( $n = 3\,301$ , 30.1%; Statistisches Bundesamt, 2017). Studies of older children and adolescents showed that PTSS following such experiences

continue in the foster family and can be affected by the foster parents (Vasileva, Fegert, Petermann 2015; Wojciak, Thompson, & Cooley, 2016). Especially foster parents' stress, parenting, and family functioning seem to affect children's mental health in general (Orme & Buehler, 2001). However, little is known about the impact of these foster parents' characteristics on preschool children in the aftermath of trauma.

The present doctoral thesis investigated for the first time PTSS in preschool children in foster care. It also analyzed the mechanisms of how foster parents' characteristics affect children's mental health consequences of trauma exposure. The project presented here was conducted between 2014 and 2017 at the Center for Clinical Psychology and Rehabilitation, University of Bremen, Germany. Assessed were data about 382 children aged 3 to 6 years from approximately 210 nationwide child welfare agencies. The thesis is based on one published meta-analysis (Publication I, Appendix A) and three empirical publications that originated in this time period (Publications II to IV, Appendix B to D). Publication I is a meta-analysis of the current research on mental health consequences of trauma exposure in preschool children in foster care. Therefore, it will be presented as part of the theoretical framework. Publications II to IV focus on the impact of foster parents on children's PTSS, further mental health problems, and therapeutic service utilization, respectively.

This doctoral thesis should enhance the understanding of mental health consequences of trauma exposure in preschool children in foster care. Considering that there is no systematical approach to prepare foster parents and support preschool children in foster care in Germany (Spangler & Bovenschen, 2008), such knowledge is particularly valuable to the child welfare agencies. Hence, practical recommendations based on the current research will be presented as implications at the end of the doctoral thesis.

# **Theoretical framework**

## **2 Mental health consequences of trauma exposure**

Trauma exposure, such as physical or sexual abuse in the biological family, is one of the main reasons for placing preschool children in foster care (Statistisches Bundesamt, 2017). Such experiences can have heterogeneous consequences on foster children – from resilience (Pynoos, Fairbank, & James-Brown, 2011) to specific disorders (e.g., PTSD; Vasileva et al., 2015) to broader dimensions of mental health problems (Vasileva & Petermann, 2016). In order to give an overview of mental health consequences, it is important to first define trauma exposure, which is a term broadly and inconsistently used in clinical practice, social work, society, and media.

### **2.1 Definition of trauma exposure**

In accordance with the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the clinical definition of trauma exposure, which is the basis of the current research project, refers to the exposure to a potentially traumatic event during which the child was seriously injured, experienced actual life threat, or sexual violence; the child can experience the traumatic event directly, witness it, or learn that it happened to a parent or a caregiver (APA, 2013). Hence, in the current doctoral thesis, the term “trauma exposure” is used as an equivalent of the term “potentially traumatic event”. Examples of potentially traumatic events are physical abuse, witnessing intimate partner violence between parents, car accident, burn injury, or natural disaster.

Following this definition, the current empirical research did not include neglect, abandonment, or emotional maltreatment although such experiences can also be stressful for preschool children in foster care (Vasileva & Petermann, 2016). This decision was justified by the focus of the current project on PTSS. Posttraumatic stress symptoms develop after a potentially traumatic event during which the child experienced life threat (which excludes emotional maltreatment; De Bellis, Woolley, & Hooper, 2013). Neglect and abandonment, on the other hand, constitute the absence of particular events or experiences necessary for normal child development (Perry, 2008).

Trauma exposure has often been defined inconsistently in research studies of children in foster care or has referred to the term “maltreatment”. Maltreatment includes potentially traumatic experiences, such as physical or sexual abuse, but also neglect and emotional maltreatment. Therefore, in Publication I, which is a review of current research and a meta-

analysis of mental health consequences of trauma exposure, a broader definition of trauma exposure including physical and sexual abuse but also neglect was exceptionally applied.

## **2.2 Posttraumatic stress disorder (PTSD)**

### 2.2.1 Diagnostics and comparison of DSM and ICD criteria

Trauma exposure is often associated with the clinical diagnosis of PTSD. Although the disorder was first introduced on the basis of symptoms of adults, there has been an increasing amount of literature giving evidence for the validity of PTSD in children over the past two decades (Scheeringa et al., 2012; Scheeringa, Zeanah, Drell, & Larrieu, 1995). However, there is still controversy in general about the conceptual framework of the diagnosis. In DSM and the International Classification of Diseases and Related Health Problems (ICD) re-experiencing, avoidance, and arousal following trauma exposure are recognized as core symptom clusters of the PTSD diagnosis. Despite of this, both classification systems differ in their definition of PTSD. The following section describes the different diagnostic criteria displayed in Table 1 and their evaluation for children. Age range is not restricted in this overview since there are only few studies of preschool children.

#### *PTSD in DSM-5*

In 2013, DSM included for the first time new PTSD diagnostic criteria for children aged 6 years and younger in its 5<sup>th</sup> edition (APA, 2013). For a PTSD, it is now required, that after trauma exposure (see section 2.1) the young child shows for at least one month at least one symptom of re-experiencing, one symptom of avoidance or negative alterations in cognitions and mood, and two symptoms of increased arousal (Table 1). The most important changes in DSM-5 towards its earlier version, besides including the diagnosis for preschool children, were the exclusion of the A2 criterion (experiencing fear, helplessness, or horror during the trauma exposure), and the expansion of the symptom cluster negative alterations in cognitions and mood.

Table 1

*PTSD criteria in DSM-IV, DSM-5, ICD-10, and the proposed ICD-11*

Symptom	Diagnostic criteria				
	DSM-IV-TR	DSM-5		ICD-10	Proposed ICD-11
		Age > 6 years	Age ≤ 6 years		
<b>Trauma exposure</b>	×	×	×	×	×
Fear, helpless, or horror as response	×				
<b>Re-experiencing</b>					
Intrusive memories	×	×	×	×	
Nightmares	×	×	×	×	×
Dissociative reactions/Flashbacks	×	×	×	×	×
Psychological distress	×	×	×	×	
Physiological reaction to reminders	×	×	×		
<b>Avoidance<sup>a</sup></b>					
Avoidance of external cues	×	×	×		×
Avoidance of internal cues	×	×	×		×
Restricted range of affect	×				
Sense of foreshortened future	×				
<b>Negative alterations in cognitions and mood<sup>a</sup></b>					
Inability to remember the event <sup>b</sup>	×	×		×	
Negative beliefs		×			
Blame for event		×			
Negative emotional state		×	×		
Diminished interest in activities <sup>b</sup>	×	×	×		
Detachment/Social withdrawal <sup>b</sup>	×	×	×		
Inability to express positive emotions		×	×		
<b>Arousal</b>					
Irritable behavior/Anger	×	×	×	×	
Reckless or self-destructive behavior		×			
Hypervigilance	×	×	×	×	×
Exaggerated startle response	×	×	×	×	×
Concentration problems	×	×	×	×	
Sleep disturbance	×	×	×	×	
<b>Functional impairment</b>	×	×	×		×

*Note.* DSM-IV-TR = 4<sup>th</sup> and text-revised edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 2000); DSM-5 = 5<sup>th</sup> edition of the Diagnostic and Statistical Manual of Mental Disorders (APA, 2013); ICD-10 = 10<sup>th</sup> edition of the International Classification of Diseases and Related Health Problems (WHO, 1992); ICD-11 = proposed 11<sup>th</sup> edition of International Classification of Diseases and Related Health Problems (e.g., Maercker et al., 2013)

<sup>a</sup> Symptoms of avoidance and of negative alterations in cognitions and mood constitute one cluster in the DSM-5 diagnosis for preschoolers.

<sup>b</sup> Symptoms are part of the avoidance cluster in DSM-IV.

Although most of the symptoms in the diagnosis for preschool children are the same as for older children and adults, the symptom combination in order to fulfill the diagnostic criteria is adapted to their development. One main challenge to diagnose PTSD in young

children is their limited verbal capacities, which require diagnostics based on caregivers' estimations. However, caregivers can estimate PTSS that are highly internalized only with difficulty because they can only rely on the children's reports and their observations of children's behavior (Scheeringa, 2011). Such internalized symptoms include, for instance, intrusive recollections, nightmares, avoidance of internalized reminders of past traumas, and alterations in cognitions. Therefore, in contrast to the diagnosis for older children and adults, the PTSD diagnosis for preschool children in DSM-5 does not include the symptoms "inability to remember an important aspect of the traumatic event", "negative beliefs about oneself, others, or the world", and "self-blame", which are, otherwise, indicators for negative alterations in cognitions.

The DSM-5 criteria for preschool children also require only one symptom either of avoidance or of negative alterations in cognitions and mood. Older children and adults, on the other hand, should meet at least one avoidance criteria and two negative alterations in cognitions and mood criteria (APA, 2013). This approach diminishes the weight of symptoms of avoidance for the diagnosis because young children often do not show avoidance in an obvious way (Scheeringa, 2011).

The DSM-5 diagnostic criteria were compared to the DSM-IV criteria in two studies of children in elementary school. In one of these samples of children attending a clinical setting, using the DSM-5 criteria, showed higher sensitivity, indicating 16% more positive cases than the DSM-IV criteria (Mikolajewski, Scheeringa, & Weems, 2017). As opposed to these findings, Danzi and La Greca (2016) reported slightly less positive cases (3%) identified by DSM-5 compared to DSM-IV in trauma-exposed children enrolled in schools.

Although there are still no studies directly using the current DSM-5 criteria for preschool children, there are several studies investigating the developmentally sensitive algorithm proposed by Scheeringa et al. (1995), which also formed the basis for the DSM-5 diagnosis for preschool children. Developmental sensitivity refers here to diagnostic criteria that are adapted to the developmental peculiarities of preschool children. Scheeringa et al. (2012) assessed a sample of 284 trauma-exposed children aged 3 to 6 years and compared the developmentally sensitive algorithm to the DSM-IV criteria and to two proposed versions of DSM-5 criteria at that time. These proposed versions differed only in single symptoms added in the final, published version. Using the DSM-IV criteria resulted in significantly fewer diagnoses (13%) compared to the developmentally sensitive algorithm and the proposed DSM-5 criteria (44% - 49%). The developmental sensitivity of the alternative algorithm was also proven in two German-speaking samples. Graf et al. (2011) found 13% PTSD in children

with burn injuries using the developmentally sensitive algorithm and only one child (1.3%) with PTSD using the DSM-IV criteria. Similarly, there were 19% children with cancer who fulfilled the developmentally sensitive algorithm and no children with PTSD according to the DSM-IV criteria (Graf et al., 2013). In another study of preschoolers who entered an emergency room in London, Meiser-Stedman, Smith, Glucksman, Yule, and Dalgleish (2008) reported half as many children with PTSD according to the DSM-IV criteria as to the developmentally sensitive algorithm. Since there are only slight differences between the developmentally sensitive algorithm and the DSM-5 criteria, it could be expected that the DSM-5 will be also more sensitive than the DSM-IV criteria when used with preschool children.

### *PTSD in ICD-10 and the proposed ICD-11*

In contrast to DSM, ICD does not provide developmentally sensitive specifications for young children, neither in its current 10<sup>th</sup> version nor in the planned 11<sup>th</sup> version (Brewin, 2016). To fulfill the ICD-10 criteria, which are currently binding for the legal health insurance funds in Germany, a person has to show symptoms of re-experiencing, avoidance, and either hyperarousal or inability to recall aspects of the exposure to the stressor (World Health Organization, 1992).

The ICD-11 committee focuses on six symptoms across the three core clusters (re-experiencing, avoidance, and arousal) claiming that some symptoms like negative alterations in cognitions and mood or sleep-disturbance included in DSM-5 are not specific for PTSD and overlap with other disorders (Table 1). The revised 11<sup>th</sup> version of ICD will also require functional impairment as opposed to its 10<sup>th</sup> version (Maercker et al., 2013).

Using the ICD-10 criteria in epidemiological studies resulted in similar prevalence as when applying the DSM-IV criteria. For instance, the prevalence of PTSD in an epidemiological study of children aged 6 years living in Brazil was 0.7% according to ICD-10 and 0.8% according to DSM-IV (Petresco et al., 2014).

So far, four studies have evaluated the ICD-11 criteria with children and adolescents aged 7 years or older; there are still no studies with preschool children. Sachser and Goldbeck (2016) compared the algorithms for the DSM-IV and the proposed ICD-11 diagnostic criteria in a German sample of children and adolescents who were preselected for treatment. Their results indicated that the ICD-11 criteria identified 27% less positive diagnoses than ICD-10 and 15% less positive diagnoses than DSM-IV. In another investigation of adolescents and young adults exposed to two school shootings, the ICD-11 diagnostic criteria led again to

15% less positive cases than ICD-10 but 4% more positive cases than DSM-IV (Haravuori, Kiviruusu, Suomalainen, & Marttunen, 2016). A recent study of teenage survivors of the 2011 attack in Norway showed 3% less positive cases using the ICD-11 algorithm compared to the DSM-5 criteria one year after the traumatic event; there were no significant differences four to five months after the attack (Hafstad, Thoresen, Wentzel-Larsen, Maercker, & Dyb, 2017). Finally, Danzi and La Greca (2016) analyzed two samples of 7- to 12-year-old children exposed to natural disasters. They reported 12% PTSD according to ICD-11 and 13% PTSD according to DSM-IV. The DSM-5 diagnostic criteria showed the lowest rates of PTSD in these samples (10%).

### *Conclusion on the diagnostic criteria*

Taken together, evaluating the risk for preschool children to develop PTSD following trauma exposure depends on the applied diagnostic criteria. Although the DSM-5 criteria might identify less positive cases in school-age children than the DSM-IV, ICD-10, and ICD-11 criteria (Danzi & La Greca, 2016), they seem to be more sensitive for the preschool age (Scheeringa et al., 2012). Using more sensitive diagnostic criteria hides the risk of giving a diagnosis to individuals who do not need treatment and can cope with trauma by mobilizing their own resources. More specific (i.e., less sensitive) diagnostic criteria, on the other hand, could lead to rating individuals who need treatment as healthy. When diagnosing PTSD in preschool children, there is rather a tendency to underestimate the prevalence in research projects as well as to overlook children with PTSS who need therapy in the clinical practice (Scheeringa, 2011). Hence, in the current empirical study, the DSM-5 criteria were chosen over the ICD-10 and the DSM-IV criteria. However, there is still no evidence if the DSM-5 or the proposed ICD-11 criteria are more sensitive for preschool children. Therefore, both diagnostic algorithms were applied and compared in the current doctoral thesis.

### 2.2.2 Psychopathogenesis

Despite the disagreement about the diagnostic criteria for PTSD, there is a consensus about the development of core PTSS, especially as regards the neurobiological mechanisms involved. When a child experiences life threat, the body prepares to fly or to fight by increased autonomic arousal and by releasing biochemical messengers (e.g., glucocorticoids and catecholamines) affecting brain areas involved in attention, arousal, and concentration (e.g., amygdala, hippocampus, and prefrontal cortex). This reaction has a protective function and is necessary for survival. However, when the stress response to the potentially traumatic

event is maladaptive, individuals might develop PTSS. A maladaptive stress response is, for instance, insufficient glucocorticoid signaling enhancing consolidation of the traumatic event (Yehuda et al., 2015). In other cases, individuals, especially children, show decreased autonomic reaction, restricted affective response, and dissociation during traumatic events which cannot be escaped (they “freeze”; Weber & Reynolds, 2004). The maladaptive stress response associated with PTSS remains even in the absence of concrete trauma exposure. For instance, intrusive memories of the traumatic event induce exaggerated response of the amygdala which releases stress chemicals to further brain areas. Meanwhile, the prefrontal cortex shows diminished responsiveness failing to inhibit the activation of the amygdala (Yehuda et al., 2015).

Although the neurobiological reaction to the traumatic event is critical for the development of PTSS, there are further factors that can modulate this reaction and the posttraumatic adaption. In a meta-analysis, 25 risk factors were found to be associated with PTSD in children and adolescents (Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). Landolt (2003) proposed that such risk factors in terms of characteristics of the trauma, the child, and the family interact with each other and determine the posttraumatic adaption. The younger the child, the more important is the impact of the family context (Kultalahti & Rosner, 2008).

### **2.3 Further mental health problems**

Trauma exposure is associated not only with PTSD but also with further mental health problems (Font & Berger, 2015). Mental health problems are often categorized in internalizing and externalizing symptoms (Achenbach, Ivanova, Rescorla, Turner, & Althoff, 2016; Goodman, Lamping, & Ploubidis, 2010). Internalizing symptoms refer to anxiety, depressive symptoms, and social withdrawal while externalizing symptoms include aggressive behavior and hyperactivity. Recent research suggested that trauma exposure is associated with a latent liability for mental health problems rather than specific pathways for the genesis of different disorders (Keyes et al., 2012; McLaughlin, 2016). In other words, there is a multifinality of trauma-exposure leading to different internalizing and externalizing symptoms. However, Scheeringa (2015b) found in a sample of 284 preschool children that mental health problems rarely developed after traumatic events in the absence of PTSS. In this context, De Bellis et al. (2013) proposed the Developmental Traumatology Model describing two pathways to develop mental health problems following a traumatic event – as a direct

consequence of the traumatic event or as a consequence of PTSS following the traumatic event.

The first pathway describes how internalizing and externalizing symptoms arise following trauma exposure without being connected to PTSS. In the short term, the mobilization of the body in threatening situations (see section 2.2.2) serves as protection (Weber & Reynolds, 2004). In the longer term, however, neurochemical activation that is prolonged or early in life, when the child brain still develops, might affect the reactivity of different brain regions, such as the amygdala, hippocampus, and prefrontal cortex (Wilson, Hansen, & Li, 2011). Since these areas are also important for regulating emotions and behavior, early and prolonged trauma can cause further mental health problems (De Bellis et al., 2013; Vasileva & Petermann, 2016). The amygdala, for example, is involved in emotional processing which is a transdiagnostic factor associated with the onset of a wide range of internalizing (e.g., anxiety and depression) and externalizing symptoms (e.g., aggressive behavior and hyperactivity; McLaughlin, 2016; Weber & Reynolds, 2004).

Additional to the effect of the traumatic event itself, there is the second pathway proposed by DeBellis et al. (2013), describing that the association between the traumatic event and further mental health problems can be mediated by PTSS. A maladaptive stress response due to PTSS as described in section 2.2.2, which sustains even in the absence of the trauma exposure, can affect the functioning of the prefrontal cortex and amygdala. This can lead to deficits in the executive functions, emotion processing, and memory (McLaughlin, 2016; Yehuda et al., 2015). Especially, executive functions and emotional processing are found to be associated with the pathogenesis of nearly all commonly occurring internalizing and externalizing symptoms (Dileo, Brewer, Northam, Yucel, & Anderson, 2016; McLaughlin, 2016).

## **2.4 Mental health in trauma-exposed children in foster care (Publication I)**

In order to investigate the current state of research on PTSD and further mental health consequences of trauma exposure concretely of preschool children in foster care, two systematic reviews of the literature were completed prior to the current empirical research. The first one, conducted by Vasileva et al. (2015), focused on trauma exposure and PTSD in children and adolescents in out-of-home care. The findings showed that children and adolescents in foster care were often exposed to potentially traumatic events (up to 92%) and that the prevalence of PTSD varied depending on the diagnostic strategy between 5% and 44%. Although Scheeringa et al. (1995) proved before more than 20 years that preschool

children can also suffer from PTSD, Vasileva et al. (2015) found no studies of PTSD in preschool children in foster care.

Therefore, in Publication I, Vasileva & Petermann (2016) investigated the prevalence of further mental health problems following trauma exposure in preschool children in foster care, using the broader concept of internalizing and externalizing symptoms. Searching the literature between 1994 (year of publication of DSM-IV) and 2016, resulted in identifying 10 studies about 726 young children in foster care that fulfilled the inclusion criteria (for more details refer to Vasileva & Petermann, 2016, Appendix A). The mean overall proportion of internalizing symptoms constituted 28.6%, CI [23.7% - 34.0%], and of externalizing symptoms 27.5%, CI [22.2% - 33.4%]. In total, 38.8%, CI [27.48% - 51.45%], of trauma-exposed children in foster care showed any mental health problems. Hence, the prevalence of mental health problems was higher than in the general population (15% - 26%, Egger & Angold, 2006). It is worth noting that the higher prevalence in children in foster care could be the result of the trauma exposure prior to the out-of-home-placement or of the out-of-home placement itself. The meta-analytic approach and the lack of literature about preschool children in foster care omitted to separate these effects. Nevertheless, Publication I highlights the vulnerability of preschool children in foster care for internalizing as well as externalizing symptoms. It also accentuates the current research gap in examining PTSD in preschool children in foster care which is the reason for Publications II and IV.

### **3 Impact of foster and biological parents when coping with trauma**

To understand the impact of trauma exposure on preschool children in foster care, the peculiarities of this age should be considered. One main aspect is that, in this age, children regulate their emotions with the help of their caregivers (Kullik & Petermann, 2012). When a child is upset, for example, she or he seeks protection and comfort in the caregiver by attachment behavior, such as crying. If the caregiver does not respond promptly or adequately to these signals, the child may not be able to regulate the release of stress hormones which will cause further psychological distress (Carpenter & Stacks, 2009). Therefore, the caregiver's behavior can buffer the maladaptive neurobiological response following a traumatic event and also the maladaptive brain activation in the absence of trauma exposure (Schuder & Lyons-Ruth, 2004; see chapter 2.2.2 and 2.3).

A growing body of research gives evidence for the influence of parental characteristics and parenting behavior on mental health of trauma-exposed children living with their biological families (Morris, Gabert-Quillen, & Delahanty, 2012; Williamson et al., 2017). However, there is scarce evidence about the impact of foster parents' characteristics. Studies of foster samples have explored the effect of foster parents' characteristics on children's mental health in general and not particularly in relation to traumatic experiences. In this chapter, evidence about foster samples will be first summarized in order to identify the most important characteristics of foster parents that influence children's mental health in general. In a second step, potential mechanisms of the impact of these characteristics on how children cope with trauma will be derived from studies of nonfoster samples.

#### **3.1 Impact of foster parents on children's mental health in general**

To our knowledge, there are no studies of the impact of foster parents' characteristics particularly on PTSD in preschool children in foster care. The few studies examining older foster children did not consider specific foster parents' characteristics as risk or protective factors for PTSD (Vasileva et al., 2015). As yet, there is only one study investigating the moderating and the mediating effects of the foster-parent-child relationship on the association between PTSS and internalizing as well as externalizing symptoms of schoolchildren in foster care. Wojciak et al. (2016) found that for children who were close to their foster parents the association between PTSS and internalizing symptoms was less strong than for children who reported less positive relationship with their caregivers. There was no such interaction between PTSS and the foster-parent-child relationship on externalizing symptoms.

