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Interpersonal Trust in Mental Disorders

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Summary

Interpersonal trust is the foundation of all healthy and stable relationships, and is one of the most heavily studied constructs in the social sciences and beyond. The extensive investigation of interpersonal trust in different contexts results in a great number of different conceptualizations as well as different study approaches. Despite this variety of approaches, there exists a lack of realistic and ecologically valid ways of measuring interpersonal trust. Apart from several questionnaires, so-called “trust games” have gained lots of attention in recent years as they have several important advantages and are the first experimental approach towards interpersonal trust. Although trust games have high ecological validity in the sense that real behavior can be observed and measured, the operationalization of trust over the exchange of monetary units seems to reflect only one facet (possibly even one of the less important facets) of interpersonal trust. This is especially true when thinking about trust deficits reported in a clinical context, for example by patients with Borderline Personality Disorder (BPD), and existing measures do not seem to capture the relevant facets of interpersonal trust.

Besides the gap in measurement methods for interpersonal trust, not much is known about interpersonal trust behavior in patients with mental disorders. In patients with BPD, study results suggest alterations in interpersonal trust. However, concerning other mental disorders – and even with clear impairments in the interpersonal realm – research on interpersonal trust is almost non-existent. Furthermore, for patients with BPD, a more differentiated insight in alterations in interpersonal trust is needed, as well as an understanding of the possible origins of the apparent alterations in interpersonal trust.

The current thesis aims to broaden our understanding of interpersonal trust in the context of mental disorders, with a special focus on patients with BPD. The premise for this was making an attempt to close the gap in measurement methods for interpersonal trust.

In Paper I, a scenario-based self-report questionnaire for the assessment of interpersonal trust behavior with a focus on high ecological validity and realistic trust scenarios was developed. The main goal was to gain insight into everyday interpersonal trust behavior beyond the results of existing measures like trust games and questionnaires. The result was an 8 item questionnaire (Interpersonal trust scenario questionnaire – ITSQ), with two scales labeled “entrusting known people with material items” and “entrusting unknown people with one’s well-being”. In the second part of Paper I, interpersonal trust in patients with BPD, major depressive disorder (MDD), social anxiety disorder (SAD) and a non-clinical control group (CG) were assessed. Results indicated that patients with BPD displayed the lowest levels of interpersonal trust. More specifically, patients with BPD reported trust deficits only towards known people and when entrusting them with material items. In trusting unknown people and when entrusting them with their well-being, they did not report lower levels than the CG. Patients with MDD and SAD did not report lower levels of interpersonal trust behavior compared to the CG in any of the investigated facets of interpersonal trust.

In Paper II, possible origins of current trust behavior in the form of trust experiences were explored. We were especially interested in the origins of current trust alterations reported by patients with BPD. For the investigation of trust experiences, autobiographical memories of trust from both patients with BPD and non-clinical controls were examined. Results indicated that patients with BPD primarily retrieved situations in which their trust was failed by family members or romantic partners. Non-clinical controls mostly retrieved situations in which they trusted their friends and which ended well (their trust was not failed). Besides this, results suggested that patients with BPD consider experiences with trust and mistrust as significantly more relevant for their current lives than non-clinical controls.

In Paper III, another group of interest concerning alterations in interpersonal trust was addressed: patients with post-traumatic stress disorder (PTSD) after interpersonal

traumatization. Former studies indicated that focusing on interpersonal trust during trauma therapy influences the outcome profoundly. PTSD is associated with distorted cognitions, or so-called “stuck-points”, about the self, the world and other people. The thematic content of these stuck-points, as well as associations to trauma-specific variables and PTSD symptom severity, were examined in adolescent survivors of interpersonal traumatization. Trust stuck-points were especially important, as they were the only things which predicted PTSD symptom severity.

The empirical data from this thesis provides further evidence of alterations in interpersonal trust in patients with BPD. Besides this, more detailed information can be drawn from our results, as trust deficits were reported only in the facet “entrusting known people with material items” however not in the facet “entrusting unknown people with one’s well-being”. The results from Paper I correspond with Paper II on autobiographical memories, in which patients with BPD recalled mainly situations in which their trust was failed by family members and romantic partners. For patients with PTSD, our results also suggest alterations in interpersonal trust, which corresponds to results from former studies. Distorted cognitions of trust seem to influence PTSD symptom severity. Implications which can be drawn from our results are that interpersonal trust seems to be a topic of great relevance in the context of several mental disorders. Besides this, it should be treated as the multi-faceted construct it is both during therapy and in research. This is firstly to understand in which facets of interpersonal trust patients display deficits, and secondly to provide individually tailored treatment methods that specifically target the difficulties an individual displays.