In a review of the literature, Orme and Buehler (2001) described a wide range of constructs referring to foster parents' characteristics that influenced children's internalizing and externalizing symptoms independently from trauma exposure. They showed that the most common constructs include parenting and foster family functioning. Recent studies covering a broad age range from infancy to adolescence also confirmed the impact of parenting on mental health problems of children in both kinship and nonkinship foster care. In these studies, foster parents' stress was found to be a strong predictor of children's mental health outcomes as well (Fuentes, Salas, Bernedo, & García-Martín, 2015; Vanderfaeillie, Van Holen, Vanschoonlandt, Robberechts, & Stroobants, 2013).

Despite of the awareness that foster parents and their behavior are important especially for preschool children's mental health (Dozier, Zeanah, & Bernard, 2013), there are only few studies focusing specifically on this age group and its peculiarities. Van Andel et al. (2015) reported a significant association between high foster parents' and children's stress levels measured by salivary cortisol in children aged 6 weeks to 42 months. In a German sample of preschool children aged 12 to 72 months, Gabler et al. (2014) confirmed the impact of high foster parents' stress levels on children's internalizing as well as externalizing symptoms. In their sample, mental health problems were very stable over time and correlated with self-reported stress of foster parents both at placement and six months later.

It is also possible that not foster parents' characteristics have an impact on children's mental health, but that children's behavioral and emotional problems influence the foster parents (Murray, Tarren-Sweeney, & France, 2011). Longitudinal studies supported the pathway of foster children's problems influencing their foster parents and did not find consistent evidence for the opposite direction (Gabler et al., 2014; Lang et al., 2016; Vanderfaeillie et al., 2013). These empirical findings constitute grounds for the current empirical research defining that foster parents' characteristics influence children's mental health.

Considering all these research findings, foster parents' stress, parenting, and family functioning can be seen as the main foster family predictors for mental health of children in foster care. Previous studies, however, used different definitions of these constructs which will be presented more concretely in the following section. Additionally, the mechanisms of their influence on children's mental health in general will be explained. The construct definitions and knowledge about the mechanisms have been derived from research on nonfoster parents but can be adopted to explain the impact of foster parent's characteristics as well.

*Parents' stress*

Parents' stress is the result of series of appraisals made by the parent regarding the parenting role (Abidin, 1992). Parents sometimes think that they cannot satisfy the demands of caregiving and that their responsibilities exceed their personal resources (Lazarus & Folkman, 1986). Parents' stress often occurs because of parent-child interaction problems or personal characteristics of the parent (e.g., psychopathology or the appraisal that the child is difficult). However, parents' stress could be determined by further proximal and distal to the family features (Mash & Johnston, 1990). For example, when taking care of a preschool child, parents' stress can be additionally increased by high workload, low social support and social connectedness, and relationship problems with the partner (Abidin, 1992; Östberg & Hagekull, 2000).

Mechanism explaining the association between caregivers' stress and children's internalizing and externalizing symptoms usually focus on the impact of high parents' stress on dysfunctional parenting as a focal point (Abidin, 1992; Belsky, 1984; Cina & Bodenmann, 2009). High levels of parents' stress can lead to reduced responsiveness, lack of warmth and sensitivity towards the developmental needs of the preschool child, or irascibility when responding to children's behavior and in this way influence children's mental health (Abidin, 1992).

*Parenting*

A general definition of parenting refers to all parental behaviors or their absence which influence the child (Kendziora & O'Leary, 1993). Parenting in the foster family context has been operationalized in various ways (e.g., discipline and control, quality of the parent-child interaction, or even foster parents' stress) with parental behavior in disciplinary situations being the most common dimension to be examined (Orme & Buehler, 2001). Two main disciplinary styles in particular are associated with children's internalizing and externalizing symptoms – overreactive, authoritarian parenting and lax, inconsistent parenting (Baumrind, 1965; Prinzie, Onghena, & Hellinckx, 2007). Additionally, verbosity has been considered as a third dimension of dysfunctional parenting (Arnold, O'Leary, Wolff, & Acker, 1993).

Authoritarian parents respond to children's problem behavior with coercive, restrictive, and firm disciplinary techniques and withdraw warmth and nurturance. They also tend to overreact using threats, aggressive language, and physical punishment (Arnold et al., 1993; Coplan, Hastings, Lagacé-Séguin, & Moulton, 2002). This strategy successfully

decreases children's problematic behavior in the short term but increases the risk for further misbehavior in the longer term. The short-term success of this parenting style and the inability to foresee the long-term consequences reinforce parents to use this strategy again which increases the risk for externalizing symptoms (Patterson, 2002). Furthermore, the frequent use of harsh punishments and controlling behavior could impair children's emotional regulation by causing heightened negative emotional arousal, sensitivity, and anxiety. This could result in developing internalizing symptoms such as depression or anxiety (Pinquart, 2016).

Conversely, lax parenting describes parents who are permissive and inconsistent in disciplinary situations. For example, they threaten with a punishment but do not apply or discontinue it prematurely. Such behavior may increase externalizing symptoms of the offspring because the child would contingently not experience the negative consequences of the inappropriate behavior and will apply it again (Koglin & Petermann, 2008). However, there are inconsistent results about the effect of laxness on internalizing symptoms, suggesting that the negative effect of the permissive and inconsistent behavior could be buffered by providing warmth and nurturance to the child (Pinquart, 2016).

Verbosity describes the tendency to unnecessarily discuss the problematic behavior of the preschool child for a long time instead of taking actions (Arnold et al., 1993). This strategy is considered dysfunctional because it is very time-consuming for the parent without showing the child the natural negative consequence of the misbehavior. Considering verbosity as a separate dimension of dysfunctional parenting has been critically discussed. There is mixed support of its reliability and parental verbosity does not consistently correlate with children's internalizing or externalizing symptoms (Miller, 2001; Prinzie et al., 2007).

Belsky (1984) proposed a model defining different determinants of parenting: Parents' personal characteristics and psychosocial functioning, characteristics of the child, and contextual sources of stress and support. In this model, weakness in one of the determinant domains results in a dysfunctional parenting, possibly leading to children's mental health problems. If there is a risk only in one domain, but the others are still functioning well, they can have a buffering effect on parenting. Having a difficult child is not seen as a potential risk for the functioning parenting when the personal resources and support system are intact.

### *Family functioning*

The construct of family functioning shifts the focus from the intraindividual differences of every family member and the interactions between pairs of members to the family as a system. There are explicit and implicit rules in this system. Members are acting

following these rules and are monitoring each other. These dynamics shape the interindividual behavior and affect the mental health of each member (Epstein, Baldwin, & Bishop, 1983). This association was also evident in preschool children (Crawford, Schrock, & Woodruff-Borden, 2011).

Epstein, Bishop, and Levin (1978) presented the McMaster Model of Family Functioning including six different domains of family functioning: problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control. *Problem solving* refers to the ability of the family to deal with issues that threaten the family integrity and functioning. Such problems can be instrumental (e.g., financial difficulties) or affective (e.g., mental health problems of a family member). *Communication* focuses on the verbal exchange of information between family members. *Roles* were described as behavioral patterns in order to fulfill family functions, such as providing resources, nurturance and reassurance, supporting development, and maintaining and managing the family system. A further dimension of family functioning is the *affective responsiveness*, i.e., the ability to respond to different situations with an appropriate quality and quantity of emotions. *Affective involvement* describes how family members value, show interest, and are willing to invest in activities and concerns of others. The last dimension of family functioning is *behavior control*. For children, behavior control refers to disciplinary measures that are activated when the child exceeds latitude of an acceptable behavior.

In a poorly functioning family, family members have difficulties to resolve problems, such as mental health symptoms of the preschool child, and to communicate feelings. For instance, the communication of feelings of anger would not be directed to a concrete family member and would be expressed in a masked or vague way. Expressed in this way, feelings would create tension without fulfilling their function. Another example is when roles are not clearly and equitably allocated based on the personal capacities of the family members (e.g., a child is responsible for a major part of the care of younger siblings). Furthermore, poorly functioning families restrict their emotions only to one direction (only negative or only positive emotions). In this way, children develop affective constrictions, which influence their further mental health and development (Epstein et al., 1978).

### **3.2 Impact of the biological parents on children's mental health after trauma exposure**

Since there is no evidence to what extent if any and which characteristics of the foster family help preschool children in foster care cope with trauma, it is worth looking at nonfoster

samples in order to understand the caregiver-child dynamics in the aftermath of the traumatic event. In a recent meta-analysis, Williamson et al. (2017) reported that parent's characteristics can be seen as modest but reliable predictors of children's PTSS severity.

Scheeringa and Zeanah (2001) proposed two models to explain how parents' characteristics can impact children's mental health following trauma exposure. The first model describes parents' characteristics as mediators and the second – as moderators. In statistics, a mediator variable is one that intervenes in the influence of an independent variable on a dependent one, i.e., the outcome. Variation in the independent variable causes variation in the mediator, which, in turn, leads to variation in the outcome (Hayes, 2013). In other words, the trauma exposure of the child influences parents' characteristics, which affect the mental health of the child (Figure 1a). The trauma exposure can have a direct or a vicarious impact on the primary caregivers. Caregivers are directly affected when they have experienced the same event as their child (e.g., natural disaster or violence in the family; Gewirtz, DeGarmo, & Medhanie, 2011). Sometimes caregivers are upset by their knowledge what their children have been exposed to and by witnessing their children's distress (Le Brocque, Hendrikz, & Kenardy, 2010). In the latter case, the trauma exposure of the child vicariously impacts the caregivers. In these two ways, the traumatic event causes parental distress and leads to insensitivity and reduced responsiveness, which affect children's PTSS and mental health problems (Scheeringa & Zeanah, 2001).

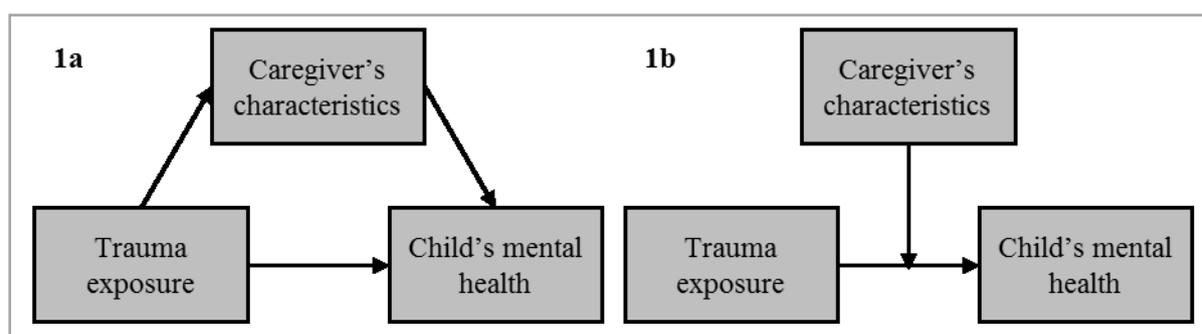


Figure 1. Mediation model (1a) and moderation model (1b) of the impact of caregivers on mental health consequences of trauma exposure

The second explanatory model considers parents' characteristics as moderator variables. A moderator influences the magnitude of the impact of the independent variable on the outcome (Hayes, 2013). As regards the current matter, this model postulates that parents' characteristics influence the impact of the traumatic event on child's adjustment by intensifying or reducing child's PTSS or mental health problems (Figure 1b). In this case, parents' characteristics should be independent from the trauma exposure of the child

(Scheeringa & Zeanah, 2001). The combined influence of the independent variable and the moderator is also referred to as interaction. In other words, when one or more distinctive parents' characteristics are strongly expressed, the impact of trauma exposure on children's mental health is lower or higher than when they are less expressed or absent.

Parents' characteristics either depend on the trauma exposure of the child as defined by the mediating (also referred as compound) model or are independent from such exposure in terms of the moderating model. This implies that both models cannot occur simultaneously and that only one of them can be true (Scheeringa, Myers, Putnam, & Zeanah, 2015). For the current work, it is of interest how the three caregivers' characteristics associated with mental health problems in children in foster care (parents' stress, parenting, and family functioning) might influence the way children cope with trauma. Since there is a dearth of research on preschool children, even in nonfoster samples, the following section reviews evidence for both models without restricting to the preschool age.

#### *Parents' stress*

Studies of the mediating or moderating effect of parents' stress on trauma-exposed children operationalized this parents' characteristic in terms of mental health symptoms. Biological parents and their children had experienced the same trauma so these studies supported rather the mediating model.

Two studies of school-age children (from 6 to 12 years) who witnessed intimate partner violence between their parents reported significant mediating effects of mothers' depression symptoms and PTSS on children's mental health. Levendosky and Graham-Bermann (2001) found a significant impact of intimate partner violence on mothers' psychopathology leading to dysfunctional parenting, which, in turn, increased the mental health problems of the child. Gewirtz et al. (2011), however, found an effect of maternal mental health problems and distress shortly after a violent incident only on changes in children's depression symptoms and PTSS but not in the broad construct of internalizing symptoms. Although higher maternal distress at baseline was associated with more severe depression symptoms of the children at that point, it predicted a decrease of children's depressive symptoms and an increase in children's PTSS severity approximately four months after the potentially traumatic event. One major limitation in order to consider this study as clear support for the mediation model was that the authors did not control if maternal mental health problems occurred after the trauma exposure or already existed before it.

The mediating effect of parents' stress was evident in two further studies of school-age children and adolescents who experienced a natural disaster. A prospective analysis of children's PTSS following Hurricane Katrina indicated a partial mediation of parents' psychopathology on the impact of experiencing a threat and loss during hurricane exposure on children's PTSS severity. The effect of trauma exposure was also mediated by parents' maladaptive coping strategies that could increase parents' stress levels (Kelley, Self- Brown, Le, Bosson, Hernandez, & Gordon, 2010). Similarly, Wickrama and Kaspar (2007) reported that property destruction increased maternal depressive symptoms, which, in turn, led to more severe depressive symptoms and PTSS of children aged 7 to 16 years.

A few recent studies investigating different types of trauma exposure focused on the preschool age. Their results also bring rather inconsistent support for the mediation model and no support for the moderating model. In a sample of 160 children from high risk neighborhoods, exposure to community violence led to more maternal stress (global distress and PTSS), which increased children's internalizing and externalizing symptoms (Linares et al., 2001). Levendosky et al. (2013) investigated children's PTSS in particular and followed children exposed to domestic violence from the age of 1 to the age of 7. They reported that maternal PTSS following domestic violence correlated with children's PTSS severity. However, this association was only evident for several age periods and did not show a clear developmental pattern. Thus, these findings do not show a distinct support for the mediation model. In another study, Crusto et al. (2010) found that domestic violence but not violence outside the family predicted higher levels of parents' stress, which, in turn, were associated with more severe PTSS in their preschool children. Parents' stress was operationalized here as distress related to the parenting role, dysfunctional parent-child interaction, and the perception of having a difficult child.

Considering pediatric injuries, findings of two studies supported the association between severe parents' and children's PTSS as well as mental health problems both shortly after burn injuries of the offspring and six months later (Bakker et al., 2014; De Young, Hendrikz, Kenardy, Cobham, & Kimble, 2014). Bakker et al. (2014) found similar impact of maternal and paternal symptoms. Haag and Landolt (2017), however, reported that maternal but not paternal stress mediated the relationship between burn injury and children's PTSS severity. In a further study of different types of pediatric injuries, parents' PTSS severity six weeks after trauma exposure predicted more severe children's PTSS half a year later (Nugent, Ostrowski, Christopher, & Delahanty, 2007). Parents' PTSS severity acted as a mediator on the association between children's initial biological reaction to the traumatic event and further

PTSS. These findings suggest that children who are at minor risk for PTSS on the basis of initial biological response (low heart rate, low cortisol level) might develop PTSS partly due to their parents' stress reaction.

Scheeringa et al. (2015) also investigated the mediating and moderating effects of parents' stress on children's PTSS after diverse trauma exposure (witnessing domestic violence, acute injury, invasive medical procedure, and sexual or physical abuse). Maternal depression and PTSS shortly after the traumatic event mediated the effect of trauma exposure on children's PTSS severity two years later. There was no evidence for a moderating effect.

### *Parenting*

Research on the contribution of parenting to children's mental health in the aftermath of trauma shows, again, inconsistent results about different facets of parenting. Levendosky and Graham-Bermann (2001) found that parenting styles including warmth, control, child-centeredness, and effectiveness partly mediated the impact of domestic violence on the mental health of children aged 7 to 12 years. Domestic violence affected parenting through its impact on parents' stress. Similarly, Kelley et al. (2010) found support that corporal punishment mediated the association between domestic violence and children's PTSS in a study of children aged 11 to 16 years exposed to Hurricane Katrina. Corporal punishment overlaps with the definition of overreactivity as parenting practice in disciplinary situations (see section 3.1). Furthermore, the authors reported significant partial mediation of corporal punishment on the relation between loss and destruction of property following trauma exposure and children's PTSS severity. However, exposure to natural disaster did not directly affect such parenting practices but influenced them through the parents' maladaptive coping strategies. Another aspect of the traumatic event, namely when the child experienced a life threat, had no impact on parenting. Findings of a further study of children aged 6 to 18 years supported the moderating effect of overprotectiveness on children's PTSS after natural disaster (Bokszczanin, 2008).

The research reported hitherto in this section is based on samples of children all of whom were exposed to potentially traumatic events. The variation in trauma exposure as a variable was defined as variation in the quantity (e.g., frequency of physical abuse) or quality (e.g., destruction of property during a natural disaster) of the traumatic experiences. Unlike these studies, Le Brocque et al. (2010) compared a sample of children aged 7 to 16 years who experienced some injury (e.g., motor vehicle incident, sporting injury) to a non-trauma-exposed sample. They found no differences in the parenting of parents comparing the trauma-

exposed and the non-trauma-exposed samples. Therefore, their study did not support the mediating model. The authors also noted that only some of the parents were exposed to the same traumatic event as their children by witnessing or experiencing it.

Concerning the preschool age, there were three studies, all of them reporting inconsistent results about the effect of parenting. Gewirtz et al. (2011) observed mothers' parenting behavior including disciplinary strategies but also empathy and warmth towards the child, skill encouragement, and agreement in problem solving in an experimental task. They found parenting to be a stable variable during the study period of approximately three months after exposure to domestic violence. Dysfunctional parenting increased the severity of internalizing symptoms, more concretely of PTSS and fear but not of depressive symptoms. These findings can be interpreted as support for the moderating model. Scheeringa et al. (2015), however, found no moderating effect of parenting in a disciplinary situation in a study of 62 children aged 1 to 6 years who were exposed to diverse potentially traumatic events. They also reported no mediating effect of observed disciplinary practices on the relation between trauma exposure and children's PTSS severity. There was a mediating effect of parents' emotional responsiveness referring to parents' ability to create a positive emotional context when interacting with their children. The findings of this longitudinal study were unexpected because greater emotional sensitivity correlated with more severe PTSS. In a similar vein, Levendosky, Huth-Bocks, Shapiro, and Semel (2003) found that parenting significantly mediated part of the association between domestic violence and children's externalizing behavior using both self-reported and observational measures. Unexpectedly, experiencing domestic violence was associated with more effective parenting practices.

### *Family functioning*

In a longitudinal study, McFarlane (1987a) investigated how exposure to bush fires influenced the family functioning of 183 trauma-exposed children compared to 497 non-affected families. They assessed two domains of family functioning related to children's trauma exposure – irritable distress and involvement. These two domains correspond to the affective responsiveness and affective involvement, respectively, in the McMaster Model of Family Functioning (see section 3.1). The authors found that in eight months the communication of families of children who were exposed to the bush fires was characterized by increased levels of conflict, irritability, and withdrawal than in non-trauma-exposed families. Furthermore, changes in the family functioning two months after the traumatic event predicted more severe PTSS in children half a year later (McFarlane, 1987b).

Using the same definition of family functioning, the association between family functioning and children's PTSS following assault or motor vehicle incident was investigated in a sample of 66 children aged 10 to 16 years. Findings indicated that irritable distress but not involvement had significant predictive effect (Meiser-Stedman, Yule, Dalgleish, Smith, & Glucksman, 2006). Both McFarlane (1987a) and Meiser-Stedman et al. (2006) assessed changes in the family functioning following trauma exposure not by comparing data from two or more assessment points but by the retrospective estimations of the caregivers. Hence, the mediation effect was not statistically tested.

Bokszczanin (2008) investigated the moderating role of family conflict, which is a construct operationalizing poor family functioning in terms of ineffective communication and affective responsiveness in the McMaster Model (see section 3.1). The author found no support for the interaction between exposure to natural disaster and family conflict on PTSS severity of schoolchildren.

Studies particularly on preschool children have analyzed the main effect of family functioning so far rather than testing if the mediating or the moderating model is more valid. Family functioning as defined in the McMaster Model was found to be an independent predictor of children's mental health problems in preschool children who were introduced in hospitals after an accidental traumatic brain injury or orthopedic injury (Yeates, Taylor, Walz, Stancin, & Wade, 2010). There was no interaction between trauma severity (with or without brain injury) and family functioning on children's outcomes.

In a sample of 67 preschool children with burns, Graf et al. (2011) investigated a similar construct – family relations. Family relations in this study assessed the three subscales cohesion, expressiveness, and conflict which overlap with the domains of the McMaster Model affective responsiveness and communication (see section 3.1). The findings supported the main effect of poor family relations on poor mental health and a greater number of PTSS in preschool children.

#### *Conclusion on findings about the mediating and moderating models*

The most consistent findings refer to the mediating effect of parents' stress on the effect of trauma exposure. Here, parents' stress has been most frequently operationalized as mental health, but there is also evidence for the mediating effect of parents' stress associated with the role of a caregiver. Studies of the effect of parenting have been more inconsistent. As to the family functioning, a main effect could be confirmed in few studies. Most studies have investigated the complex impact of caregivers' characteristics on mental health consequences

of trauma using structural equation modeling. This statistical approach is suitable to investigate mediating effects but requires advanced calculations in order to address possible moderating effects (Henseler & Chin, 2010). Hence, in many samples, even when there was no support for the mediating model, a possible moderation has not been analyzed. There was only one study investigating both mediating and moderating effects (Scheeringa et al., 2015). Furthermore, only few studies compared trauma-exposed to non-trauma-exposed samples.

### **3.3 The influence of foster and biological parents on therapeutic service utilization**

Research has shown that the family has not only a direct impact on the mental health of its members but also an indirect one through its influence on therapeutic service utilization. Caregivers have an important role for the initiation of therapeutic services, especially for preschool children, because at this age children do not decide on their own to start a treatment (Costello, Pescosolido, Angold, & Burns, 1998). Preschool children often do not communicate their emotions clearly because they still develop their language capacities. Therefore, caregivers may not be aware of mental health problems of the child that may require treatment (Scheeringa, 2011). In such cases, parents' characteristics could enable or inhibit help-seeking steps (Andersen, 1995). There are, however, further factors influencing therapeutic service utilization of young children.