Zusammenfassung in deutscher Sprache

Zwischenmenschliches Vertrauen ist die Grundlage positiver und stabiler Beziehungen und ist eines der am intensivsten untersuchten Konstrukte in verschiedenen Bereichen der sozialwissenschaftlichen und psychologischen Forschung und darüber hinaus. Die umfassende Untersuchung von zwischenmenschlichem Vertrauen in verschiedenen Kontexten führt zu einer großen Anzahl unterschiedlicher Konzeptualisierungen und Studienansätzen. Trotz dieser großen Vielfalt fehlt es an realistischen und ökologisch validen Methoden, zwischenmenschliches Vertrauen zu messen. Abgesehen von verschiedenen Fragebögen haben in den letzten Jahren sogenannte „Trust Games“ viel Aufmerksamkeit erregt, da sie einige wichtige Vorteile haben und der erste experimentelle Ansatz sind, zwischenmenschliches Vertrauen zu messen. Auch wenn Trust Games eine hohe ökologische Validität in dem Sinne haben, dass reales Verhalten beobachtet und gemessen werden kann, scheint die Operationalisierung von Vertrauen über den Austausch von Geldeinheiten nur eine, wenn nicht sogar eine der nicht allzu wichtigen Facetten von interpersonellem Vertrauen widerzuspiegeln. Insbesondere wenn man an Vertrauensdefizite denkt, die im klinischen Kontext beispielsweise von Patient*innen mit Borderline Persönlichkeitsstörung (BPS) berichtet werden, scheinen die bisher existierenden Messmethoden die relevantesten Facetten des interpersonellen Vertrauens nicht zu erfassen.

Abgesehen von der Lücke in den Messmethoden ist bislang nicht viel über das interpersonelle Vertrauen von Patient*innen mit psychischen Störungen bekannt. Bei Patient*innen mit BPS deuten die Studienergebnisse auf Veränderungen des interpersonellen Vertrauens hin. Bezüglich anderer psychischer Störungen - und selbst bei solchen mit deutlichen Beeinträchtigungen im interpersonellen Bereich - ist die Forschung über interpersonelles Vertrauen jedoch nicht allzu weit fortgeschritten. Darüber hinaus ist bei Patient*innen mit BPS ein differenzierterer Einblick in die Veränderungen des

zwischenmenschlichen Vertrauens sowie ein Verständnis über die möglichen Ursachen der scheinbaren Veränderungen des zwischenmenschlichen Vertrauens erforderlich.

Die vorliegende Arbeit zielt darauf ab, das Verständnis von interpersonellem Vertrauen im Kontext psychischer Störungen und mit besonderem Fokus auf Patient*innen mit BPS zu erweitern. Eine Prämisse zur Erreichung dieses Ziels war zunächst, die oben beschriebene Lücke in den Messmethoden für interpersonelles Vertrauen zu schließen.

Zu diesem Zweck wurde in Artikel I ein szenario-basierter Selbstberichtsfragebogen zur ökologisch validen Messung interpersonellen Vertrauens entwickelt. Das Hauptziel war es, über die Ergebnisse bestehender Maßnahmen wie Trust Games und anderer Fragebögen hinaus Einblicke in das alltägliche interpersonelle Vertrauensverhalten zu gewinnen. Das Ergebnis war ein 8-Item-Fragebogen (Interpersonal Trust Szenario Questionnaire - ITSQ) mit zwei Skalen, die als "Bekannten Personen materielle Dinge anvertrauen" und "Unbekannten Personen das eigene Wohlbefinden anvertrauen" bezeichnet werden können. Im zweiten Teil von Artikel I wurde das interpersonelle Vertrauen bei Patient*innen mit BPS, Patient*innen mit Major Depression (MD), Patient*innen mit sozialer Angststörung (SAS) und einer nicht-klinischen Kontrollgruppe (KG) untersucht. Die Ergebnisse weisen darauf hin, dass Patient*innen mit BPS das geringste Maß an zwischenmenschlichem Vertrauen zeigen. Genauer gesagt berichteten Patient*innen mit BPS Vertrauensdefizite nur auf ITSQ Skala 1 „Bekannten Personen materielle Dinge anvertrauen“. Patient*innen mit MD und SAS berichteten auf keiner der untersuchten Facetten niedrigere Vertrauenswerte als die KG.