Andersen (1995) described a model of help-seeking behavior determined by three sets of predictors: enabling or inhibiting factors, such as parents' characteristics, predisposing factors, such as gender, and need factors, such as mental health problems. Research on enabling or inhibiting factors on foster care populations have, so far, focused on rather organizational variables, such as placement changes and nonkinship foster care (Horwitz et al., 2012; Zima, Bussing, Yang, & Belin, 2000). Findings in studies of the general population suggest that parents' stress and family functioning could be potential predictors of therapeutic service utilization. They might be applied to explain the impact of the foster family. For instance, in a study of 1 124 children aged 6 to 17 years, Horwitz et al. (2014) found high parents' stress to be associated with more outpatient therapeutic services, even when controlled for children's mental health. In another study of 246 Dutch children aged 4 to 11 years, poor family functioning according to the McMaster Model (see section 3.1) increased the perceived need for therapeutic help. Higher need for therapeutic help was, in turn, associated with more frequent therapeutic service utilization.

# Empirical research

## 4 Aims of the current research

The theoretical framework of this doctoral thesis highlighted several research gaps. Although the preliminary work to the current research showed that potentially traumatic experiences are associated with PTSS in older children and adolescents (Vasileva et al., 2015) and further mental health problems in preschool children (Publication I), no studies have yet investigated the distribution of PTSS and the prevalence of PTSD in preschool children in foster care. Estimating the prevalence of PTSD depends on the applied diagnostic criteria. As yet the overlap between the DSM-5 criteria for preschoolers and the proposed ICD-11 criteria has not been evaluated in foster care children (see section 2.2).

Furthermore, previous research has not systematically analyzed the impact of foster parents' characteristics on PTSS and further mental health problems following trauma exposure in preschool children. Especially foster parents' stress, parenting, and family functioning are associated with foster children's mental health in general (section 3.1). Despite the fact that research on nonfoster samples brings some, although inconsistent, support for the mediating effect of caregivers' characteristics on mental health problems in trauma-exposed children (see section 3.2), it should be taken under consideration that foster parents often did not know the child before the traumatic event. They can be only vicariously affected by knowing about the distress of their child. Therefore, foster parents' characteristics are probably not at all or only slightly affected by the trauma exposure of the child, so they rather moderate than mediate its effect on children's mental health. They can also have an indirect effect on children's well-being by affecting the initiation of therapeutic services for the child. Studies of foster samples, have, so far, focused on organizational variables and not on foster parents' characteristics when investigating enabling or inhibiting predictors for therapeutic service utilization (see section 3.3).

The current research project sought out to address the aforementioned research gaps and to answer the following questions:

- (1) How many preschool children in foster care experience traumatic events and how many show PTSD using different diagnostic criteria? (Publication II)
- (2) Which foster parents' characteristics predict PTSS in preschool children in foster care? (Publication II)
- (3) Do foster parents' characteristics moderate the impact of trauma exposure on children's internalizing and externalizing symptoms? (Publication III)

(4) Which foster parents' characteristics affect the therapeutic service utilization for the child? (Publication IV)

The questions (1), (2), and (4) followed an exploratory analyzing strategy. Question (3) tested subsequently the interactions between trauma exposure and foster parents' stress as well as parenting styles. It was expected that trauma-exposed children would have more severe internalizing and externalizing symptoms, except their foster parents had low stress levels and used less dysfunctional parenting practices in disciplinary situations. Foster family functioning was not included in the moderator analysis, since previous research gave no support for the moderating effect of this variable (see section 3.2).

The study questions (1) to (4) focused separately on different dimensions of children's mental health – PTSD and internalizing as well as externalizing symptoms – by integrating evidence from outcome-specific theoretical and empirical knowledge. However, these outcomes can be connected to each other (see section 2.3). According to the Developmental Traumatology Model by De Bellis et al. (2013), internalizing and externalizing symptoms could be affected by a traumatic event directly or indirectly through the onset of PTSD. Therefore, the relational impact of foster parents on both PTSD and further mental health problems was tested in a meta-model included in the current contribution that addressed the association between both outcomes (Figure 2).

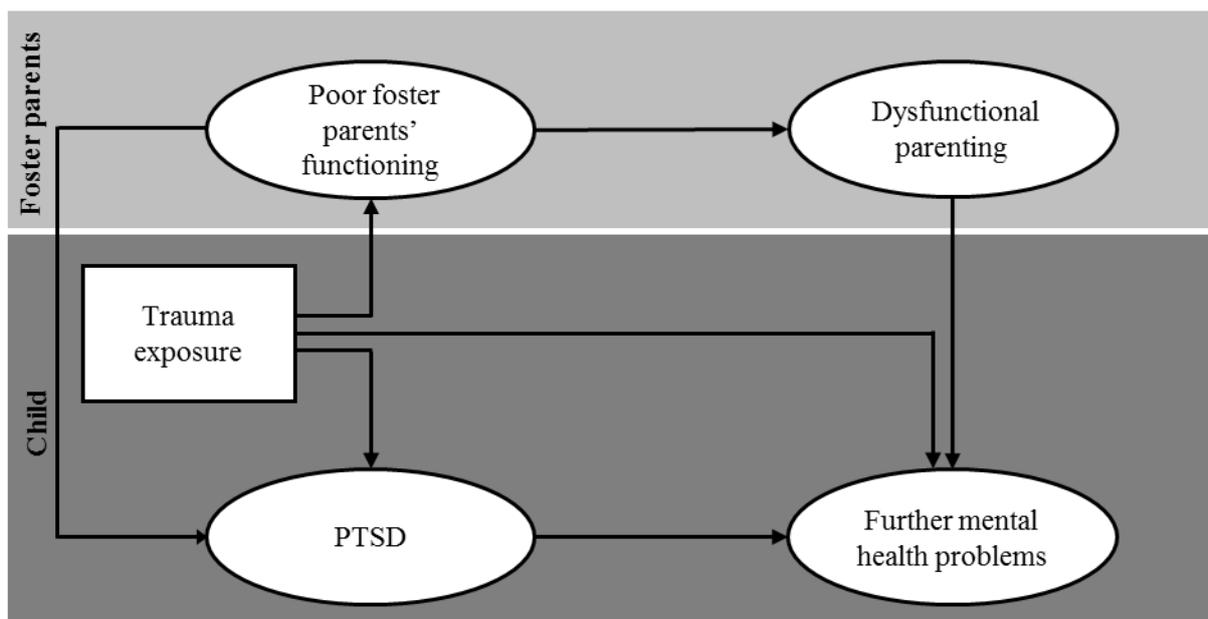


Figure 2. Theoretical meta-model of the foster parents' impact

For the construction of this model, which is displayed in Figure 2, further theoretical considerations were integrated. First, Belsky's model (1980) of the determinants of parenting postulates that poor parents' functioning following trauma exposure of the child can lead to dysfunctional parenting, which, in turn, affects children's mental health (section 3.1). Parents' stress, partnership, role restriction in the family, and social support of foster parents can be seen as indicators for foster parents' functioning. Second, Scheeringa and Zeanah (2001) considered that there are two possible effects of the foster family in the aftermath of trauma – a mediating and a moderating effect (section 3.2). The moderating effect of parenting can be tested by analyzing differences in its effect on mental health problems separately in trauma-exposed and non-trauma-exposed children (Figure 3; see section 5.3). The following research question concerning the meta-model was investigated in the sample of preschoolers:

- (5) Does a theoretical meta-model of the impact of foster parents on both PTSD and further mental health problems fit the empirical data?

In case that the theoretical meta-model did not fit the empirical data, findings in the outcome-specific analyses – questions (1) to (3) – were used to modify it.

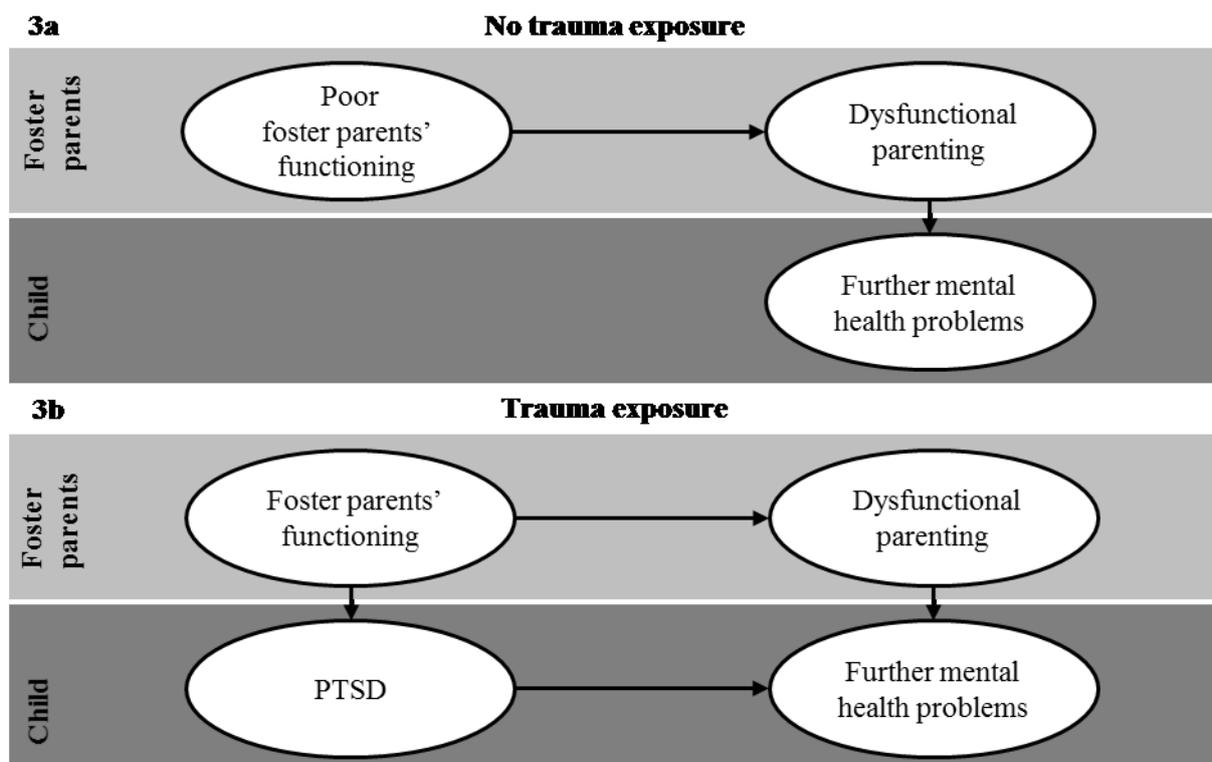


Figure 3. Theoretical meta-model of the foster parents' impact for trauma-exposed (3a) and non-trauma-exposed children (3b)

Systematically investigating the effect of the foster family in the way preschool children cope with trauma gives the opportunity to derive implications for the concrete work with these children and their foster families. Therefore, the current project also aimed at formulating practical recommendations for child welfare services, based on the current findings. These recommendations will be presented as part of the implications of the results. To sum up, the research questions, together with the preliminary work (Publication I; section 2.4), and deriving implications for the practice constitute a sequential approach allowing to best address the already mentioned research aims (Figure 4).

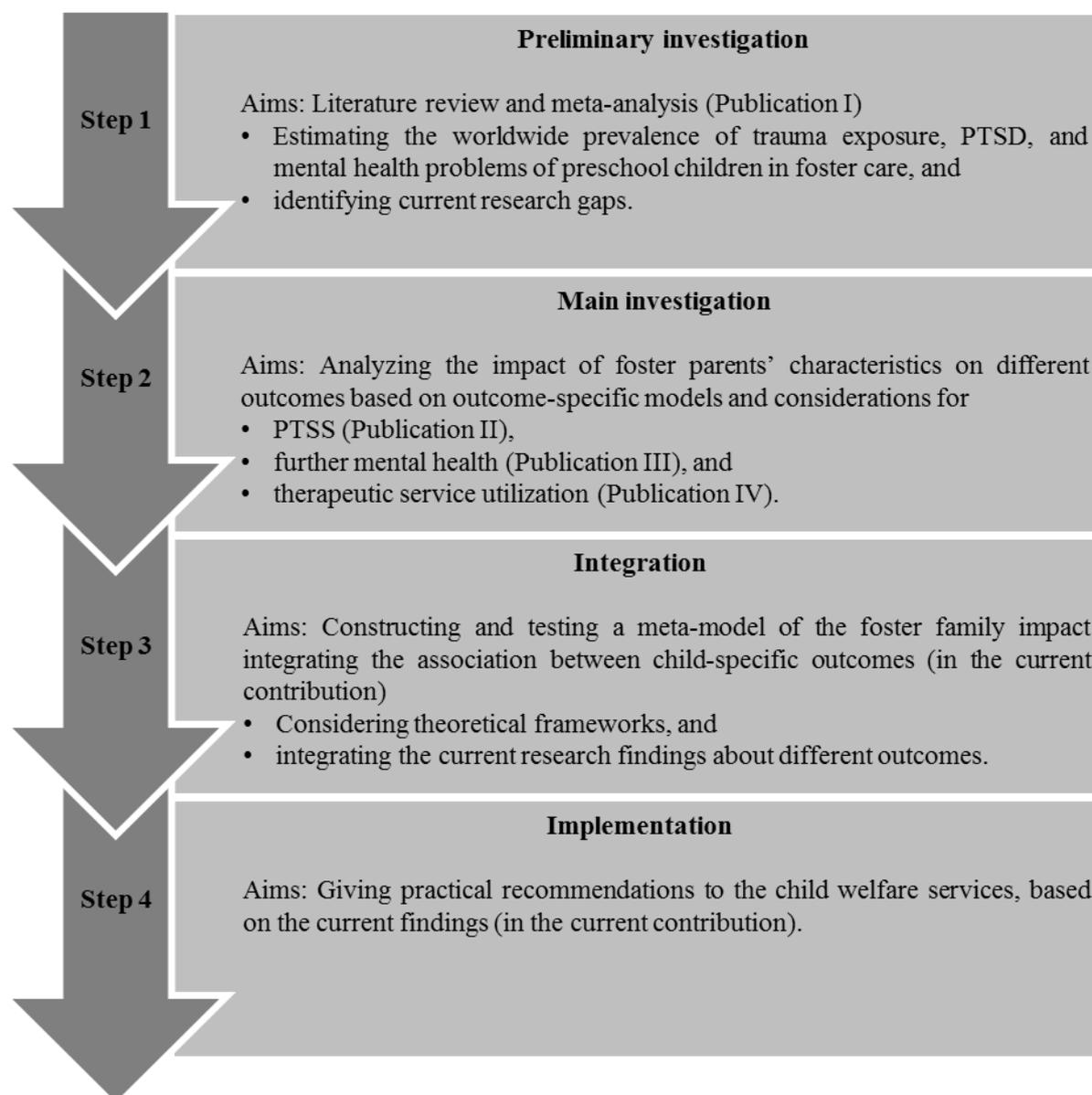


Figure 4. Sequential approach of the present research

## 5 Methods

### 5.1 Participants and procedure

The procedure was approved by the ethics commission of the University of Bremen. Data were collected between March 2015 and March 2016. Since there is no official registry of children in foster care in Germany, different strategies were applied in order to inform as many foster parents as possible about the study (Figure 5). First, governmental child welfare agencies were contacted via e-mail and then, if there was no response, via telephone; they were asked to invite foster parents to participate. Foster parents could answer the questionnaire online or receive a printed version by their child welfare agencies. Of nearly 600 child welfare agencies, 85 refused to participate and 17 could not be reached. There was greater resistance between October 2015 and March 2016. Child welfare services explained this with being overburdened by accommodating and caring for a vast number of unaccompanied minor refugees. The rest of the agencies responded positively to the project. However, some had no children that fulfilled the inclusion criteria, others could not persuade foster parents to participate, or did not forward the information despite agreeing to participate. Since child welfare agencies were only asked to route the information through to their foster parents and were not supposed to give a feedback if they did this or if foster parents agreed to participate, it was not possible to track how many foster parents were actually informed and to clarify their response rate. Finally, foster parents from 210 governmental welfare agencies participated in the study.

Another recruitment strategy constituted contacting 130 private child welfare agencies, associations working with foster parents (e.g., PFAD “Bundesverband der Pflege- und Adoptivfamilien”), and self-help organizations. They were also asked to route the information about the study through to foster parents. Information was also disseminated in password-protected forums for foster parents.

Foster parents were eligible to participate if they were looking after children who (a) were in long-term foster care, (b) had no diagnosed autism spectrum disorder, and (c) had not experienced any traumatic events in the past month (one criterion for PTSD is that the symptoms last over a month, DSM-5; APA, 2013).

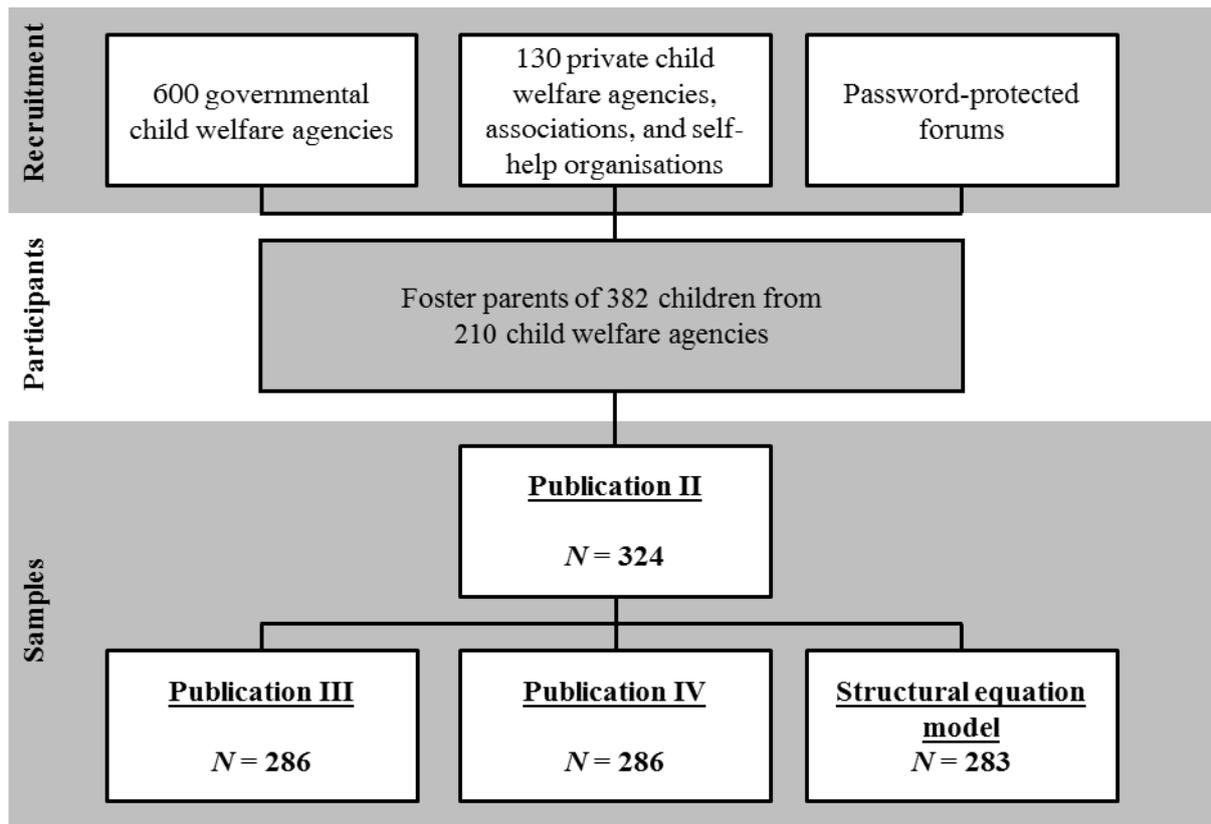


Figure 5. Overview of recruitment strategies and sample sizes in the present empirical publications

Foster parents of 382 children participated in the study. Foster parents who answered questions online ( $n = 308$ ) reported more dysfunctional parenting than those who received the paper-and-pencil version ( $n = 74$ ,  $t = -4.43$ ,  $df = 321$ ,  $p < .001$ ). There were no differences between the online and offline answers for all other variables of interest (all  $p > .05$ ). For every publication, participants with no more than 10% missing values in the variables of interest were included (according to Bennett, 2001). Hence, 324 participants were included in Publication II and 286 participants in Publications III and IV (Figure 5). The samples in Publication III and IV were part of the larger sample of Publication II. In Publication II, there were no differences between foster parents who had more than 10% missing values and were, therefore, excluded from the analysis ( $N = 58$ ) and foster parents with less than or equal to 10% missing values ( $N = 324$ ). In Publication III, foster parents who were excluded from the analysis reported more frequently traumatic experiences ( $\chi^2 = 5.38$ ,  $df = 1$ ,  $p = .02$ ) of their children, more specifically physical abuse ( $\chi^2 = 4.28$ ,  $df = 1$ ,  $p = .039$ ). In Publication IV, only female foster parents did answer enough questions and were excluded from the analysis due to missing values. There were no further differences regarding child's gender, age, immigration status, types of traumatic experiences, duration of current care, and age at first placement (all  $t$  and  $\chi^2$  tests had a significance level of  $p > .05$ ). Table 2 gives an overview of

characteristics of the sample used in Publication II, which includes 88.3% of the children in Publications III and IV.

Table 2

*Sample characteristics (N = 324; Publication II)*

<b>Characteristic</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>n</i></b>	<b>%</b>
Age in months	58.7	15.5		
Age at first placement in months	14.8	13.2		
Duration of current foster care in months	37.7	19.3		
Placement change	2.3	1.4		
Male			160	49.4
Immigrant background			47	14.5
Kinship foster care			27	8.3

*Note.* Displayed are valid percentages without missing values.

According to estimates based on the last report of the German Federal Statistical Office about children in foster care (Statistisches Bundesamt, 2017), the current sample constituted about 3% of the preschoolers in foster care in Germany at the end of 2015. In order to analyze the representativity of the current sample, it was compared to the reference sample of the Federal Statistical Office. The reference sample included children aged 3 to 6 years in long-term foster care ( $N = 10\,682$ ; 51.6% boys, 19.01% immigrant background, 20.64% kinship foster care). The current sample did not differ from the reference sample in the proportions of gender ( $\chi^2 = 0.39$ ,  $df = 1$ ,  $p > .05$ ). The current sample included less children with an immigrant background ( $\chi^2 = 4.65$ ,  $df = 1$ ,  $p = .031$ ) and less children in kinship foster care than the reference sample ( $\chi^2 = 27.15$ ,  $df = 1$ ,  $p < .001$ ).

## 5.2 Measures

A set of valid standardized questionnaires was selected to assess children's trauma exposure and mental health as well as foster parents' characteristics. Additionally, self-phrased questions measured placement history of the child and therapeutic service utilization (Appendix E). Table 3 gives an overview of the selected measures and their use in the publications.

Table 3  
*Overview of variables and instruments included in the doctoral thesis*

Instrument	Variable	Publication			
		II	III	IV	SEM
<b>YCPC</b> (Young Child PTSD Checklist; Scheeringa, 2013)	<ul style="list-style-type: none"> <li>• Traumatic experience (yes/no)</li> <li>• PTSS</li> <li>• PTSD (yes/no)</li> </ul>	×	×	×	× <sup>a</sup>
<b>SDQ</b> (Strengths and Difficulties Questionnaire; Goodman, 2001) - five subscales	<ul style="list-style-type: none"> <li>• Emotional symptoms</li> <li>• Conduct symptoms</li> <li>• Hyperactivity/inattention</li> <li>• Peer relationship problems</li> <li>• Prosocial behavior</li> </ul>			×	
<b>SDQ</b> (Strengths and Difficulties Questionnaire; Goodman, 2001) - two broad subscales	<ul style="list-style-type: none"> <li>• Internalizing symptoms</li> <li>• Externalizing symptoms</li> </ul>		×		×
<b>PSQ</b> (Parental Stress Questionnaire; Domsch & Lohaus, 2010) - full version	<ul style="list-style-type: none"> <li>• Foster parent's stress</li> <li>• Role division problems</li> <li>• Social support</li> <li>• Partnership</li> </ul>			×	× <sup>b</sup>
<b>PSQ</b> (Parent Stress Questionnaire; Domsch & Lohaus, 2010) - only stress scale	<ul style="list-style-type: none"> <li>• Foster parent's stress</li> </ul>	×	×		
<b>PS</b> (Parenting Scale; Arnold et al., 1993)	<ul style="list-style-type: none"> <li>• Parenting (overreactivity, laxness, verbosity)</li> </ul>	×	×		×
<b>FAD</b> (Family Assessment Device; Epstein et al., 1983)	<ul style="list-style-type: none"> <li>• Family functioning</li> </ul>	×		×	
Self-phrased questions about <b>placement history</b>	<ul style="list-style-type: none"> <li>• Age at first placement</li> <li>• Duration of current care</li> <li>• Number of placement disruptions</li> <li>• Contacts with biological parents</li> <li>• Nonkinship vs. kinship foster care</li> </ul>	×		×	
Self-phrased questions about <b>therapeutic utilization</b>	<ul style="list-style-type: none"> <li>• Therapeutic service utilization</li> <li>• Foster parents' need for child therapy</li> </ul>			×	

*Note.* PTSD = Posttraumatic stress disorder; PTSS = Posttraumatic stress symptoms; SEM = Structural equation model, presented in the current contribution. Dependent/endogenous variables are marked bold.

<sup>a</sup> Only PTSS were included as endogenous variables in the structural equation model

<sup>b</sup> Only parent's stress was included as endogenous variable in the structural equation model

### 5.2.1 Children's mental health

#### *Trauma exposure and PTSS*

The German translation of the Young Child PTSD Checklist (YCPC; Landolt & Haag, 2014; Scheeringa, 2013) was used to assess potentially traumatic events across the child's lifespan and PTSS according to DSM-5. Foster parents were first asked if the children had experienced eleven different traumatic events: accident, attack by an animal, man-made disaster, natural disaster, hospitalization or invasive medical procedure, physical abuse, sexual abuse, accidental burning, near drowning, witnessing another person being hurt, and kidnapping. Parents were instructed that an event is traumatic when the child (a) felt that she or he might die or (b) had or felt like she or he might get a serious injury, or (c) saw (a) and (b) happen to another person or saw someone die. Binary variables (0 = "No trauma exposure", 1 = "Trauma exposure") were computed to indicate if the child had experienced each of the trauma types as well as at least one of the traumatic events.

Further 23 questions assessed children's PTSS on a five-point Likert scale (from 0 = "Not at all" to 4 = "Every day"). There were 18 symptoms derived from DSM-5 and five extra items beyond DSM-5 that can often be observed in preschool children after traumatic exposure (Scheeringa, Zeanah, Myers, & Putnam, 2003). After computing the sum of the scores, the attention cut-offs (total = 12, re-experiencing = 4, avoidance/numbing = 2, increased arousal = 4) were used to identify children with PTSS and functional impairment who may need treatment but do not have enough symptoms to satisfy the diagnostic criteria. Using the clinical cut-offs (total = 26, re-experiencing = 8, avoidance/numbing = 4, increased arousal = 10) clinical scores for children with a suspected diagnosis were computed. Additionally, algorithms for DSM-5 and the proposed ICD-11 diagnostic criteria were calculated in order to identify children who probably have PTSD according to these diagnostic systems. A symptom was considered fulfilled when a child had a score of 2 = "Two to four times a week/half of the time" or higher. In this case, the clinical cut-off = 4 for function impairment should be exceeded. The function impairment scale included 6 items on a five-point Likert scale (from 0 = "Hardly ever/none" to 4 = "Every day").

The interview form of the items showed excellent test-retest reliability and face as well as predictive validity in a series of empirical studies and formed the basis for the new DSM-5 diagnosis for preschool children (Scheeringa et al., 2012; Scheeringa et al., 1995; Scheeringa et al., 2003). Although the reliability of the items in questionnaire format has not been tested yet, the YCPC was chosen based on its foundation in empirical studies of preschool children and the absence of well-established alternatives. In the current sample, all

three symptom clusters showed acceptable internal consistency in children who have experienced potentially traumatic events ( $n = 147$ , re-experiencing: Cronbach's  $\alpha = .81$ , avoidance: Cronbach's  $\alpha = .79$ , and arousal: Cronbach's  $\alpha = .79$ ).

#### *Further mental health problems*

The 25-item Strengths and Difficulties Questionnaire (SDQ 4-16; Goodman, 2001) was used to assess on a three-point Likert scale (from 0 = "Not true" to 2 = "Certainly true") psychological deficits of the child in four areas: emotional symptoms, conduct symptoms, hyperactivity/inattention, and peer relationship problems. It also estimated children's prosocial behavior. For three-year old children, the SDQ 2-4 version was used including three adjusted to the young child's behavior items about reflectivity and aggressive behavior. Using cut-offs, children were divided into having "normal or borderline" or "abnormal" behavior in the four problem scales. Depending on the analytic strategy, either the five subscales (Publication III) or the two broader internalizing (emotional symptoms and peer relationship problems) and externalizing (conduct symptoms and hyperactivity/inattention) subscales (Goodman et al., 2010) were applied.

The German version of the SDQ showed good content and discriminant validity as well as acceptable to good internal consistency of all scales (Cronbach's  $\alpha = .73$  to  $\alpha = .86$ ; Koglin, Barquero, Mayer, Scheithauer, & Petermann, 2007). The broader internalizing and externalizing subscales also showed good convergent and discriminant validity as well as acceptable to good internal consistency (Cronbach's  $\alpha = .73$  to  $\alpha = .88$ ; Goodman et al., 2010). In the current sample Cronbach's Alpha ranged between  $\alpha = .67$  to  $\alpha = 0.84$ .

#### 5.2.2 Foster parents' characteristics

##### *Foster parent's stress, role division problems, social support, and partnership*

The 38-item Parental Stress Questionnaire (original title in German: "Elternstressfragebogen", Domsch & Lohaus, 2010) was used to assess on a four-point Likert scale (from 0 = "Strongly agree" to 3 = "Strongly disagree") four different facets of self-reported parents' functioning: stress, role division problems, social support, and partnership. Total scores were calculated for each scale and were, then, compared to normative data of parents with kindergarten children. Reliability for the scales ranged between Cronbach's  $\alpha = .76$  and  $\alpha = .92$  in the normative sample (Domsch & Lohaus, 2010). In the current sample, reliability was also acceptable to excellent (Cronbach's  $\alpha = .74$  to  $\alpha = .93$ ).

### *Parenting*

Parenting was assessed by the 28-item German Version of the Parenting Scale (Arnold et al., 1993; Miller, 2001). Foster parents rated their behavior in disciplinary situations on a seven-point Likert scale. Three parenting tendencies were measured: overreactivity (harsh and punitive parenting), laxness (inconsistent or permissive parenting), and verbosity (overly wordy responses). Sum of scores for each parenting tendency and for overall parenting were calculated. The current sample was compared to the normative sample of preschool children (Miller, 2001).

There were good reliability and validity of the German version for parents of kindergarten children (Naumann et al., 2010). Internal consistency in the current sample for the subscales and the total score was good as well (Cronbach's  $\alpha = .67$  to  $\alpha = .82$ ).

### *Family Functioning*

The 12-item General Functioning Scale of the McMaster's Family Assessment Device (Epstein et al., 1983) was used to measure the functioning of the family as an interactional system that can influence the behavior of family members. The scale was translated by the author (Appendix F). Items were rated on a four-point Likert scale (from 0 = "Strongly agree" to 3 = "Strongly disagree"). Family functioning was included as a continuous variable in the analysis with higher scores indicating better family functioning. Even when used on its own, the General Functioning Scale showed good reliability and validity (Boterhoven de Haan, Hafekost, Lawrence, Sawyer, & Zubrick, 2015). In the current sample, Cronbach's Alpha was  $\alpha = .77$ .

### 5.2.3 Placement history

Placement history variables that were shown to be related with children's mental health (Goemans, van Geel, & Vedder, 2016) were assessed in order to control if foster parents' characteristics influenced children's mental health even in the presence of these variables. Foster parents stated the age at which the child had been initially moved from the biological parents, the number of placements the child had experienced since then, how long the child had been in the current foster family, and how many contacts the child had had with the biological parents. They were also asked if they were related to the child (nonkinship vs. kinship foster care) and who had the (partial) custodial rights of the child – the biological parents, the foster parents, or the child welfare services (Appendix E).

#### 5.2.4 Therapeutic service utilization

Therapeutic service utilization, which was planned to start or was ongoing for no more than 12 months, was reported by the foster parents and was coded as a binary variable (0 = “No therapeutic service”, 1 = “Planned or ongoing therapeutic service”). The type of the therapeutic services was not restricted to psychotherapy since preschool children with psychological problems in Germany often receive other services (e.g., occupational therapy, game therapy, equine therapy; Lehmkuhl, Köster, & Schubert, 2009). Foster parents were also asked if they thought the child needed (further) therapeutic help. Their answers were coded as a binary variable as well (0 = “No therapeutic help needed”, 1 = “Therapeutic help needed”).

### 5.3 Statistical analysis

All analyses were conducted using SPSS 24, AMOS 24 (IBM Corp., Armonk, NY), and R (packages: norm2, version 2.01; mice, version 2.30, miceadds, version 2.2, eulerr version 2.0.0). Missing values were handled using the predictive mean matching method for multiple imputations in SPSS. This method is regression-based and imputes missing values of one respondent from a donor (another respondent who has the closest predicted values). Of the variables of interest, 17.6% were missing completely at random (Little’s missing completely at random test had  $p > .05$ ). Computed were 10 imputations through 200 Markov chain Monte Carlo (MCMC) iterations with trauma exposure as a covariate (Scheeringa et al., 2015). Results are displayed as pooled estimates (Barnard & Rubin, 1999). Prior to conducting the main analyses, requirements and assumptions for the statistical comparisons were tested. For all two-sided statistical tests  $p < 0.05$  was considered significant. Table 4 gives an overview of the statistical approaches used in Publications II to IV and in the current contribution as well.

Descriptive statistics were used to delineate the frequency of traumatic experiences, PTSD, therapeutic service utilization as well as the distribution of PTSS. To estimate the prevalence of PTSD, different diagnostic criteria were applied – the cut-off of the screening YCPC, the symptom combination according to DSM-5, and the symptom combination according to the proposed ICD-11 (see section 2.1). Foster parents sometimes lack information about potentially traumatic experiences of the child (Oswald & Goldbeck, 2009). In order to control such bias, participants were asked if they thought they had enough information to answer questions about the child (Appendix E). Parents who felt confident to answer the questions ( $n = 269$ ) were compared to those who did not ( $n = 55$ ) using chi-square and  $t$  tests.

Table 4  
*Overview of statistical approaches*

Publication	Statistical approach	Description of use
<b>Current contribution</b>	<ul style="list-style-type: none"> <li>• McNemar's tests</li> <li>• Kappa</li> </ul>	Analyzing the overlap of rates of PTSD using different diagnostic criteria – the YCPC screening, DSM-5, the proposed ICD-11.
<b>Publication II</b>	<ul style="list-style-type: none"> <li>• <math>\chi^2</math> tests</li> <li>• <i>t</i> tests</li> <li>• Spearman's correlations</li> <li>• Multiple linear regression testing all possible models</li> <li>• Moderation analysis</li> <li>• Mediation analysis</li> </ul>	<p>Comparing estimates of foster parents who thought they had enough information about the child with those who did not.</p> <p>Investigating possible single predictors of posttraumatic stress symptoms.</p> <p>Identifying the strongest predictors of posttraumatic stress symptoms.</p> <p>Testing possible interactions which might explain changes in the relation between variables in the single and in the multiple predictor analyses.</p> <p>Testing possible indirect effects which might explain changes in the relation between variables in the single and in the multiple predictor analyses.</p>
<b>Publication III</b>	<ul style="list-style-type: none"> <li>• Moderation analysis with bootstrap sampling</li> <li>• Mediation analysis with bootstrap sampling</li> </ul>	<p>Testing the interactions between trauma exposure and parents' stress and parenting on children's internalizing and externalizing symptoms.</p> <p>Testing the indirect effects of trauma exposure mediated by parents' stress and parenting on children's internalizing and externalizing symptoms.</p>
<b>Publication IV</b>	<ul style="list-style-type: none"> <li>• Multiple logistic regression with backwards elimination</li> <li>• Hierarchical logistic regression</li> </ul>	<p>Identifying the strongest predictors for therapeutic service utilization and foster parents' perceived need for help of each set of variables according to Andersen's model (1995): (1) predisposing, (2) enabling/inhibiting, and (3) need variables.</p> <p>Identifying factors that had significant influence on the therapeutic service utilization and foster parents' perceived need for help even when the variables of the other sets defined by Andersen (1995) were controlled.</p>
<b>Current contribution</b>	<ul style="list-style-type: none"> <li>• Structural equation modeling (Maximum likelihood estimation)</li> </ul>	Testing a meta-model integrating the foster parents' impact on both children's PTSS and further mental health problems.

*Note.* DSM = Diagnostic and Statistical Manual for Mental Disorders; ICD = International Classification of Diseases and Related Health Problems; PTSD = Posttraumatic stress disorder; PTSS = Posttraumatic stress symptoms; YCPC = Young Child PTSD Checklist

Furthermore, children's mental health problems, foster parents' stress and parenting were compared to the normative data (Domsch & Lohaus, 2010; Goodman, 2001; Miller, 2001). The comparison of values of the variable "Family functioning" in the current and the reference samples was not possible since there was no information about the standard deviation in the reference sample (Boterhoven de Haan et al., 2015).

In addition, a subsample of 75 foster parents was asked if the child received mental health diagnostics. This question was added in a later stage of the data collection and was, therefore, used only in descriptive and not in multiple inferential analyses.

Publication II included single (Spearman's  $\rho$ ) and multiple predictor analyses (multiple linear regression) exploring the impact of child- and trauma-related predictors, placement history, and foster parents' characteristics on PTSS. An explorative strategy was applied in order to find the best predictive model among all possible combinations of predictors for PTSS. Models were compared considering the adjusted  $R^2$ , the root mean square error, and the Aikake's information criterion. Changes in the relations between the single predictor and the multiple predictor analyses were monitored. If associations in the single and multiple predictor analyses differed, possible moderation and mediation effects were analyzed.

Publication III focused on mechanisms connecting traumatic experiences, foster parents' stress and parenting, and children's mental health problems. The hypothesized moderation effects of parents' stress and parenting on the relation between trauma exposure and internalizing as well as externalizing symptoms were analyzed sequentially using the PROCESS Macro in SPSS (Hayes, 2013). This procedure was preferred to the method proposed by Baron and Kenny (1986) because it shows higher power (Hayes, 2013). To exclude possible mediation effects, the PROCESS Macro was used to test indirect effects of traumatic experiences on internalizing and externalizing symptoms mediated by foster parents' stress and parenting. Standard errors were estimated using 1 000 bootstrap samples.

In Publication IV, the main outcomes were therapeutic service utilization and foster parents' perceived need for child therapy. The analytic strategy was based on Andersen's (1995) model of health service use (see section 3.3). According to this model, there are three sets of predictors for therapeutic service utilization that can have independent as well as concurrent effect as a process on help-seeking behavior. The sets of predictors included in the analysis were predisposing factors (child's sex, parents' education, and immigrant background of the child), enabling or inhibiting factors (foster parents' stress, role division problems, social support, partnership, family functioning, and placement characteristics), and need

factors (children's traumatic experiences, PTSD, and further mental health problems). The three sets of predictors were tested in a two-step procedure. First, the best predictors for both outcomes in every set were identified in order to investigate the independent impact of each set on both outcomes (therapeutic service utilization and perceived for therapeutic help). Then, the best predictors of every set were included in a final model that controlled for the effect of the other predictors.

Additionally, a structural equation model build in the statistical program AMOS 24 tested if a theoretical meta-model explaining the foster parents' impact on both children's PTSS and further mental health problems fit the empirical data. Trauma exposure was used as a manifest variable assuming error-free measurement. Children's "PTSD", "Further mental health problems", "Poor foster parents' functioning", and "Dysfunctional parenting" were included in the model as latent variables. Indicators for children's PTSD were the three symptom clusters assessed by the YCPC – "Re-experiencing", "Avoidance and negative alterations in cognitions and mood" (referred as "Avoidance/mood change" in the meta-model), and "Arousal". Indicators for further mental health problems were the broad internalizing and externalizing symptom scales of the SDQ (Goodmann, 2001). Poor foster parents' functioning was operationalized by the scales of the Parental Stress Questionnaire (parents' stress, role restriction, social support, and partnership). The three disciplinary styles assessed by the Parenting Scale – "Overreactivity", "Laxness", and "Verbosity" – were included as indicators for dysfunctional parenting. All associations except between "Poor family functioning" and "Social support" as well as "Partnership" were expected to be positive (Figure 6).

The moderating effect of dysfunctional parenting was analyzed by comparing the influence of parenting separately for trauma-exposed and non-trauma-exposed subsamples. This procedure was recommended by Jaccard, Wan, and Turrisi (1990) for structurally different models, which was the case by excluding PTSD as a variable in the non-trauma-exposed subsample (Figure 3, p. 28). The manifest variables were the same as for the model without the moderating effect parenting (Figure 6). Findings from Publications II and III were used to derive possible modification indices for the theoretical model. They were applied, only if the theoretical meta-model did not fit the empirical data.

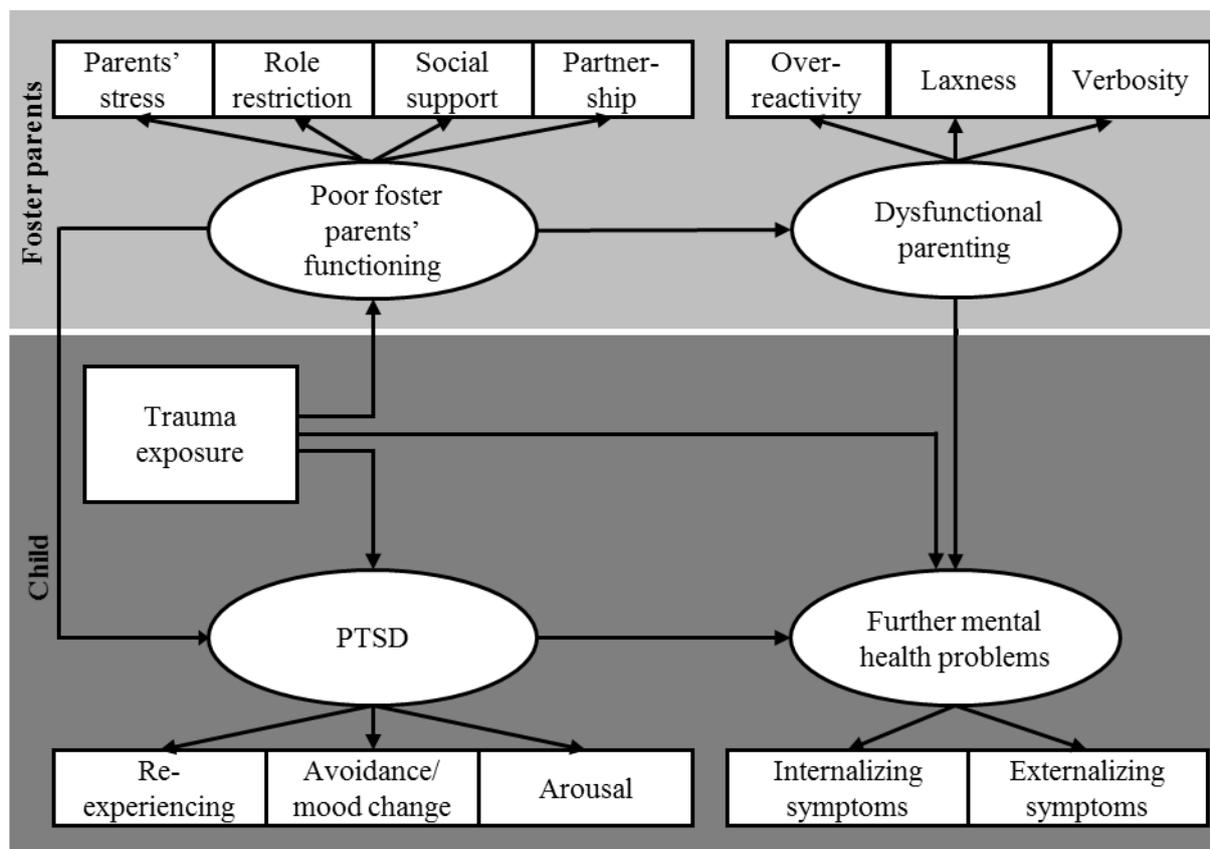


Figure 6. Latent and manifest variables of the theoretical meta-model of the foster parents' impact

Assumptions of multicollinearity and multinormality were considered met when bivariate correlations were smaller than  $r = .85$ , variance inflation factor (VIF) was smaller than 10, and Mardia's test was nonsignificant. The meta-model was evaluated using different classes of fit indexes in order to overcome the limitations of each one:

- (1) Absolute fit indexes testing the discrepancy to a saturated model which implies that the model describes the data perfectly. Such indexes are the likelihood ratio chi-square statistic ( $\chi^2$ ) and the standardized root mean square error of approximation (RMSEA). A nonsignificant chi-square ratio indicates acceptable fit. This index depends strongly on the sample size and is very liberal (i.e., there is great risk for falsely accepting the alternative hypothesis; Ullman, 2013). The normed chi-square ratio was also calculated ( $\chi^2/df$ ). There are no absolute standards for its interpretation. A normed chi-square ratio less than 2 (Ullman, 2013) or even less than 5 (Schumacker & Lomax, 2004) is considered acceptable. Different cut-offs have been proposed for the RMSEA as well. Values of RMSEA of about 0.01, 0.05, and 0.08 can be considered as

excellent, good, and mediocre fit, respectively (MacCallum, Browne, & Sugawara, 1996). Values of RMSEA  $\geq 0.10$  indicate a poor-fitting model (Brown & Cudeck, 1993).