In Artikel II wurden mögliche Ursprünge des aktuellen Vertrauensverhaltens in Form von Vertrauenserfahrungen untersucht. Für die Untersuchung von Vertrauenserfahrungen wurden autobiographische Erinnerungen an Vertrauen sowohl von Patient*innen mit BPS als auch von nicht-klinischen Kontrollen untersucht. Die Ergebnisse deuten darauf hin, dass Patient*innen mit BPS in erster Linie Situationen abrufen, in denen ihr Vertrauen von ihren

Familienmitgliedern oder romantischen Partner*innen enttäuscht wurde. Nicht-klinische Kontrollproband*innen hingegen erinnerten vor allem Situationen, in denen sie ihren Freund*innen vertrauten und deren Ausgang positiv war (ihr Vertrauen wurde nicht enttäuscht). Darüber hinaus legen die Ergebnisse nahe, dass Patient*innen mit BPS ihre Erfahrungen mit Vertrauen und Misstrauen als signifikant relevanter für ihr gegenwärtiges Leben ansehen als nicht-klinische Kontrollproband*innen.

In Artikel III wurde das Vertrauen einer weiteren klinischen Gruppe untersucht: Patient*innen mit posttraumatischer Belastungsstörung (PTBS) nach interpersoneller Traumatisierung. Die Ergebnisse früherer Studien weisen darauf hin, dass die Fokussierung auf das Thema zwischenmenschliches Vertrauen während der Traumatherapie das Therapieergebnis stark beeinflusst. PTBS ist von verzerrten Kognitionen oder so genannten "Stuck-points" gekennzeichnet - dies sind maladaptive Gedanken über das Selbst, die Welt und andere Menschen. Der thematische Inhalt dieser Stuck-points sowie Zusammenhänge zu trauma-spezifischen Variablen und zur Schwere der PTBS-Symptomatik wurden bei jugendlichen Patient*innen mit PTBS nach interpersoneller Traumatisierung untersucht. Stuck-points die sich auf Vertrauen beziehen, zeichneten sich durch besondere Bedeutung aus, da sie die einzigen waren, die die Schwere der PTBS-Symptome vorhersagten.

Zusammenfassend lässt sich sagen, dass die empirischen Daten aus der vorliegenden Dissertationsschrift weitere Hinweise auf Veränderungen im zwischenmenschlichen Vertrauen bei Patient*innen mit BPS liefern. Darüber hinaus lassen sich aus unseren Ergebnissen detailliertere Informationen ableiten. Defizite im interpersonellen Vertrauen wurden nur bezüglich des Anvertrauens materieller Gegenstände an bekannten Interaktionspartner*innen berichtet, nicht jedoch beim Anvertrauen des Wohlbefindens an unbekanntem Interaktionspartner*innen. Die Ergebnisse aus Artikel II unterstreichen die in Artikel I gefundenen Besonderheiten im Vertrauensverhalten von Patient*innen mit BPS. In Artikel I

berichteten Patient*innen mit BPS Vertrauensdefizite gegenüber bekannten Personen, in Artikel II berichteten sie autobiographische Erinnerungen an Situationen in denen ihr Vertrauen von Familienmitgliedern und romantischen Partner*innen enttäuscht wurde. Bei Patient*innen mit PTBS deuten unsere Ergebnisse auch auf Veränderungen des zwischenmenschlichen Vertrauens hin, was mit den Ergebnissen aus früheren Studie übereinstimmt. Verzerrte Kognitionen über Vertrauen scheinen insbesondere die Schwere der PTBS-Symptome zu beeinflussen. Aus unseren Ergebnissen lässt sich die Schlussfolgerung ziehen, dass zwischenmenschliches Vertrauen ein Thema von hoher Relevanz im Zusammenhang mit verschiedenen psychischen Störungen zu sein scheint. Außerdem sollte es sowohl in der Therapie als auch in der Forschung als das vielschichtige Konstrukt behandelt werden, das es ist. Erstens, um im Detail zu verstehen, auf welche Facetten des zwischenmenschlichen Vertrauens Patient*innen Defizite aufweisen, und zweitens, um individuell zugeschnittene Behandlungsmethoden anzubieten, die auf die individuellen Schwierigkeiten der Patient*innen abzielen.

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“Trust is the glue of life. It’s the most essential ingredient in effective communication. It’s the foundational principle that holds all relationships.”