- (2) Incremental fit indexes describing the proportional increase in the fit compared to a null model in which the variables vary but do not correlate. Widely used incremental fit indexes are the nonnormed fit index, also called the Tucker-Lewis index (TLI), and the comparative fit index (CFI). Values of TLI and CFI greater than .90 have been suggested as acceptable with values greater than .95 indicating good fit (Hu & Bentler, 1999).

The regression coefficients were estimated using the maximum likelihood estimation method. If the assumption of multinormality was not satisfied, the chi-square fit index was evaluated using the Bollen-Stine resampling procedure with 1 000 bootstrap samples in order to control the increased Type I error rate (Bollen & Stine, 1992). The regression coefficients of the imputed data sets were tested for between-variability using multigroup comparison in AMOS.

## 6 Results

### 6.1 Descriptive Statistics

The first part of the result section gives an overview of the status quo in the German foster care system by answering questions about mental health needs in preschool children in foster care and how well these needs are addressed, as well as by describing foster parents' characteristics. The presented results are based on findings of Publications II to IV and additional calculations (Table 4, p. 38).

#### 6.1.1 Children's trauma exposure, PTSD, and further mental health problems

##### *Trauma exposure and PTSD*

Publication II focused on trauma exposure and PTSS in a sample of 324 children. About 45.4% ( $n = 147$ ) children experienced some traumatic event, most commonly physical abuse and hospitalization or invasive medical procedure (22.2%,  $n = 72$  each; Table 5). Furthermore, foster parents reported that 15.7% ( $n = 51$ ) witnessed other person being hurt and 4.6% ( $n = 15$ ) were sexually abused. Hence, most trauma-exposed children experienced interpersonal traumatic events (94.56%,  $n = 138$ ) compared to noninterpersonal ones (60.54%,  $n = 92$ ). Children experienced between one and five – on average  $M = 1.61$  ( $SD = 0.85$ ) – traumatic events.

Table 5

*Traumatic experiences (N = 324; Publication II)*

<b>Traumatic experiences</b>	<b><i>n</i></b>	<b>%</b>
Physical abuse	72	22.2
Hospitalization/invasive medical procedure	72	22.2
Witnessing other person being hurt	51	15.7
Sexual abuse	15	4.6
Attacked by animal	8	2.5
Accidental burning	5	1.5
Others	7	2.2

*Note.* Children can have more than one potentially traumatic experience.

Of the trauma-exposed children, 86.4% ( $n = 127$ ) showed at least one symptom of re-experiencing, 75.5% ( $n = 111$ ) at least one symptom of avoidance, and 88.4% ( $n = 130$ ) at least one symptom of arousal. Only 4.1% ( $n = 6$ ) trauma-exposed children showed no PTSS at all. All three symptom clusters and the overall PTSS were positively skewed, indicating that there were many children with few symptoms; only some children experiencing more severe PTSS. While the distributions of the three symptom clusters were neither normal nor exponential (Kolmogorov-Smirnov  $z$  ranged from 1.55 to 3.96,  $p < .05$ ), the overall PTSS did not significantly differ from the exponential distribution ( $z = 1.32$ ,  $p = .06$ ). As can be seen in Figure 7, avoidance was the most frequent symptom above the clinical cut-off of the YCPC independently from children's age. Figure 7 also depicts a slight nonsignificant increase in all symptom clusters in four- and six-year-old children.

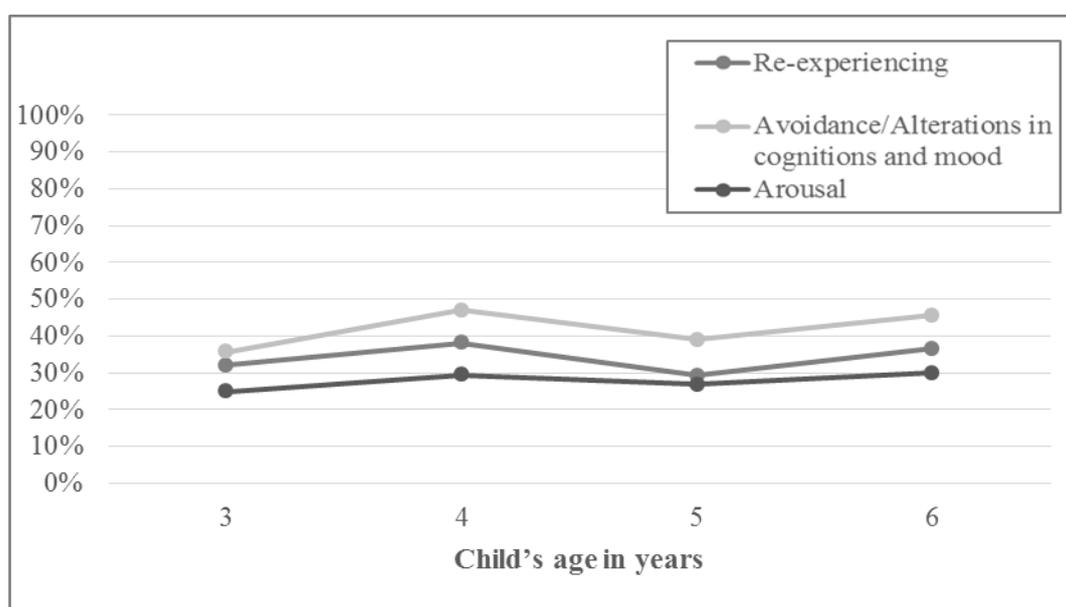


Figure 7. Percentage of children with posttraumatic stress symptoms of clinical relevance at different ages ( $n = 139$ )

Since this is the first sample investigating PTSD in preschool children in foster care, the prevalence was estimated using different diagnostic criteria (see section 5.3). In Publication II, it was reported that 15.4% ( $n = 50$ ) of children had PTSS above the clinical cut-off of the YCPC, while 11.7% ( $n = 38$ ) had PTSD according to the DSM-5 criteria. Additional to these calculations, the rates of PTSD according to the proposed ICD-11 and the overlap in rates using different criteria are presented in this contribution. In the sample selected for Publication II, 7.1% ( $n = 23$ ) had PTSD according to the proposed ICD-11 symptom combination.

Figure 8 displays the overlap in the diagnoses for trauma-exposed children. The DSM-5 and the proposed ICD-11 criteria overlapped in 81.63% of the cases ( $\kappa = 0.45$ , McNemar's  $\chi^2 = 7.25$ ,  $df = 1$ ,  $p = .007$ ). The overlap between the DSM-5 criteria and the YCPC cut-off constituted 85.03% ( $\kappa = 0.65$ , McNemar's  $\chi^2(1) = 5.50$ ,  $p = .019$ ). Finally, using the proposed ICD-11 criteria and the YCPC cut-off resulted in 80.3% overlapping ratings ( $\kappa = 0.49$ , McNemar's  $\chi^2 = 23.31$ ,  $df = 1$ ,  $p < .001$ ). All McNemar's chi-square tests were significant, indicating marginal heterogeneity. In other words, the total of diagnosed children using one of the diagnostic criteria differed to the total of diagnosed children using the other diagnostic criteria. The analog assumption can be driven for the total of nondiagnosed children.

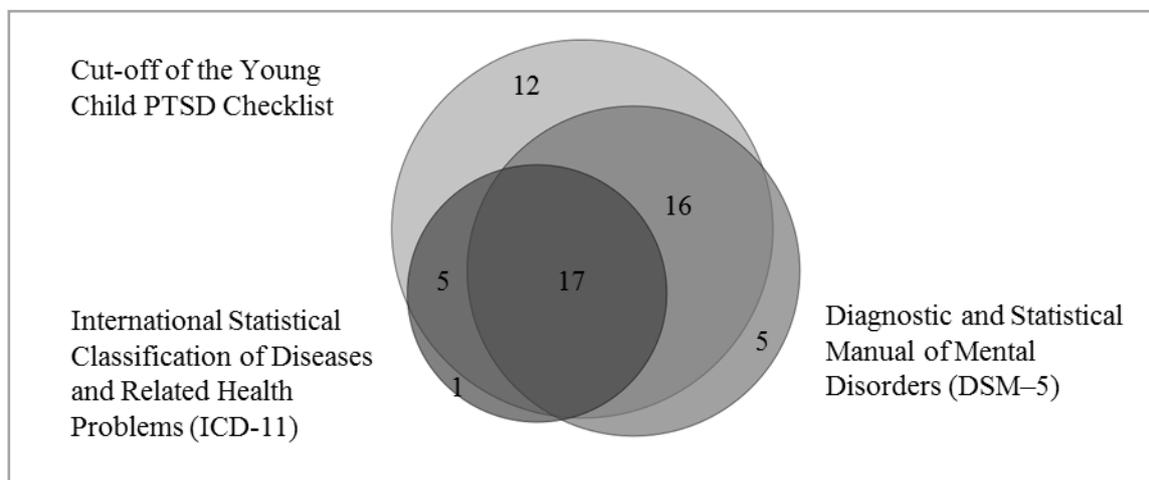


Figure 8. Number of trauma-exposed children ( $n = 149$ ) with overlapped PTSD diagnoses

In order to untangle the significant discrepancies between the DSM-5 and the proposed ICD-11 criteria, the main difference between the two diagnostic systems was considered. Namely, ICD-11 focusses on the three main symptom clusters, while DSM-5 includes symptoms of negative alterations in cognitions and mood together with symptoms of avoidance in a joint cluster (see section 2.2.1). Excluding symptoms of negative alterations in cognitions and mood from the DSM-5 algorithm resulted in an overlap in 91.8% of the ratings between the DSM-5 and the proposed ICD-11 criteria ( $\kappa = 0.72$ , McNemar's  $\chi^2 = 2.08$ ,  $df = 1$ ,  $p = .149$ ).

Furthermore, Publication II investigated the impact of foster parents' confidence to answer questions about their children. In total, 17% ( $n = 55$ ) of parents felt unconfident to rate the trauma exposure and mental health of their children. There were weak indices that these parents tended to overestimate their children's PTSS. They reported slightly higher means of re-experiencing and function impairment and more frequently rated their child as having

symptoms of avoidance and negative alterations in cognitions and mood of clinical relevance. However, there were no differences in PTSD diagnoses using ratings of foster parents who felt they did not have sufficient information about the child compared to foster parents who felt confident in the information they had.

### *Further mental health problems*

In Publication III, further mental health problems in children in foster care ( $N = 286$ ) were described. Most common problems were conduct problems and hyperactivity/inattention (Table 6). Trauma-exposed children had more problems in all domains (emotional problems:  $\chi^2 = 17.93$ ,  $df = 1$ ,  $p < .001$ ; conduct problems:  $\chi^2 = 16.72$ ,  $df = 1$ ,  $p < .001$ ; hyperactivity/inattention:  $\chi^2 = 14.82$ ,  $df = 1$ ,  $p < .001$ ; peer relationship problems:  $\chi^2 = 15.97$ ,  $df = 1$ ,  $p < .001$ ).

Table 6

### *Mental health problems and comorbidity of PTSD ( $N = 286$ )*

Mental health problem <sup>a</sup>		<i>n</i> (%)	Comorbid PTSD <sup>b</sup>
			<i>n</i> (%)
Emotional symptoms			
Trauma exposure	No ( $n = 149$ )	21 (14.1)	
	Yes ( $n = 137$ )	49 (35.8) <sup>***</sup>	32 (65.3)
	All	70 (24.5)	32 (45.7)
Conduct symptoms			
Trauma exposure	No ( $n = 149$ )	51 (34.2)	
	Yes ( $n = 137$ )	80 (58.4) <sup>***</sup>	39 (48.8)
	All	132 (46.2)	39 (29.6)
Hyperactivity/inattention			
Trauma exposure	No ( $n = 149$ )	36 (24.2)	
	Yes ( $n = 137$ )	63 (46.0) <sup>***</sup>	36 (57.1)
	All	99 (34.6)	36 (36.4)
Peer relationship problems			
Trauma exposure	No ( $n = 149$ )	26 (17.5)	
	Yes ( $n = 137$ )	53 (38.7) <sup>***</sup>	30 (56.6)
	All	78 (27.3)	30 (38.5)

*Note.* PTSD = Posttraumatic stress disorder. Differences to Publication III are due to sample selection.

<sup>a</sup> According to the cut-off of the Strengths and Difficulties Questionnaire

<sup>b</sup> According to the cut-off of the Young Child PTSD Checklist

<sup>\*\*\*</sup>  $p < .001$

Approximately half of the children who experienced a traumatic event and showed a specific abnormal mental health problem experienced PTSS above the clinical cut-off of the YCPC. The analysis of comorbidity was restricted to the YCPC cut-off because it showed the greatest sensitivity and might identify children with PTSS who may need help although they do not satisfy all DSM-5 or proposed ICD-11 diagnostic criteria for a PTSD. Emotional problems showed the greatest comorbidity with PTSD with 65% of trauma-exposed children with emotional problems showing PTSS of clinical relevance (Table 6). Looked from a different angle, 94% ( $n = 47$ ) of the children who had PTSS above the clinical cut-off experienced mental health symptoms in at least one of the problem areas. The most frequent comorbid problem were conduct problems in 78% ( $n = 39$ ) of all children with PTSD according to the YCPC cut-off.

Figure 9 depicts specific further mental health problems in children who experienced different trauma types. Conduct symptoms were the most frequent mental health problems in all trauma types. Emotional problems were most frequent in children who witnessed other person being hurt. About 40% to 60% of children with different potentially traumatic experiences showed hyperactivity/inattention problems except of sexually abused children who showed hyperactivity/inattention in 20% of the cases. Hyperactivity/inattention and peer relationship problems were at least common in children who were sexually abused and most common in children who were attacked by an animal.

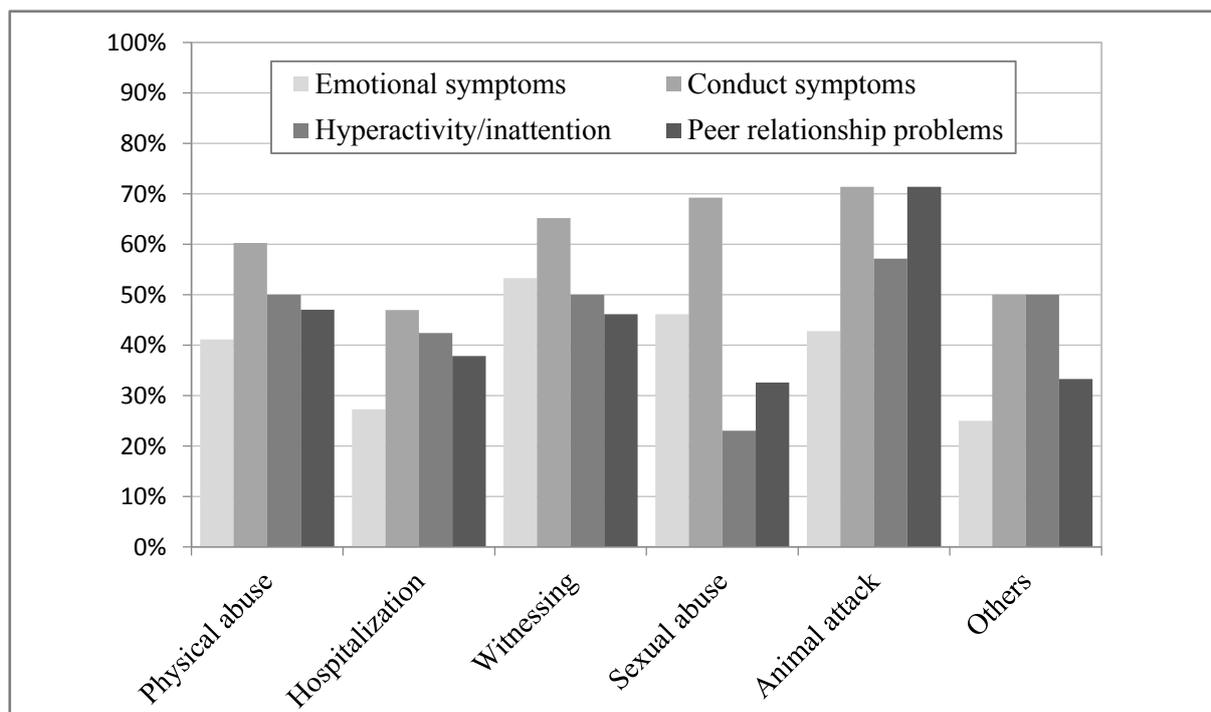


Figure 9. Children's mental health problems by trauma type ( $n = 149$ )

### *Diagnostics and therapeutic service utilization*

Since mental health problems were common in the current sample, it was of interest to what extent their mental health needs were met. Publication IV described that half of foster parents (52%;  $n = 39$ ) in a subsample, who were asked about diagnostics ( $n = 75$ ), reported that their child received mental health diagnostics. All but one diagnostic procedure were conducted by external professionals and not by the child welfare services. Children who received mental health diagnostics were more likely to get therapeutic help ( $\chi^2 = 29.2$ ,  $df = 1$ ,  $p < 0.001$ ).

Publication IV also described that 49.7% ( $n = 88$ ) of children with some mental health problems received therapeutic services. Trauma-exposed children most frequently were in occupational and psychotherapy or trauma therapy. Nearly 40% of foster parents thought their children needed therapeutic help and considered that psychotherapy and trauma therapy would best meet their children's needs.

#### 6.1.2 Foster parent's stress, parenting, and family functioning

Foster parents' characteristics of the current sample were compared to normative data (Table 7, extended results of Publication III). Foster parents showed higher stress levels ( $t = 2.09$ ,  $df = 807$ ,  $p = .036$ ), less role restriction ( $t = -3.75$ ,  $df = 807$ ,  $p < .001$ ), better partnership ( $t = 9.03$ ,  $df = 766$ ,  $p < .001$ ), and better parenting ( $t = 13.78$ ,  $df = 848$ ,  $p < .001$ ) than the normative samples.

A separate look at foster parents of children with and without trauma exposure showed that foster parents' stress levels were higher than the normative sample when fosterer children had experienced traumatic events ( $t = 4.5$ ,  $df = 658$ ,  $p < .001$ ) but not when foster children were not exposed to traumatic events ( $t = 0.91$ ,  $df = 679$ ,  $p = .364$ ). In fact, foster parents of trauma-exposed children reported significantly higher stress levels ( $t = 3.74$ ,  $df = 284$ ,  $p < .001$ ) than foster parents of non-trauma-exposed children. Foster parents of trauma-exposed children did not differ from normative data in their reports of role restriction ( $t = -1.66$ ,  $df = 658$ ,  $p > .05$ ) while parents of non-trauma-exposed children showed lower role restriction than the normative data ( $t = -4.27$ ,  $df = 670$ ,  $p < .001$ ).

Additionally, foster parents of trauma-exposed children showed less verbosity as parenting style ( $t = -2.25$ ,  $df = 284$ ,  $p = .025$ ) than foster parents of non-trauma-exposed children. Other foster parents' characteristics were not associated with children's trauma exposure.

Table 7

*Foster parents' characteristics in the current sample compared to normative data*

Variable	Normative Data	Current sample		
	<i>M (SD)</i>	All ( <i>N</i> = 286)	Trauma-exposed sample ( <i>n</i> = 137)	Non-trauma-exposed sample ( <i>n</i> = 149)
Foster parents' stress	16.2 (8.9) <sup>b</sup>	17.7 (11.1) <sup>*</sup>	20.2 (10.4) <sup>***</sup>	15.4 (11.3)
Role restriction	10.2 (5.0) <sup>b</sup>	8.8 (5.2) <sup>***</sup>	9.4 (5.1)	8.2 (5.2) <sup>***</sup>
Social support	12.2 (4.6) <sup>b</sup>	11.8 (4.7)	11.7 (4.5)	11.9 (4.9)
Partnership <sup>a</sup>	14.1 (4.8) <sup>b</sup>	17.0 (3.3) <sup>***</sup>	16.8 (3.2) <sup>***</sup>	17.2 (3.4) <sup>***</sup>
Parenting				
Overreactivity	3.3 (0.8) <sup>c</sup>	2.8 (0.9) <sup>***</sup>	2.7 (0.9) <sup>***</sup>	2.8 (0.9) <sup>***</sup>
Verbosity	4.5 (1.0) <sup>c</sup>	3.7 (1.1) <sup>***</sup>	3.5 (1.0) <sup>***</sup>	3.8 (1.1) <sup>***</sup>
Laxness	2.5 (0.8) <sup>c</sup>	2.1 (0.7) <sup>***</sup>	2.1 (0.7) <sup>***</sup>	2.1 (0.7) <sup>***</sup>
Total score	3.3 (0.6) <sup>c</sup>	2.7 (0.6) <sup>***</sup>	2.7 (0.6) <sup>***</sup>	2.8 (0.6) <sup>***</sup>
Family functioning <sup>d</sup>	3.2 <sup>d,e</sup>	3.6 (0.3) <sup>e</sup>	3.6 (0.3) <sup>e</sup>	3.6 (0.3) <sup>e</sup>

*Note.* Normative data were used as reference in the statistical tests.

<sup>a</sup> Size of the current sample for the scale "Partnership": *n* = 282, trauma-exposed sample: *n* = 136, non-trauma-exposed sample: *n* = 146

<sup>b</sup> Domsch and Lohaus (2010), *N* = 523, *N* = 482 for the scale "Partnership"

<sup>c</sup> Miller (2001), *N* = 559 for the scales, *N* = 564 for the total score

<sup>d</sup> Boterhoven de Haan et al. (2015), *N* = 1 266; mean was recoded in order to have the same direction as the current sample

<sup>e</sup> Information about the standard deviation was missing; no *t* test was conducted

<sup>\*</sup> *p* < .05, <sup>\*\*\*</sup> *p* < .001

## 6.2 Impact of foster parents on child outcomes following trauma exposure

### 6.2.1 Impact on posttraumatic stress symptoms (Publication II)

Publication II examined the effect of foster parents' characteristics particularly on PTSS of trauma-exposed children (*n* = 147). High levels of foster parents' stress, dysfunctional parenting, and poor family functioning as well as more contacts with the biological parents, early age at first placement, longer duration of current care, and many placement changes were expected to predict higher PTSS scores.