Stephen R. Covey

1 Overview

“Trust involves the juxtaposition of people’s loftiest hopes and aspirations with their deepest worries and fears. It may be the single most important ingredient for the development and maintenance of happy, well-functioning relationships.” (Simpson, 2007, p.01)

A construct comprising entities so opposed to each other in their nature yet so fundamental for our well-being is, unsurprisingly, one of the most prominent and most heavily studied constructs in the social sciences and beyond. Trust seems to be omnipresent – in the fine arts, scientific research and our everyday lives. *“The importance of trust cannot be overemphasized”* (Thielmann & Hilbig, 2015, p.03 after Yamagishi, 2011). We trust when we leave our children with other people while we are at work, we trust our colleagues to cooperate with us and do their share of the workload, and we trust in the practical and emotional abilities of our friends, families and partners. The number of contexts and situations in which interpersonal trust plays a crucial role in is nearly endless - and so is the number of scientific approaches, definitions and conceptualizations found in the literature.

Over the following pages, I will introduce the most important conceptualizations of trust in psychological literature and present the working definition I adopted for my research on interpersonal trust. In the next part, I will elaborate on different methods of measuring trust and describe why developing a new measure for interpersonal trust was one important premise of my dissertation.

Next, I will elaborate on one key source of information about possible origins of current trust behavior: trust experiences, which were examined through autobiographical memories of interpersonal trust. I will finally describe the role of interpersonal trust in different mental disorders, and especially in the context of Borderline Personality Disorder.

This thesis as a whole aims to expand our knowledge about the construct of interpersonal trust – first generally, and then in the context of mental disorders. In the first chapter, I sought to integrate current ideas and concepts of interpersonal trust, present existing measurement methods and elaborate on the latest findings of interpersonal trust in patients with mental disorders. In the following chapters, three empirical studies which were conducted within this dissertation are presented. Two articles (papers I and III) were published in and one (Paper II) was submitted to peer reviewed journals. In the final chapter, a summary and general discussion of the main findings next to some additional findings, ideas for future research and implications for the clinical practice are presented.

Throughout the thesis, gender-specific terms will be used solely for the purpose of making the text easier to read. Any gender-specific term should be understood as referring to all genders, unless explicitly stated. No offence or sexism is intended.

2 Theoretical understanding of interpersonal trust

2.1 Preconditions of interpersonal trust

Trust has gained lots of attention in a variety of disciplines, including social sciences, management and psychology. A comprehensive definition of interpersonal trust does not exist, as definitions differ depending on the context interpersonal trust is investigated within. As Randy Borum (2010) states: “Researchers are often trying to define an elephant, while only being able to touch a particular part of it.” (p. 39).

Rousseau et al. (1998) adopted a multidisciplinary perspective to the construct, and tried to summarize different approaches towards trust. They defined interpersonal trust as:

“A psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.” (p. 395).

Within this definition, three preconditions of trust can be found, upon which most scholars seem to agree (Rousseau, Sitkin, Burt, & Camerer, 1998). First, *the intention to accept vulnerability*; second, *an optimistic expectation regarding the entrusted person’s intentions and the outcome of the trust situation*; and third, an inevitable *risk* which is not openly mentioned, though inherent in the other two. These three preconditions should be explained with the help of an illustrative picture of a trust situation (Collins, 2017).

Figure 1

Two dancers engaging in a trust situation



Note. Photography by Collins, R. (2017). *Tick Tock*. Unsplash. <https://unsplash.com/photos/DrUguS1oBGU>. [The work is in the public domain. Copyright statement from Unplash: “All photos published on Unsplash can be used for free.”]

In the above photograph (Figure 1), two people can be seen. One trusting subject (trustor), the dancer in the upper part of the picture; and one entrusted interaction partner (trustee), who is the dancer in the lower part of the picture. The trustee is balancing the trustor on his back, while the trustor is on her back too, without much of control over the situation. The trustor seems to have *the intention to accept her vulnerability* in this situation, as she might fall down if the trustee loses his balance. Besides this, the trustor seems to participate in this figure intentionally. Furthermore, the trustor seems to have an *(optimistic) expectation*

regarding the trustee's intentions and the outcome of the trust situation, i.e. that the trustee will try his best to balance the trustor over the ground, and not let her fall. There is an inevitable *risk* of actually falling down, as the trustee might lose his balance accidentally or even act with malicious intent and let the trustor fall intentionally. Even though the condition of risk is not openly mentioned within most trust definitions, it is still an important (if not the most important) of all preconditions of trust, as trust would not be necessary without risk (e.g. Borum, 2010; Lewis & Weigert, 1985; Thielmann & Hilbig, 2015).