Comparing all possible regression models indicated a five-predictor model that best predicted the outcome ( $R^2 = .34$ , root mean square = 12.66). In this model, several trauma types were associated with more or less severe PTSS: physical abuse ( $b = 10.54$ ,  $SE = 2.23$ ,  $p < .001$ ) predicted higher PTSS scores, hospitalization or invasive medical procedure ( $b = -5.41$ ,  $SE = 2.43$ ,  $p = .015$ ) and witnessing another person being hurt ( $b = -5.02$ ,

$SE = -5.02, p = .033$ ) predicted lower PTSS scores. Foster parents' characteristics associated with children's PTSS severity were high parents' stress levels ( $b = 0.65, SD = 0.12, p < .001$ ) and more dysfunctional parenting ( $b = -0.17, SE = 0.07, p = .028$ ). Foster family functioning had effect neither as a single predictor nor in improving the predictive power of the regression model. The effect of dysfunctional parenting, that was nearly zero in the single predictor analysis ( $r = -.05, p > .05$ ), was associated with less severe PTSS in the multiple predictor analysis. Additional analyses aiming at untangling this change in the association indicated a possible suppression effect of the variable "Parents' stress" on the association between the variable "Parenting" and children's PTSS. In other words, the variable "Parenting" was a significant predictor only in the presence of the variable "Foster parents' stress" in the model. If foster parents' stress and the other variables in the five-predictor model were set constant, more dysfunctional parenting scores predicted less PTSS (partial  $r = -.18$ ).

### 6.2.2 Impact on further mental health problems (Publication III)

Publication III tested the moderating and mediating models describing the impact of caregivers' characteristics on children's mental health following trauma exposure. The study tested the hypothesis that foster parents' stress and parenting moderate the impact of trauma exposure on children's internalizing and externalizing symptoms. No mediation effect was expected (see section 4).

As opposed to the initial hypothesis, parents' stress partly mediated the association between trauma exposure and both internalizing and externalizing symptoms (Figure 10). As expected, laxness and verbosity as parenting styles significantly moderated the effect of trauma exposure on children's externalizing but not on internalizing symptoms. The interaction effects ( $b = -0.19, SE = 0.09, p = .042$ , for verbosity and  $b = -0.19, SE = .09, p = .026$ , for laxness) increased 1% of the explained variance of externalizing symptoms. However, the effects were in the opposite direction than expected. While in non-trauma-exposed children, higher scores in the scales "Verbosity" and "Laxness" were associated with more severe externalizing symptoms, in trauma-exposed children, higher scores in the aforementioned scales corresponded to less severe externalizing symptoms.

Furthermore, overreactivity had a direct effect on both internalizing and externalizing symptoms independently of children's traumatic experiences with higher scores in the scale "Overreactivity" predicting less mental health problems. Overreactivity acted neither as a moderator nor as a mediator of the effect of trauma exposure.

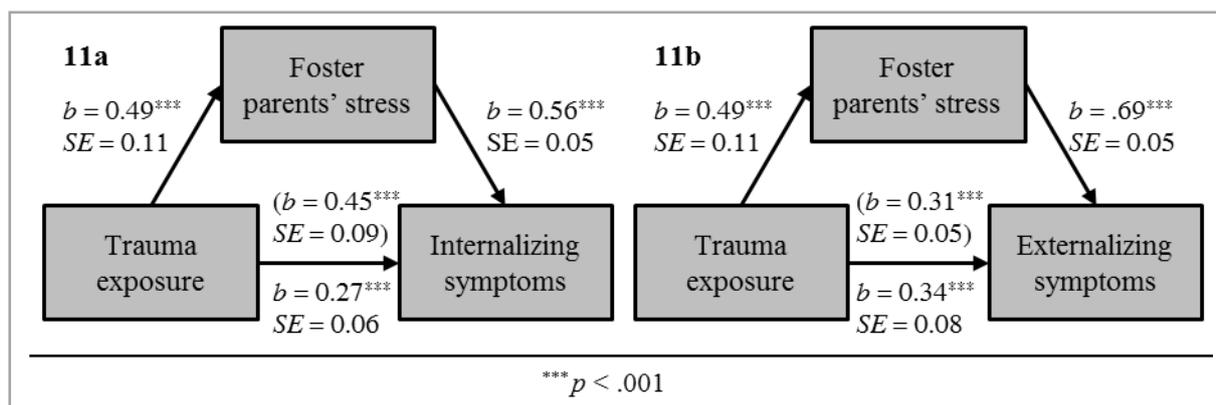


Figure 10. Direct (in brackets) and indirect effects of trauma exposure on internalizing (10a) and externalizing symptoms (10b) through foster parents' stress ( $N = 286$ )

### 6.2.3 Impact on therapeutic service utilization (Publication IV)

Publication IV investigated the impact of trauma- and child-related predictors, organizational predictors, and foster parents' characteristics on children's therapeutic service utilization and the perceived need for foster parents for therapeutic help for their children. In this section, the results about the impact of foster parents' characteristics on therapeutic service utilization in trauma-exposed children ( $n = 137$ ) will be presented.

When analyzing the subset of enabling factors, parents' stress was associated with six times higher odds for therapeutic service utilization ( $b = 1.86$ ,  $p < .001$ , OR = 6.41) and four times higher odds for foster parents perceived need for further help for the child ( $b = 1.44$ ,  $p < .001$ , OR = 4.23). Other foster parents' characteristics (i.e., role restriction, social support, partnership, and family functioning) did not determine the likelihood that children received therapeutic services or that foster parents perceived greater need for therapy for their children. When controlling for mental health needs of trauma-exposed children, foster parents' stress remained significant only in the predictive model of perceived need for therapeutic help ( $b = 1.08$ ,  $p = .01$ , OR = 2.95) but not in the predictive model of therapeutic service utilization ( $b = 0.98$ ,  $p > .05$ , OR = 2.65).

### 6.2.4 Summary and implications of the findings

The results of Publications II to IV conclusively supported the impact of foster parents' stress for all investigated outcomes – PTSS, further mental health problems, and therapeutic service utilization. There were inconsistent results concerning parenting. Parenting was not associated with children's PTSS unless foster parents' stress was included in the statistical model, indicating that the effect of parenting was probably suppressed by the

variable “Parents’ stress”. Publication III showed that overreactivity as parenting style was associated with internalizing and externalizing symptoms while verbosity and laxness moderated the effect of traumatic experiences of the child. All three facets of parenting improved the predictive models of mental health problems almost negligible ( $\Delta R^2 \leq 1\%$ ). These results imply that the effect of parenting should be critically examined, when testing the integrative meta-model of the foster parents’ impact. Therefore, in case of poor fit of the theoretical integrative meta-model, it was modified by excluding parenting in disciplinary situations in order to improve the model fit.

### 6.3 An integrative meta-model of the foster parents’ impact

#### 6.3.1 Testing the theoretical meta-model

##### *Bivariate correlations*

Prior to testing the model, bivariate correlations of the variables of interest were analyzed (Table 8). As expected, trauma exposure correlated significantly with all children’s outcomes ( $.31 \leq r \leq .53, p < .001$ ) and with parent’s stress ( $r = .22, p < .001$ ) but not with other determinants of parents’ functioning. While all indicators of foster parents’ functioning were associated with children’s outcomes, only overreactivity as parenting style correlated with internalizing and externalizing symptoms of the child ( $r = .15, p = .01, r = .17, p = .005$ , respectively). Children’s PTSS and further mental health problems also correlated positively ( $.31 \leq r \leq .60, p < .001$ ).

##### *Assumptions*

In order to test multicollinearity, the correlation matrix of all variables in the model was first screened (Table 8). The highest correlation was calculated between the variables “Avoidance/mood change” and “Arousal” ( $r = 0.80$ ) indicating no violation of the multicollinearity assumption (all  $r < .85$ ). The values of the VIF varied between 1.43 (for “Trauma exposure”) and 3.21 (for “Foster parents’ stress”) which also implied no multicollinearity that could jeopardize the model estimates. Mardia’s critical ratio was greater than the critical value of 1.96, indicating that the assumption of multinormality was violated ( $z = 9.56$ ). However, all variables had kurtosis greater than seven and only the PTSS “Avoidance/mood change” had skewness just above the cut-off of 2 (skewness = 2.22) proposed by West, Finch, and Curran (1995) in order to adapt the maximum likelihood estimation procedure with samples greater than 100. Therefore, the maximum likelihood

estimation method was applied in the current analysis but was controlled through the Bollen-Stine procedure.

### *Model Fit*

The chi-square statistic was significant ( $\chi^2 = 217.72$ ,  $df = 59$ ,  $p < .001$ ), even when controlled for nonnormality through the Bollen-Stine bootstrapping procedure ( $p = .001$ ). The normed chi-square ratio lay within the liberal range for acceptable fit, proposed by Schumacker and Lomax (2004). However, the RMSEA = 0.10 and both incremental fit indexes (TLI = 0.87, CFI = 0.90) indicated poor fit of the theoretical meta-model.

### *Model parameters*

The only nonsignificant regression coefficients in the path analysis were between the manifest variable “Trauma exposure” and the latent variable “Further mental health problems” as well as between the latent variable “Dysfunctional parenting” and the manifest indicator “Verbosity”. All other regression coefficients were significant ( $p < .05$ ) and conform to the hypothesized model specification. However, Brown and Moore (2012) pointed out that, in the context of poor fit, models estimates could be biased and should not be interpreted. Furthermore, the standardized beta coefficient between the latent variables “Poor foster parents’ functioning” and “Dysfunctional parenting” and the explained variance of the latent variable “Dysfunctional parenting” were greater than one ( $\beta = 1.13$ ,  $R^2 = 1.12$ ) which points to multicollinearity. Even though the preliminary testing of assumptions indicated no severe violations of the multicollinearity, it should be considered that multicollinearity could strongly bias the parameter estimates (Ullman, 2013).

There were no differences in the regression coefficients between the multiple imputations ( $p > .05$ ).

Table 8  
*Pearson's correlations of model variables (N = 283)*

Variable	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Trauma exposure <sup>a</sup>	0.48	0.50	-												
2. Re-experiencing	3.34	4.48	.53***	-											
3. Avoidance/mood change	2.31	3.81	.44***	.80***	-										
4. Arousal	3.81	4.78	.53***	.80***	.75***	-									
5. Internalizing symptoms	5.27	3.93	.36***	.60***	.55***	.57***	-								
6. Externalizing symptoms	9.06	4.53	.31***	.42***	.35***	.52***	.60***	-							
7. Parents' stress	17.74	11.19	.22**	.35***	.30***	.36***	.58***	.65***	-						
8. Role restriction	8.82	5.19	.12	.20**	.17**	.22***	.32***	.42***	.61***	-					
9. Social support	11.76	4.70	-.02	-.09	-.12	-.14*	-.18**	-.26***	-.17**	-.28***	-				
10. Partnership	17.00	3.31	-.06	-.09	-.07	-.09	-.22***	-.22***	-.46***	-.44***	.07	-			
11. Overreactivity	24.80	7.58	-.04	-.02	.01	-.01	.15*	.17**	.48***	.35***	-.05	-.41***	-		
12. Laxness	23.14	7.26	-.02	-.001	-.03	-.02	.11	.08	.20**	.05	-.04	-.27***	.34***	-	
13. Verbosity	21.91	6.57	-.13*	-.09	-.06	-.09	-.09	-.03	.01	.03	-.11	-.08	.19**	.34***	-

<sup>a</sup> Dichotomous variable

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

### *Interaction between trauma exposure and parenting*

In order to test the interaction between trauma exposure and parenting, models with slightly different structure (see section 5.3; Figure 3, p. 28) were tested separately with trauma-exposed and non-trauma-exposed children. Dysfunctional parenting had a significant effect on children's mental health problems in the non-trauma-exposed subsample ( $\beta = .67$ ,  $p < .001$ ) and no effect in the trauma-exposed subsample ( $\beta = .29$ ,  $p = .05$ ). However, both models had poor fit which could bias the estimation of model parameters (non-trauma-exposed subsample:  $\chi^2 = 78.93$ ,  $df = 25$ ,  $p < .001$ , RMSEA = 0.12, TLI = 0.79, CFI = 0.85; trauma-exposed subsample:  $\chi^2 = 148.41$ ,  $df = 50$ ,  $p < .001$ , RMSEA = 0.12, TLI = 0.79, CFI = 0.84).

### 6.3.2 Testing a modified meta-model

Since the theoretical meta-model showed poor fit of the empirical data, results of the outcome-specific analyses were used to modify it (see section 6.2.4). Hence, a modified meta-model excluding the latent variable "Dysfunctional parenting" was tested.

#### *Assumptions*

Additional to the screening of the correlations (see section 6.3.1) that revealed no severe violation of the assumption for multicollinearity, the scores of VIF for the modified meta-model without parenting were investigated. All VIF were smaller than 3 with the highest values of "Arousal" (VIF = 2.98) and "Foster parents' stress" (VIF = 2.78). These values were within the acceptable tolerance for multicollinearity.

The normality assumption was not met by the current data (Mardia's  $z = 11.82$ ). Therefore, the Bollen-Stine procedure was applied for this model as well.

#### *Model Fit*

The chi-square ratio was significant ( $\chi^2 = 94.89$ ,  $df = 30$ ,  $p < .001$ , Bollen-Stine  $p = .001$ ). However, the normed chi-square ratio and the RMSEA were in the acceptable range ( $\chi^2/df = 3.16$ ; RMSEA = 0.09). The incremental fit indexes also indicated acceptable fit with the CFI having a value above the threshold for good fit (TLI = 0.93; CFI = 0.95). Considering that complex models often have too large and significant chi-square ratios (Kenny & McCoach, 2003), it could be assumed that the modified meta-model had an acceptable fit allowing to interpret the model parameters.

### Model Parameters

The standardized parameter estimates are displayed in Figure 11. For most latent variables, there was significant moderate to strong association with the corresponding manifest variables ( $0.21 \leq |\beta| \leq 0.96$ ). The smallest standardized coefficient and the only one significant at level  $p = .002$  (all other  $p < .001$ ) was calculated for “Social support” as an indicator for “Poor Foster parents’ functioning”. Hence, being well socially integrated and receiving social support, was the weakest determinant of foster parents’ functioning.

All expected associations, including all latent variables and the manifest variable “Trauma exposure”, were significant in the expected direction at level  $p < .001$  except the association between “Trauma exposure” and “Further mental health problems” of the child ( $\beta = 0.02$ ,  $p = 0.751$ ). Hence, PTSS and foster parents’ stress fully mediated the effect of trauma exposure on further mental health problems. The standardized indirect effect of trauma exposure on internalizing symptoms was  $\beta = 0.35$  and on externalizing symptoms was  $\beta = 0.33$ . Furthermore, trauma exposure had rather a direct effect ( $\beta = 0.51$ ) on PTSD than an indirect one ( $\beta = 0.06$ ). The model explained 40% of the variance of PTSS and 87% of the variance of further mental health problems. Regression coefficients did not differ between the multiple imputations ( $p > .05$ ).

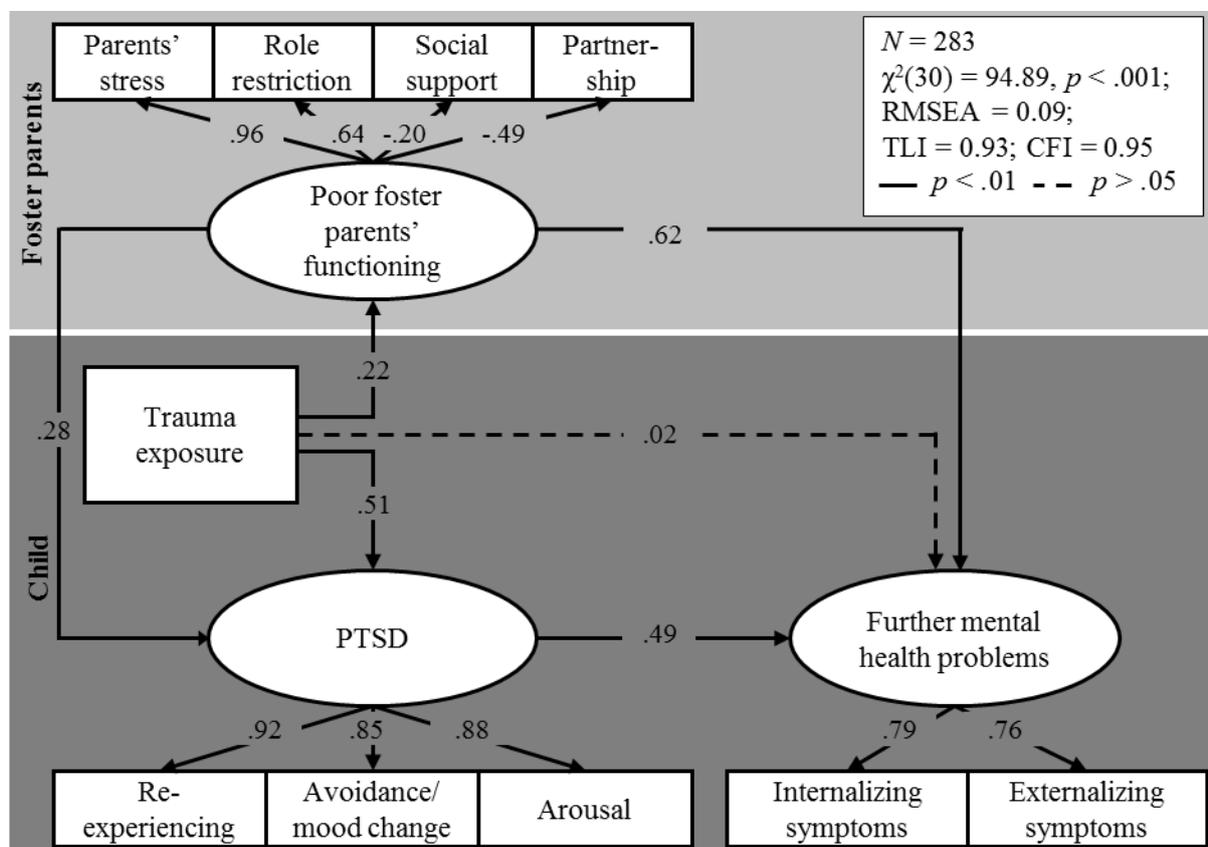


Figure 11. Modified meta-model of the foster parent's impact with standardized path coefficients

## 7 Discussion

The overarching aim of the current research project was to investigate how foster parents influence preschool children in the aftermath of trauma exposure considering three domains – PTSS (Publication II), further mental health problems (Publication III), and therapeutic service utilization (Publication IV). It gives first insights in the frequency, distribution, and predictors of PTSS in preschool children in foster care in Germany. The findings show that nearly every second preschool child in foster care had experienced a potentially traumatic event and about one third of trauma-exposed children showed PTSS of clinical relevance. High levels of foster parents' stress were associated with more severe PTSS, further mental health problems, and higher perceived need for therapeutic help for the child, even when controlling for the effect of trauma exposure and placement characteristics. The research findings gave no support for the influence of foster family functioning on PTSS or on therapeutic service utilization. They were also inconsistent about parenting practices in disciplinary situations: Dysfunctional parenting was not associated with PTSS and internalizing symptoms, showed, however, some evidence for small moderating effects of lax parenting and verbosity on the effect of trauma exposure on children's externalizing symptoms. In fact, a final meta-model of the impact of foster parents on both PTSS and further mental health problems reached an acceptable fit in the absence of the construct "Parenting".

### 7.1 Children's trauma exposure, PTSD, and further mental health problems

#### *Trauma exposure*

The rates of children exposed to a traumatic event (45.5%) in the current sample were low compared to rates of self-reported trauma exposure in a relative small sample of older children and adolescents in foster care in Germany (91.7%; Rosner, Arnold, Groh, & Hagl, 2012). The rates of the specific traumatic experiences physical (22.2%) and sexual abuse (4.6%) were also lower than in another sample of preschool children in foster care in Germany (Lang, 2014). In the latter reference sample, physical (34.5%) and sexual abuse (14.5%) were assessed through foster parents' reports combined with case reports by the child welfare agencies. There was no information about other types of traumatic experiences as defined by DSM-5 that could be compared to the current data. The lower rates in the current sample could be the result of the assessment strategy solely using foster parents' reports. Foster parents often do not receive all the information about the child's biography by the

welfare agencies and information is sometimes getting lost when the child's residence or the responsible agencies change frequently (Oswald & Goldbeck, 2009).

### *PTSD*

The prevalence of PTSD was estimated at 15.4% using the cut-off of the screening YCPC, at 11.7% using the DSM-5 criteria, and at 7.1% using the proposed ICD-11 criteria. The YCPC is a screening instrument assessing PTSS on a dimensional level; it does not consider symptom combination and functional impairment which increases the sensitivity and decreases the specificity of this instrument. Screenings are used in the clinical practice to identify suspected PTSD cases that have to receive additional diagnostics through, for instance, a structured clinical interview. If false positive cases of PTSD can be clarified in the additional diagnostics with more specific clinical interviews, it is useful to apply a screening such as the YCPC, which is more sensitive. It is, however not sufficient as a single diagnostic instrument.

Using the DSM-5 and ICD-11 criteria to estimate the rate of suspected PTSD constitutes a simulation of the diagnostic algorithms. The findings showed that in this simulations, applying the proposed ICD-11 criteria resulted in half as many positive cases as the DSM-5 criteria. Danzi and La Greca (2016) found the opposite tendency in school-age children. Here it should be considered that the DSM-5 combination of criteria for older children and adults is stricter than the combination for children 6 years old and younger (see section 2.2.1). One of the main differences of DSM-5 and ICD-11 can be found in the avoidance cluster, which is expanded in DSM-5 by adding symptoms of negative alterations in cognitions and mood. In other words, the impact of symptoms of avoidance for the DSM-5 diagnosis is diminished, considering difficulties when detecting symptoms of avoidance in preschool children. In fact, the current results showed that the DSM-5 algorithm without these additional symptoms does not differ from the proposed ICD-11 criteria in differentiating between PTSD and no PTSD diagnosis. Hence, the DSM-5 criteria are more sensitive towards symptom manifestation in preschool children. On the other hand, the DSM-5 is less specific than the proposed ICD-11.

The sensitivity and specificity of diagnostic criteria have interpersonal, social, and economic consequences. For example, adults with PTSD who receive psychiatric treatment cause greater health care expenses than adults with PTSD who do not receive treatment. However, the total economic costs, including loss of earning capacity, are greater for individuals with PTSD who have not been treated (Chan, Air & McFarlane, 2003). While for

adults lack of sensitivity constitutes a main concern because it could lead to financial support of therapies that were not actually needed, for preschool children, there are rather concerns about the lack of sensitivity of the PTSD diagnosis (Scheeringa, 2011). More sensitive symptom criteria and assessment instruments are needed for young children because of the difficulties in recognizing internalizing symptoms (see section 2.2) and considering the unfavorable course of psychopathology following trauma exposure in early childhood (Kessler et al., 2010). Another argument for using more sensitive than more specific criteria is that only 4.1% of the current sample showed no PTSS following a traumatic event. In other words, there are children who may not fully fulfill concrete diagnostic criteria and symptom combination but still suffer from the consequences of trauma exposure. These findings give reason for the ICD-11 committee to consider the peculiarities of preschool children when defining diagnostic criteria for PTSD.

Furthermore, greater sensitivity of diagnostic instruments for PTSD in preschool children is necessary in the context of foster care because the informants (foster or biological parents) may lack information. Especially for diagnosing PTSD, it is important to compare children's behavior before and after the traumatic event (APA, 2013). Foster parents often did not know the child before the traumatic event as the potentially traumatic experience is in many cases the reason for children being placed out of their homes. And still, they are the current caregivers spending most of the time with the child and can best estimate the child's present behavior and emotional state. On the other hand, biological parents usually have more information to estimate the child's mental health prior to the traumatic event. It is often difficult to use information from the biological parents for PTSD diagnostics since they may not be available at all, may have no or only limited visiting rights, or may lack solicitude for the child. In this sample, for instance, many children had only rare contact with the biological parents. It is, therefore, important to use sensitive instruments and to combine all possible sources of information in every individual case – foster parents' and social workers' estimation, information from the biological parents when available, case reports, mental health records, etc. (Grasso et al., 2009).

On symptom level, the most common symptom cluster above the cut-off of the YCPC was avoidance and negative alterations in cognitions and mood, which was also the symptom cluster with the greatest positive skewness. This means that, although there were more children with no or only slight symptoms of avoidance and negative alterations in cognitions and mood, this cluster had a lower threshold defined by the YCPC than the other symptom clusters. Considering that avoidance symptoms, especially avoidance of reminders of past

trauma, and alterations in cognitions and mood are difficult to be detected by caregivers (Scheeringa, 2011), and that foster parents tend to underestimate such internalizing symptoms (Strijker, van Oijen, & Knot-Dickscheit, 2011), child welfare services should apply screenings and diagnostic instruments with low thresholds of such symptoms.

Furthermore, there was some evidence that PTSD is more common in children who were victims of interpersonal traumatic experiences, such as physical abuse, than in children who experienced noninterpersonal traumatic events, such as hospitalization or invasive medical procedure or who witnessed others being hurt. These results are consistent with the general tendency found in a recent meta-analysis, showing that exposure to interpersonal traumatic experiences is one of the strongest predictors of PTSD in children and adolescents (Alisic et al., 2014). Little is known about the mechanisms behind this association. For older children and adolescents, it is considered that interpersonal traumatic events may lead to maladaptive cognitive appraisals (e.g., a general sense of current threat). Preschool children, however, differ in their self- and world concept; they describe only obvious and less abstract details, tend to estimate things unrealistically positive, and do not generalize (Harter, 1999). There has been so far no empirical evidence if preschool children can develop dysfunctional cognitions that could explain the risk potential of interpersonal traumatic events.

Another possible explanation is that children exposed to interpersonal traumatic events come from environments in which further risk factors (e.g., psychopathology of the biological parents or high levels of community violence) increased the risk for PTSD (Enlow, Blood, & Egeland, 2013). In addition, it should be also considered that the estimation of trauma exposure was based on ratings of foster parents. Although they were instructed that a traumatic event is a life-threatening experience, they could only speculate if the child actually experienced a hospitalization as life-threatening or if the child was present in situations of violence between family members. This might have led to including cases of noninterpersonal traumatic events that were not life-threatening for the child or events that the child did not actually witness.

Considering the expansive developmental changes in the first six years of life, there were no significant differences in the frequency of clinically relevant PTSS across the age groups of three-, four-, five-, and six-year-old children. In contrast, Levendosky et al. (2013) found an increase of symptoms of re-experiencing at the age of 4 and explained it with the increasing memory capacity at this age. In the current project, a nonsignificant tendency of more clinically relevant symptoms of re-experiencing but also of avoidance and negative alterations in cognitions and mood as well as of arousal could be observed in four- and six-

year-old children. Since the time of occurrence of the traumatic event was not controlled, it was not possible to derive information about sensitive periods in which the child's brain is especially vulnerable to the effects of traumatic stress (see Andersen et al., 2008). However, greater number of trauma types was associated with later age at first placement in the current sample (Publication II). Therefore, further studies should explore if there are sensitive phases to place children in foster care in order to diminish the negative impact of multiple trauma exposure.

### *Further mental health problems*

Many trauma-exposed children showed further mental health problems, most commonly conduct problems and hyperactivity/inattention. There was also high comorbidity between clinically relevant PTSS and further mental health problems, especially emotional problems. Theoretical models assume that mental health problems can develop directly as a consequence of trauma exposure or can be mediated by PTSS (see section 2.2.2). In the current sample, there were children with specific mental health problems without PTSS of clinical relevance. These mental health problems might have appeared before the traumatic event, which was not controlled in the study. However, the current findings support the pathway in which PTSS lead to further psychopathology following trauma exposure. First, in the integrative meta-model the association between traumatic experiences and further mental health problems was fully mediated by PTSS. Second, there were only six children who were exposed to a potentially traumatic event but did not show any PTSS at all. Third, PTSS of clinical relevance without further mental health problems was also an exception.

These findings raise the question if the mental health problems are a consequence of PTSS or if they represent the same and not comorbid disorders. Some PTSS described in DSM-5 overlap with symptoms of other disorders. For instance, symptoms of arousal including verbal and physical aggression overlap with the oppositional defiant disorder; or lack of concentration or hypervigilance can be found in the description of PTSD but also of attention deficit hyperactivity disorder (APA, 2013). Considering the latter example, it could be expected that foster parents who report symptoms of hypervigilance and problems with concentration in the YCPC will probably rate their children high in the SDQ scale "Hyperactivity/inattention" as well, which will cause correlation between these two variables. Especially children with early chronic trauma exposure in their families show a bright spectrum of emotional and behavioral problems. In many cases, their symptoms could not be adequately captured by the diagnostic criteria of PTSD. The high comorbidity of PTSS and

further mental health problems in the current sample suggests that the proposed diagnosis of developmental trauma disorder may better describe the mental health needs of trauma-exposed preschool children in foster care (Schmid, Petermann, & Fegert, 2013; van der Kolk, 2005).

## **7.2 Impact of foster parents on child outcomes following trauma exposure**

### *Foster parents' stress*

Foster parents' stress was associated with all three outcomes – PTSS, internalizing and externalizing symptoms, and therapeutic service utilization. Foster parents showed higher stress levels than parents in the general population; the higher the stress levels, the more severe were children's PTSS, internalizing, and externalizing symptoms. The results are in line with the mediating model proposed by Scheeringa and Zeanah (2001) and show that knowing about the traumatic experiences of their foster children can be stressful for foster parents. Highly stressed foster parents are often unavailable when the child needs them and react insensitive towards children's problems which could influence the way children cope with trauma (Dozier et al., 2013). Additionally, Scheeringa et al. (2015) discussed the genetic transmission of stress regulation as an explanation of the association between biological parents' distress and children's PTSS. Such genetic transmission is possible between kinship foster parents and their related children. However, most of the foster parents in the current sample were not related to their children. Therefore, the association can be better explained by an impaired dynamics between child and foster parent. These findings could be adopted to explain the impact of the biological parents as well.

When interpreting these results, it should be considered that the current data were collected in a cross-sectional design. Although theoretical and empirical grounds of the current study assume that foster parents influence their foster children (e.g., Gabler et al., 2014), it is possible that children's behavioral and emotional problems burden foster parents. Most probably, there is a reciprocal relationship between children's and foster parents' variables (Neece, Green, & Baker, 2012), that would make it harder to identify isolated effects in studies.

Foster parents' stress also predicted higher perceived need for therapy for the child, even when controlling for the child's mental health problems. Yet, high foster parents' stress levels did not predict higher therapeutic service utilization in the presence of clinically relevant mental health problems of the child. These findings indicate that, although children with mental health problems receive some therapy, the needs of highly stressed foster parents

stay unmet. Therefore, it is necessary to involve both the preschool child and the foster parents in an effective intervention (Dozier et al., 2006).

### *Parenting*

The effect of parenting in disciplinary situations was inconsistent for the different outcomes – PTSS and further mental health problems – and did not support the expectation that less dysfunctional parenting will help children cope with trauma. The effect of parenting was statistically suppressed by the variable “Foster parents’ stress” in the prediction model of PTSS, had only slight moderating effects in an unexpected direction on externalizing symptoms, and probably caused multicollinearity and poor fit when included in an integrative meta-model predicting both PTSS and further mental health problems.

Foster parents in the current sample showed in general more effective parenting than parents in the general population. In addition, only 10% were classified as using dysfunctional parenting strategies. Therefore, it could be questioned if this variables’ variation was an adequate indicator for more or less dysfunctional parenting. It is possible that foster parents with relatively high scores of the concrete parenting styles still had scores in the normal range compared to the general population.

Even so, for children in foster care who were not exposed to traumatic events, there was the expected positive correlation between more laxness and verbosity as dysfunctional parenting styles and more severe externalizing symptoms of the child. Conversely, trauma-exposed children showed less externalizing symptoms when their parents were lax and discussed the problem behavior for a long time, instead of taking consistent actions. Although these effects were of small magnitude, they show that trauma-exposed children might react differently to parenting styles, assumed to be “positive”. There were signs for a moderating effect in the meta-model as well: The association between dysfunctional parenting and children’s mental health problems was nonsignificant for trauma-exposed children; the association for non-trauma-exposed children was, as expected, significantly positive. Hence, foster parents’ parenting in disciplinary situations may be not as important determinant for the mental health of trauma-exposed preschoolers as for non-trauma-exposed children.

It should be considered that the current study assessed only one dimension of parenting, namely dysfunctional parenting in disciplinary situations. Parenting and the way foster parents can influence their children consists of much more facets. Dozier et al. (2013) described that nurturance and warmth, synchrony in the interaction with the child, stability of care, and commitment are key characteristics of foster parents that promote preschool

children's mental health. Furthermore, providing the sense of security is especially important for trauma-exposed children in out-of-home care (Beierl, 2017). Foster parents who tend to laxness and verbosity, often communicate in a warm way to their children which may buffer the negative effect of their inconsistent parenting in disciplinary situations (Pinquart, 2016). Lang et al. (2016) also showed that high control can be positive for the foster child as long as the foster parents interact in a warm and responsive way with the child. Hence, providing warmth and security may represent needs of higher importance for preschoolers in foster care who were exposed to life-threatening experiences. Further studies should explore if these dimensions of parenting help children in foster care cope with trauma and decrease their PTSS severity.

### *Foster family functioning*

The construct of family functioning showed no effects in this study. The results are in contrast to studies of nonfoster samples that identified poor family functioning as predictor of preschool children's mental health following trauma exposure (Graf et al., 2011; Yeates et al., 2010). There was no sufficient data about the reference sample (Boterhoven de Haan et al., 2015) in order to compare the foster family functioning to the family functioning in the general population. However, the scores of foster parents on the General Functioning Scale ranged between 2.9 and 4 while theoretically scores could range from 1.0 (worst functioning) to 4.0 (best functioning). Therefore, the family functioning in the current sample varied near the theoretically best family functioning score.

Family functioning was also not affected by children's trauma exposure in contrast to family functioning in nonfoster samples (McFarlane, 1987a; Meiser-Stedman et al., 2006). Hence, foster families show stable family functioning when a child with mental health consequences of trauma exposure enters their home. The high functioning of the foster family as a system can be used as a resource when treating problems of single family members.

Studies of nonfoster samples reporting effects of family functioning on children's PTSS investigated changes in the family functioning after a traumatic experience of the child (McFarlane, 1987b; Meiser-Stedman et al., 2006). Most of the foster parents in the current sample were not related to the child and did not know the child before the traumatic event. In this context, the foster family functioning did not differ between trauma-exposed and non-trauma-exposed children. For foster samples, it is rather of interest, if the family functioning changes after hosting a foster child in the family and how this affects children's mental health following trauma exposure.

It is also possible that for preschool children the pairwise relationships with family members, especially with the primary caregiver, are more important than the functioning of the family as a system. Dozier et al. (2006), for instance, showed that an intervention including only the foster mother and the preschool child aiming at improving their interaction was sufficient to promote child's mental health. Furthermore, the MacMaster Model of Family Functioning includes behavior and communication of the family as a system regarding emotion-related but also financial problems (Epstein et al., 1983). Preschool children may be less involved in the problem solving of such issues than older children and adolescents. Despite of this, higher family functioning was associated with lower stress levels and more functional parenting of the foster parents (Publication II). Therefore, it is possible that family functioning acted as a buffer against foster parents' stress and had an indirect effect on preschoolers' mental health.

### **7.3 An integrative meta-model of the foster parents' impact**

The current results support a meta-model of the foster parents' impact integrating for the first time theories about

- the relationship of PTSS and further mental health problems following trauma exposure (De Bellis et al., 2013),
- the determinants of parenting (Belsky, 1980), and
- the relational impact of caregivers on children's mental health following trauma exposure (Scheeringa & Zeanah, 2001).

The meta-model gives evidence for a complex association between foster parents' characteristics and foster children's mental health following a traumatic event. It shows that preschool children in foster care still show mental health consequences of their traumatic experiences, even when placed out of their biological families. Furthermore, the meta-model supports the hypothesis that poor foster parents' psychosocial functioning affects the way children cope with these consequences. The integrative meta-model also gives insights into possible intervention aims for preschool children in foster care. First, the findings support the hypothesis that PTSS lead to further mental health problems; therefore, a trauma-focused intervention may reduce further emotional and behavioral symptoms (Salloum, Scheeringa, Cohen, & Storch, 2014). Second, foster parents should be part of such interventions; improving the way they cope with stress as a consequence of external factors (e.g., role restriction) as well as of their responsibility as caregivers will help them provide a better environment for the child to cope with the consequences of trauma exposure.

The model reached an acceptable fit after excluding the variable “Dysfunctional parenting”. Belsky (1980) underlined that there should be concrete, observable parenting behavior that describes the mechanisms connecting foster parents’ functioning and children’s mental health following a traumatic event. As already discussed (section 7.2), parenting in disciplinary situations was not suitable to describe precisely how foster parents influence the way foster children cope with trauma. The findings leave the question still open, which concrete parenting behavior might be relevant for trauma-exposed preschool children in foster care; this should be addressed in further research.

#### **7.4 Limitations**

The recruitment strategy aimed at disseminating the information about the study to all foster parents that fulfilled the inclusion criteria. However, foster care agencies decided voluntarily to route the information through to the foster parents. Additionally, participation was voluntary for the foster parents as well. Therefore, there could be selective effects. Compared to data of the Federal Statistical Office, migration background and kinship foster care were underestimated in the current sample. It is possible that, foster parents who were overwhelmed by high stress levels and severe problems of the child did not have the time to participate.

The cross-sectional study design hampered concluding causality of study variables. The findings give support for the hypotheses based on previous longitudinal studies that foster parents influence their foster children’s mental health (e.g., Gabler et al., 2014). However, the association between, for instance, foster parents’ stress and children’s PTSS could also be the result of the influence of children’s emotional and behavioral problems on their foster parents.

Furthermore, information about children was assessed by foster parents’ ratings due to the limited language capacities of preschool children. Foster parents may lack information about traumatic experiences of the child; they can only speculate if and to what extent children’s symptoms changed after the traumatic event, when children often had experienced it before entering the current foster family. Additionally, foster parents differ in their ratings of children’s internalizing and externalizing symptoms from children’s and teachers’ reports (Strijker et al., 2011; Tarren-Sweeney, Hazell, & Carr, 2004). The interrater agreement of different informants about foster children’s PTSS has still not been investigated, but it could be speculated that there will be differences similar to the assessment of internalizing symptoms.

Self-report was used to assess foster parents' characteristics which could also lead to biased results: Foster parents' with high stress levels may overestimate their children's symptoms, which would increase the correlation between foster parents' characteristics and children's mental health. Foster parents also reported more dysfunctional parenting when answering questions online than in the paper-and-pencil version. Online data collection ensures less biased data for sensible topics (Strassnig, 2009). Although the assessment was anonym for both versions, foster parents who filled out the paper-and-pencil questionnaires might have been worried that the child welfare agencies would see and use the information they gave; this could be the case, especially in child welfare agencies that supported only few foster parents of children in this age range. Future research should combine self-report with observational measures (e.g., Hill, Maskowitz, Danis, & Wakschlag, 2008) in order to control bias in self-report.

Further methodological limitations can be discussed in terms of specific assessment instruments. The psychometric properties of the YCPC items were investigated only in interview form (Scheeringa et al., 2012). Although the questions are supported by examples and explained in detail (e.g., "a child who saw domestic violence might be nervous when other people argue"; Scheeringa, 2013), foster parents still might have misinterpreted the questions. For instance, the term "traumatic" is widely used in society and media and each person has an individual concept of it. Even though foster parents were instructed that a traumatic event is life-threatening, foster parents may have estimated some experiences as traumatic, although they did not fit the DSM-5 definition. Using the interview form of the questions will ensure giving additional examples and explanations when needed. The Family Assessment Device was not validated in a German sample either. So a comparison to the general population was not possible.

The operationalization of some constructs should be critically reflected as well. Parenting was operationalized as parenting behavior in disciplinary situations. However, the current findings imply that further facets of parenting (e.g., warmth in the foster-parent-child interaction) might be more relevant for preschool children in foster care (see section 7.2 and 7.3). Additionally, there is some skepticism in the literature about the reliability of the construct "Verbosity" as an indicator for dysfunctional parenting (Prinz et al., 2007). Furthermore, the particular time and chronicity of traumatic experiences were not controlled for. For instance, a child may have more or less severe PTSS if the traumatic event happened three months or three years ago (Hiller et al., 2016). Traumatic experiences in the foster family are also possible and may have different effect on the foster parents' characteristics.

Chronicity and multiple traumatic experiences may also have different influence on children's mental health than single traumatic events but were not controlled for in the current project (Gustafsson, Nilsson, & Svedin, 2009). Therapeutic service utilization was assessed without differentiating between types of services, so it did not refer only to psychotherapy.

It should be also considered that preschool children in foster care often suffer from further consequences of trauma exposure, such as disorganized attachment and developmental delays (Publication I). Such problems can influence children's mental health and foster parents' functioning. Attachment and development were not assessed in this project because they can be best assessed by observational tasks (Petermann & Macha, 2005; Van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Marianne Riksen-Walraven, 2004) which would have expanded the resources for the project assessing national-wide data. Future research may use observational tasks to assess attachment and development in order to investigate their role in the model of the foster parents' impact on children's mental health consequences of trauma exposure.

Finally, assumptions about normality and multicollinearity were not always met. This could have biased the statistical estimates even though robust methods (e.g., bootstrap samples) were applied. Repeated statistical tests with the same sample often lead to inflation of the overall Type I error rate. Therefore, the meta-model should be cross-validated in further samples.

## 7.5 Implications

Notwithstanding these limitations, the findings of this project has important implications for foster care services. This chapter summarizes these implications into recommendations for foster care agencies on the background of selected international examples of alternative procedures. To sum up, the current research findings highlight that trauma exposure and PTSS are common among preschool children in foster care and that they are associated with high foster parents' stress levels. Hence, the child welfare agencies should address children's mental health needs as a consequence of trauma exposure through developmentally sensitive diagnostics and treatment (Scheeringa, 2011). They should also support and prepare foster parents by improving their coping strategies and stress regulation.

In this context, the current project also gives some insights into the mental health and support services to foster children and their foster parents in Germany. About 50% of children received mental health diagnostics independently from trauma-exposure. In addition, there was also no evidence for systematic proceeding in selecting the type of therapeutic services

children received with many children suffering from mental health problems receiving, for instance, ergo therapy.

A first recommendation is, therefore, to include mental health diagnostics assessing trauma exposure and PTSS when a child enters the welfare services (Figure 12). Only a few countries (e.g., Australia and the USA) determine standards for developmental and mental health diagnostics for children in foster care (Bromfield & Holzer, 2008; Child Welfare League of America, 1998). Bromfield and Holzer (2008), for instance, described a diagnostic process referring to both risk and needs assessment that frames the work of the Australian child welfare services. The assessment of needs includes diagnostics of development and mental health, the ability of foster parents to respond appropriately to these needs, and the impact of the wider family environment (for more details refer to Bromfield & Holzer, 2008).

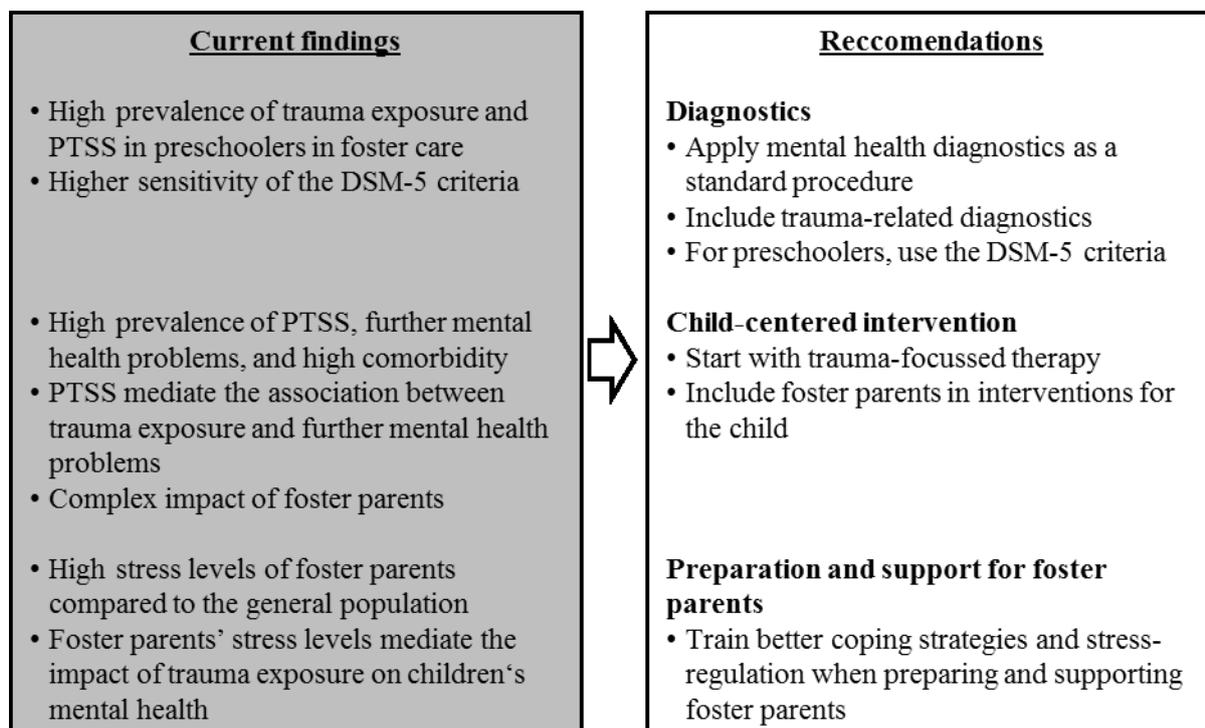


Figure 12. Recommendations for child welfare services based on current findings

It could be recommended based on the current findings that the child welfare agencies in Germany take distance from the ICD criteria which are the current legal standard to finance interventions through the health insurance funds. Since child welfare agencies are not legally bound to a diagnostic system in order to finance their services, they could profit from instruments implying the more developmentally sensitive DSM-5 criteria. The current findings showed that some foster parents felt that they did not have enough information to

answer questions about the child's trauma exposure and consequences. Hence, it is important to combine all possible information sources in the diagnostic process (see section 7.1)

Considering the recommendations for support and mental health services, the current findings underline the complexity of the influence of foster parents' characteristics in the aftermath of trauma exposure of the child. An example for an evidence-based intervention addressing the impact of foster parents is the Attachment and Behavioral Catch-up provided in the USA (ABC; Dozier, Roben, Caron, Hoye, & Bernard, 2016). The program targets needs of preschool children who have experienced early adversities, i.e., the need for source, organized attachment, and biological regulation. Furthermore, the high stress levels of foster parents in the current sample associated with children's trauma exposure support a trauma-focused therapeutic framework aiming at improving caregiver's coping strategies (Scheeringa, 2015a).