2.2 Basic components of interpersonal trust situations

Besides these preconditions for trust, three basic components, which form an interpersonal trust situation, can be extracted from the majority of definitions, and are indeed visible in the photograph. A *trusting subject or trustor* (the dancer being balanced), an *entrusted interaction partner or trustee* (the dancer balancing the other dancer on his back) and the *trust object* (i.e. the trustee's intention and ability to secure the trustor's well-being by not letting her fall down) - *I trust you to do X* (e.g. Hardin, 2003; Simpson, 2007; Thielmann & Hilbig, 2015).

In general, interpersonal trust is considered to be the result of the interplay of first, the trustor's trait- and experience-based propensity to trust; and second, interaction partner- and situation-specific features. Each component is understood to influence the degree of interpersonal trust apparent in a specific situation differently. Thielmann and Hilbig (2015) describe how certain characteristics from the trustor influence their propensity to trust. These characteristics are an *attitude towards risky behavior*, *trustworthiness expectations* and *betrayal sensitivity*. The *attitude towards risky behavior* encompasses risk and loss aversion, both functions of the probabilities of gain vs. loss and the relation between the utilities of potential gain and loss. A couple of examples: Ida chooses the secure lottery win of 20 Euros instead of the possible win of 40 Euros if she proceeded gambling (risk aversion). Natalija stays at home instead of leaving her child with the babysitter, because she prefers not taking the risk

of her child being neglected by the babysitter instead of going out with her husband (loss aversion). *Trustworthiness expectations* can be derived from prior trust experiences next to trust cues, like the trustee's outward appearance and social projection (the trustor evaluates her own trustworthiness and draws conclusions about the trustee's trustworthiness from that). *Betrayal sensitivity* is understood as a specific personal sensitivity towards betrayal. Besides the description of these personality characteristics, Thielmann and Hilbig (2015) show which basic traits the above described characteristics are rooted in. They name neuroticism (influencing *risk and loss aversion*), agreeableness and honesty-humility (influencing *trustworthiness expectations* and *betrayal sensitivity*), and extraversion, though the latter one solely for situations with a strong social component.

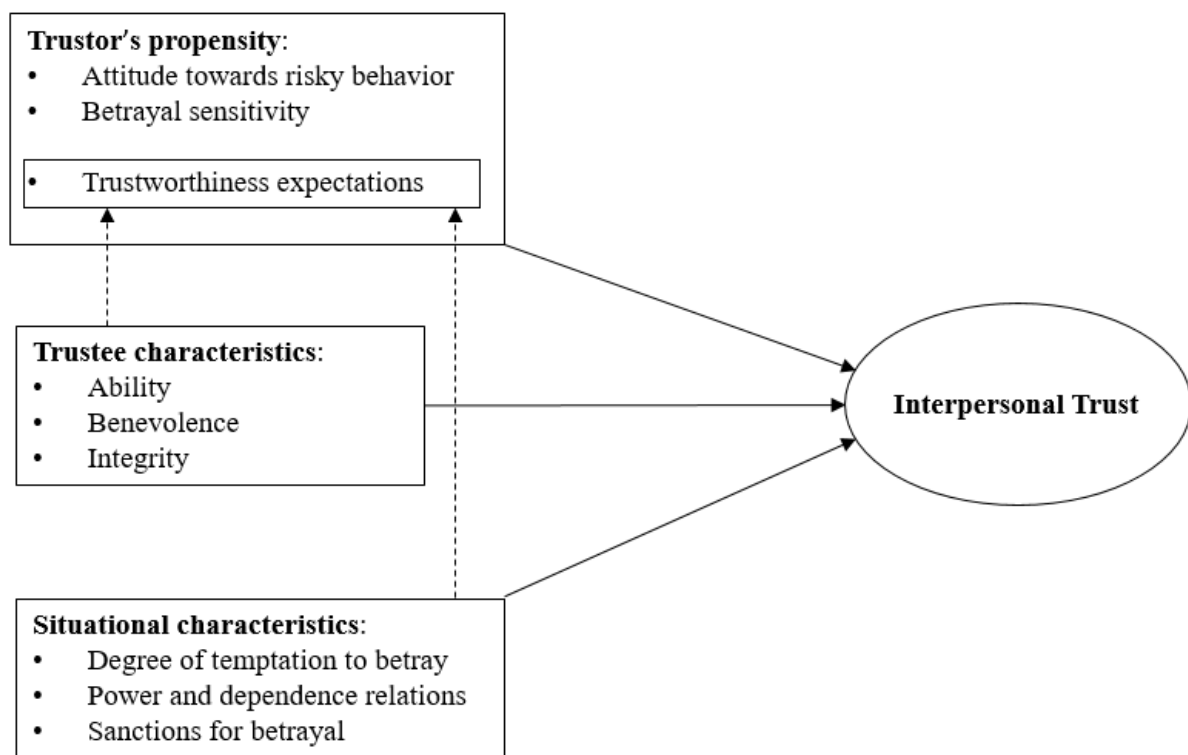
Important factors on the side of the trustee are *ability*, *integrity* and *benevolence*, as suggested by Mayer, Davis, and Schoorman's (1995). *Ability* describes the actual capacity to do what the trustor expects the trustee to do (e.g. balancing her on his back), while *benevolence* reflects the trustee's benevolent intentions towards the trustor (e.g. the intention of not letting her fall). *Integrity* describes in how far the trustee behaviorally sticks to his benevolent intentions towards the trustor.