## 8 Conclusions

This study addressed the gap in research of PTSS in the vulnerable population of preschool children in foster care. The findings show that the impact of trauma exposure continues in the foster family and give first insights into the mechanisms of how foster parents can influence preschool children's posttraumatic adaption. The results imply that child welfare agencies should address the needs of trauma-exposed preschool children in foster care. They should support their foster parents as well in order to help children overcome the negative long-term consequences of trauma and prevent foster parents' overstrain or disruption of care. The association of foster parents' stress and children's mental health consequences of trauma exposure was consistent within the different analyses. However, further studies should investigate which is the distinct parenting behavior connecting high levels of foster parents' stress and PTSS of preschool children.

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# Appendices

## Appendix A

### Publication I

Vasileva, M., & Petermann, F. (2016). Attachment, development, and mental health in abused and neglected preschool children in foster care: A meta-analysis. *Trauma, Violence, & Abuse*, 1-16. doi: 10.1177/1524838016669503

## Appendix B

### Publication II

Vasileva, M., & Petermann, F. (in press). Posttraumatic stress symptoms in preschool children in foster care: The influence of placement and foster family environment. *Journal of Traumatic Stress*, 30, 472-481. doi: 10.1002/jts.22217

## Appendix C

### Publication III

Vasileva, M., & Petermann, F. (in press). Psychische Gesundheit von Pflegekindern im Vorschulalter: Wie stark hängt die Bewältigung traumatischer Erfahrungen von der Pflegefamilie ab? [Mental health of preschool foster care children: How do foster families influence the way children cope with trauma?]. *Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie*, 1-9. doi. 0.1024/1422-4917/a000539

## Appendix D

### Publication IV

Vasileva, M., & Petermann, F. (2017). Mental health needs and therapeutic service utilization of young children in foster care in Germany. *Children and Youth Services Review*, 75, 69-76. doi: 10.1016/j.childyouth.2017.02.022

## **Appendix E**

Questionnaire for foster parents:  
Informed consent and demographics

**Zentrum für Klinische Psychologie und  
Rehabilitation (ZKPR)**  
Prof. Dr. Franz Petermann  
Mira Vasileva, M. Sc.

Ansprechpartnerin für eventuelle Rückfragen:  
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## **Allgemeine Teilnehmerinformation über die Untersuchung**

**Zentrum für Klinische Psychologie und Rehabilitation der Universität Bremen**

### **Titel der Studie**

*„Trauma und Posttraumatische Belastungsstörungen in Jugendhilfemaßnahmen“*

Sehr geehrte Pflegeeltern,

Danke für Ihr Interesse an unserer Studie!

Wir wissen und schätzen, dass Sie die schwere Aufgabe übernommen haben, maximal zu zweit „im Dienst“, eine verlässliche Bezugsperson für Ihr Pflegekind zu sein und die Balance zwischen einer normalen Familienstruktur und professioneller Unterstützung zu leisten. Zudem schaffen Sie es auch, Ihr Pflegekind zu lieben und für sie oder ihn immer da zu sein.

In diesem Zusammenhang führt das **Zentrum für Klinische Psychologie und Rehabilitation (ZKPR)** der Universität Bremen unter der Leitung von Prof. Dr. Franz Petermann und in Kooperation mit der Jugendhilfe-Einrichtung **Projekt PETRA** in Hessen (Partner für Erziehung, Therapie, Research und Analyse) eine Pflegeelternbefragung durch. Hierdurch sollten die Merkmale eines Pflegeverhältnisses bestimmt werden, die sich positiv oder negativ auf die Folgen einer Vortraumatisierung des Pflegekindes auswirken. Bevor Sie mit der Umfrage anfangen, bitten wir Sie die folgende Information aufmerksam zu lesen und Ihre Einwilligung zur Teilnahme zu geben.

### **Was sind die Ziele der Studie?**

Das Zentrum für Klinische Psychologie und Rehabilitation (ZKPR) ist eines der führenden Forschungsinstitute zur psychologischen Diagnostik im Kindesalter. Im laufenden Projekt richten wir unsere Aufmerksamkeit auf die Gesundheit der jüngsten Kinder in Pflegeverhältnissen und stellen uns das Ziel, die Häufigkeit einer Posttraumatischen Belastungsstörung (PTBS) einzuschätzen. Eine PTBS entsteht als Folge eines Traumas wie beispielweise eines Unfalls oder körperlicher Misshandlung. Sie kann sich äußern, indem sich das Kind an das Ereignis erinnert und darunter leidet, besondere Situationen vermeidet oder vermehrt Schuld, Angst oder Traurigkeit empfindet. Wir möchten auch untersuchen, wie sich eine Pflegefamilie positiv oder negativ auf die Bewältigung dieser Symptome auswirkt.

### **Warum sollte ich an der Studie teilnehmen?**

Durch Ihre Teilnahme tragen Sie maßgeblich zum besseren Verständnis der psychischen Folgen traumatischer Erfahrungen von Pflegekindern bei. Die Ergebnisse können ermöglichen, eine trauma-spezifische Diagnostik in die Jugendhilfe einzuführen und Pflegeeltern besser auf die Aufnahme von Kindern mit einer PTBS vorzubereiten. Wir können Ihnen auch versichern, dass durch die Teilnahme keine Nachteile für Sie oder das Kind entstehen werden.

### **Kann ich meine Teilnahme an der Studie widerrufen?**

Sie können Ihre Einwilligung zur Teilnahme an der Studie jederzeit ohne Angabe von Gründen widerrufen und Ihre Teilnahme abbrechen, ohne dass Ihnen daraus Nachteile entstehen. Auch wenn Sie von der Studie rücktreten, können Sie die von uns vorbereiteten Informationen über wichtige Themen der

Pflegeelternschaft erhalten. Da Ihre Daten anonymisiert gespeichert werden, wird eine Löschung ihrer Angaben nicht möglich sein.

### **Datenschutz**

Die Erhebung der Daten erfolgt völlig **anonymisiert**, sodass auf keinen Fall Rückschlüsse auf Ihre Person oder das Pflegekind gemacht werden können. Personendaten wie Name, Anschrift, E-Mail-Adresse oder Telefonnummer werden nicht erhoben. Ihre Einwilligungserklärung und die Fragebogen werden direkt nach der Übersendung getrennt voneinander aufbewahrt. Ihre Angaben werden auf einer externen Festplatte, die mit einem Passwort verschlüsselt und verschlossen aufbewahrt wird, gespeichert. Nach Übertragung der Daten zur Auswertung, werden die Fragebögen vernichtet. Auch ihre Einwilligungserklärung wird nach Abschluss der Auswertung, spätestens zum 30.04.2017 vernichtet. Die Auswertung, Nutzung der Daten und ihre Veröffentlichung in Fachzeitschriften wird nur in anonymisierter Form und für wissenschaftliche Zwecke erfolgen.

### **Die Befragung**

Die Umfrage dauert ca. 40 Minuten. Sie enthält Fragen zum demographischen Hintergrund von Ihnen und dem Pflegekind, zum Verhalten und zur psychischen Verfassung des Kindes, zu Ihrem Stresserleben, Erziehungsverhalten und zum Familienfunktionsniveau.

Bitte planen Sie genügend Zeit für die Umfrage ein und wählen Sie einen ruhigen Platz. Wir bitten Sie, möglichst ehrlich zu sein. Alle Antworten werden anonym gespeichert und werden nicht an Dritten übermittelt.

Kreuzen Sie bitte nur eine Antwort, wenn sie dieses Zeichen sehen:  . Wenn die Antwortmöglichkeiten so vermerkt sind:  , dürfen Sie auch mehrere davon ankreuzen.

Wir schätzen Ihre Zeit und sind dankbar für jede Antwort, die Sie geben. Damit wir Ihre Daten auch statistisch auswerten können, bitten wir Sie, die Befragung bis zum Ende zu machen. Sie können allerdings freiwillig wählen welche Fragen Sie antworten und welche nicht.

Am Ende der Befragung erhalten Sie Informationen über das Störungsbild einer PTBS und Hinweise auf Unterstützungsangebote oder Vernetzungsmöglichkeiten für Pflegeeltern erhalten.

### **Kontakt**

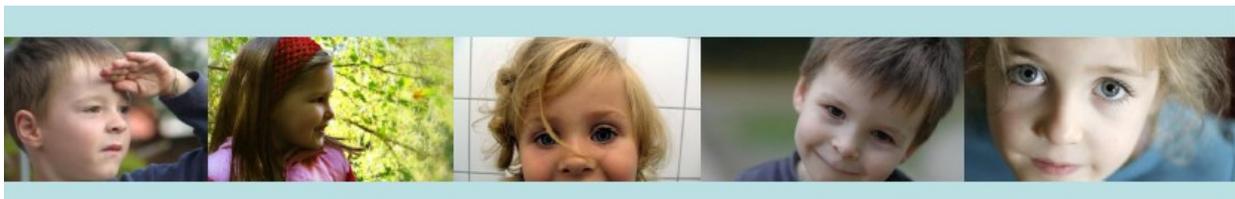
Bei Rückfragen stehen wir Ihnen unter der Telefonnummer 0421/ 218 686 34 (Mo. - Do. von 8:30 bis 16:30) oder jederzeit unter der E-Mail-Adresse [pfegekinderstudie@uni-bremen.de](mailto:pfegekinderstudie@uni-bremen.de) zur Verfügung.

Vielen Dank für Ihre Unterstützung!

Mit freundlichen Grüßen,



Mira Vasileva, M. Sc.



**Zentrum für Klinische Psychologie und  
Rehabilitation (ZKPR)**  
Prof. Dr. Franz Petermann  
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Telefon: 0421/ 218 686 34

## **Einwilligungserklärung der Pflegeeltern**

**Zentrum für Klinische Psychologie und Rehabilitation der Universität Bremen**

### **Titel der Studie**

*„Trauma und Posttraumatische Belastungsstörungen in Jugendhilfemaßnahmen“*

Ich bestätige, dass ich Kenntnis von den schriftlichen Informationen über die Studie zum Thema „Trauma und Posttraumatische Belastungsstörungen in Jugendhilfemaßnahmen“ genommen habe. Dementsprechend bin ich über die Ziele, den Ablauf sowie über die möglichen Vor- und Nachteile einer Teilnahme an der Studie informiert und habe alles verstanden. Mir ist bekannt, dass mir Fragen zu meinem demographischen Hintergrund, zu meinem Pflegekind und zu Merkmalen meiner Familie gestellt werden und dass sämtliche Angaben anonym gespeichert werden.

Ich erkläre hiermit, freiwillig an der Befragung teilzunehmen.

**Außerdem versichere ich, dass ich einer der Pflegeeltern des Kindes bin und dass:**

1. mein Pflegekind zwischen drei und sechs Jahre alt ist,
2. mein Pflegekind sich im Moment nicht in Bereitschaftspflege befindet,
3. bei dem Kind keine Autismus-Spektrum-Störung diagnostiziert wurde,
4. mir keine lebensbedrohlichen Ereignisse im letzten Monat bekannt sind, die das Kind selber erlebt hat oder von denen es Zeuge war.

\_\_\_\_\_  
Datum

\_\_\_\_\_  
Unterschrift

### **Verpflichtung des Zentrums für Klinische Psychologie und Rehabilitation**

Als verantwortliche Wissenschaftlerin dieses Forschungsprojekts werde ich dafür Sorge tragen, dass alle Erfordernisse des Bremischen Datenschutzgesetzes berücksichtigt werden und dass die Daten nicht für kommerzielle Zwecke, sondern nur für das Untersuchungsziel verwendet werden.

Bremen, den 01.03.2015

  
\_\_\_\_\_  
( Mira Vasileva)

**Im Folgenden werden Daten über Ihren demographischen Hintergrund und allgemeine Informationen über Ihre Pflegeelternschaft abgefragt:**

**Geschlecht**

- weiblich
- männlich

**Wann sind Sie geboren?**

(Bitte geben Sie das Alter in Jahren und Monaten an.)

**In welchem Land sind Sie geboren?**

- Deutschland
- Anderes \_\_\_\_\_

**Bitte beschreiben Sie die aktuelle Situation Ihrer Pflegefamilie.**

- Ich bin eine alleinerziehende Pflegemutter/ein alleinerziehender Pflegevater.
- Wir sind ein Ehepaar.
- Wir sind ein unverheiratetes Paar.

**Welcher ist Ihr höchster Bildungsabschluss?**

- Ohne allgemeinen Schulabschluss
- Haupt/ Volksschule, anderer Schulabschluss
- Realschule, Polytechnische Oberschule, Fachhochschulreife
- Abitur/ Allgemeine Hochschulreife
- Fachhochschulabschluss, Hochschulabschluss (Bachelor)
- Hochschulabschluss (Master, Diplom)

**Was machen Sie beruflich?** \_\_\_\_\_

**Welcher ist der höchste Bildungsabschluss ihrer/s Partner/in?**

- Ohne allgemeinen Schulabschluss
- Haupt/ Volksschule, anderer Schulabschluss
- Realschule, Polytechnische Oberschule, Fachhochschulreife
- Abitur/ Allgemeine Hochschulreife
- Fachhochschulabschluss, Hochschulabschluss (Bachelor)
- Hochschulabschluss (Master, Diplom)

**Was macht Ihr/e Partner/in beruflich?** \_\_\_\_\_

**Bitte geben Sie ihr betreuendes Jugendamt an.**

---

**Wie viele Pflegekinder leben in Ihrer Familie?** \_\_\_\_\_

**Wie viele leibliche Kinder haben Sie?** \_\_\_\_\_

**Hatten Sie schon früher Pflegekinder?**

- Nein. Das ist mein erstes Pflegekind.
- Ja

Bitte geben Sie an wie viele. Zählen Sie bitte ohne die Kinder, die zurzeit in Ihrer Pflegefamilie sind. \_\_\_\_\_

**Nennen Sie bitte Gründe, aus denen Sie sich für (ein) Pflegekind(er) entschieden haben?**

- Ich wollte misshandelten und vernachlässigten Kindern helfen. Ich habe
- mir eine größere Familie gewünscht.
- Ich finde es wichtig, einen Beitrag für die Gesellschaft zu leisten. Für mich
- sind finanzielle Vorteile von Bedeutung.
- Ich wollte Kindern mit speziellen Bedürfnissen helfen.
- Seitdem meine Kinder aus dem Haus sind, habe ich Zeit, mich um andere zu kümmern.
- Mein Kind sollte eine Schwester/ einen Bruder bekommen.
- Für mich sind religiöse Gründe von Bedeutung.
- Ich wollte ein Kind adoptieren.
- Ich habe mir mehr Leben zu Hause gewünscht.
- Anderes (Geben Sie bitte an.) \_\_\_\_\_

**Wie haben Sie sich für die Aufnahme eines Pflegekindes vorbereitet?**

- Ich habe mich nicht vorbereitet.
- Ich habe Angebote des Pflegekinderdienstes genutzt.
- Ich habe mich wie folgt vorbereitet: \_\_\_\_\_
- 

**Denken Sie manchmal über einen Abbruch des Pflegeverhältnisse nach?**

- Nein
- Ja (Bitte geben Sie Gründe dafür.)
-

**Wie würden Sie Ihre eigene Kindheit beschreiben?**

- (eher) harmonisch
- teils-teils
- (eher) belastend

***Im Folgenden werden Daten über den demographischen Hintergrund des Pflegekindes und allgemeine Informationen über sie/ihn abgefragt.***

**Wann ist das Pflegekind geboren?** \_\_\_\_\_

(Bitte geben Sie das Alter in Jahren und Monaten an.)

**Geschlecht**

- weiblich
- männlich

**Hat das Kind einen Migrationshintergrund?**

(Das Kind selbst oder ein Elternteil ist im Ausland geboren.)

- Nein
- Ja

**Bekommt Ihr Pflegekind Unterstützung von Therapeuten, kinderpsychiatrische Versorgung o.ä.?**

- Nein
- Nein, aber eine therapeutische Versorgung ist geplant.
- Jetzt nicht mehr, aber früher. (Bitte geben Sie in Monaten an wie lange.)
- Ja (Bitte geben Sie in Monaten an wie lange.)

**Glauben Sie, dass Ihr Kind zusätzliche Unterstützung/Hilfe bräuchte?**

- Nein
- Ja (Bitte geben Sie an welche.) \_\_\_\_\_

**Sind Sie mit Ihrem Pflegekind verwandt?**

- Nein
- Ja

### Wer hat die Sorgerechte für das Pflegekind?

- Die leiblichen Eltern haben die Vormundschaft.
- Die leiblichen Eltern haben die Pflegschaft.
- Ich und/oder mein Partner haben/hat die Vormundschaft. Ich und/oder mein Partner haben/hat die Pflegschaft.
- Die Vormundschaft wird von dem Jugendamt übernommen.
- Die Pflegschaft wird von dem Jugendamt übernommen.
- Die Vormundschaft wird von einem Verein (z.B. Diakonie, SkF) übernommen.
- Die Pflegschaft wird von einem Verein (z.B. Diakonie, SkF) übernommen.

**Wie alt war Ihr Pflegekind, als es zum ersten Mal aus der leiblichen Familie herausgenommen wurde?** (Bitte geben Sie das Alter in Jahren und Monaten an.) \_\_\_\_\_

### In wie vielen Einrichtungen/Pflegefamilien war das Pflegekind insgesamt? (Einschließlich Ihrer Pflegefamilie)

(Bitte geben Sie die Anzahl an für die Platzierungen, die Sie kennen. Falls das Kind dazwischen bei seinen leiblichen Eltern war, zählen Sie das bitte auch als Platzierungswechsel.) \_\_\_\_\_

### Seit wann ist das Pflegekind in Ihrer Familie?

\_\_\_\_\_

### Wie viele Male pro Monat sieht das Pflegekind seine leiblichen Eltern?

\_\_\_\_\_

- weniger als einmal pro Monat
- ein Mal pro Monat
- zwei Mal pro Monat
- drei Mal pro Monat
- jede Woche
- mehrmals pro Woche

...

### Welche der folgenden Aussagen trifft bei Ihnen eher zu?

- Ich konnte einige Fragen nicht beantworten, weil ich bestimmte Dinge über mein Pflegekind nicht weiß.
- Ich wusste genug über mein Pflegekind, um die meisten Fragen zu beantworten.

## **Appendix F**

General Functioning Scale: German translation

**Im Folgenden befinden sich Aussagen über Familien. Bitte kreuzen sie für jede Aussage an, wie gut sie Ihre Familie beschreibt. Uns ist Ihre Sicht wichtig.**

	Trifft nicht zu	Trifft kaum zu	Trifft etwas zu	Trifft genau zu
Das Planen von Familienaktivitäten ist schwer, weil wir uns missverstehen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In Krisensituationen wenden wir uns einander zu, um Unterstützung zu erhalten.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wenn wir traurig sind, können wir nicht darüber sprechen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Individuen werden so akzeptiert, wie sie sind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wir vermeiden, unsere Ängste und Sorgen zu besprechen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In unserer Familie drücken wir unsere Gefühle aus.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Es gibt viele negative Gefühle in unserer Familie.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wir fühlen uns so akzeptiert, wie wir sind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Das Treffen von Entscheidungen ist ein Problem für unsere Familie.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wir können Entscheidungen über Problemlösungswege treffen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wir verstehen uns nicht so gut.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wir vertrauen uns gegenseitig an.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## **Appendix G**

Candidate's contribution to each publication

## Candidate's contribution to each publication

The doctoral thesis is based on four publications, which were either already published or accepted for publication by internationally renowned and peer-reviewed journals. In order to prepare the publications, first, research questions were defined and a *conceptual framework* was developed. Every study is based on a comprehensive *literature research*. For the Publication II to IV, *data was collected, analyzed, and evaluated*. In a next step, the *manuscript was prepared*. Each publication was accepted after at least one *revision*. Table A1 displays the candidate's individual contribution to each publication.

The extent of this contribution is evaluated using three different categories denoting whether the candidate solely contributed to a specific working step (fully) or whether she made the most important contribution to a specific working step (mostly). Apart from this, all steps during the progress of the present research were communicated with the supervisor and coauthor Prof. Franz Petermann.

Table A1  
*The candidate's contribution to each publication*

Working steps	Publication			
	I	II	III	IV
<b>Conceptual framework</b>	Fully	Fully	Fully	Fully
<b>Literature research</b>	Fully	Fully	Fully	Fully
<b>Data collection</b>	-	Mostly	Mostly	Mostly
<b>Data analysies</b>	Fully	Fully	Fully	Fully
<b>Data evaluation</b>	Fully	Fully	Fully	Fully
<b>Manuscript preparation</b>	Mostly	Mostly	Mostly	Mostly
<b>Manuscript revision</b>	Mostly	Mostly	Fully	Fully

The doctoral candidate, Mira Vasileva, and the co-author, Prof. Dr. Franz Petermann, hereby certify that the statement made by the candidate on her own contribution to each publication is accurate and that permission is granted for these publications to be included in the candidate's doctoral thesis.

Bremen, August 2017

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(Prof. Dr. Franz Petermann)

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(Mira Vasileva, M.Sc.)

## **Appendix H**

Declaration of originality

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## Declaration of Originality

In accordance with § 6 subparagraph 5 of the formal requirements for doctoral candidates at the University of Bremen, I, Mira Vasileva, hereby declare that the present doctoral thesis represents my own original work except where specifically acknowledged. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature. I further declare that my doctoral thesis does not contain any material which has previously been accepted and is not currently considered for the award of any other university degree.

Bremen, August 2017

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(Mira Vasileva, M. Sc.)