Concerning trust objects (i.e. what is entrusted), empirical research is scarce. Thielmann and Hilbig (2015) describe a set of situational characteristics which influence the probability of trust beyond the trustor's and trustee's personal characteristics. The most prominent of these situational characteristics is the *degree of temptation to betray*, i.e. the difference in payoff between honoring and betraying the trustor's trust. Besides this, *power and dependence relations* and the *presence and absence of potential sanctions for trust betrayal* might also influence the probability of trust (Kelley et al., 1970; Thielmann & Hilbig, 2015). Both the trustee's characteristics and situational characteristics are understood to influence trust on the one hand independently and on the other hand indirectly over the trustor's trustworthiness

expectations (Thielmann & Hilbig, 2015; Mayer et al., 1995). The following figure (Figure 2) should summarize and illustrate the above described components influencing interpersonal trust. The components in the illustration are derived from two pertinent theoretical articles on interpersonal trust by Mayer et al. (1995) and Thielmann & Hilbig (2015).

Figure 2

Components that influence interpersonal trust



2.3 Main conceptualizations of interpersonal trust

To conclude this chapter, two main conceptualizations of interpersonal trust should be presented briefly: the *attitudinal* and the *behavioral* perspective. The *attitudinal perspective* understands trust as expectancies and intentions towards others (e.g. Rotter, 1967; Mayer, Davis & Schoorman, 1995). One example of trusting from this perspective would be to believe that other people are generally trustworthy. The *behavioral perspective* primarily focuses on

trusting behavior (e.g. Coleman, 1990; Fehr, 2009). One example of trusting from this perspective would be to lend money to somebody.

To find grounding in this wide ocean of possible approaches and conceptualizations and to refrain from perpetuating the existing confusion, which might be the result of attempts to address all aspects of the subject of interpersonal trust at once, a choice had to be made. *Attitudinal perspectives* seem to focus only on cognitions (Thielmann, 2015) and often fail to predict actual trust behavior (Yamagishi, Cho, Inoue, Li and Matsumoto, 2015). *Behavioral conceptualizations of trust*, however, consider attitudinal and emotional aspects as prerequisites for trusting behavior (Deutsch, 1977) and thus seem to reconcile different aspects from different definitions. Besides this, the *behavioral perspective*, unlike the *attitudinal perspective*, includes the precondition of risk (an intention to make oneself vulnerable and take a risk (*attitudinal*) versus actually making oneself vulnerable and actually taking the risk (*behavioral*)), which is a key aspect in interpersonal trust (e.g. Dunn, 1988). Within my research, I have adopted the *behavioral perspective*, because I think this perspective represents the construct most comprehensively. Thielmann and Hilbig (2015) adopt the *behavioral perspective* too, integrating all core components extracted in previous research and extending previous definitions by incorporating different perspectives. Their definition of interpersonal trust can be understood as the working definition of this thesis:

“A risky choice of making oneself dependent on the actions of another in a situation of uncertainty, based upon some expectation of whether the other will act in a benevolent fashion despite an opportunity to betray.” (p. 10).

To summarize, interpersonal trust is based on the *trustors' intention to accept vulnerability, an optimistic expectation regarding the trustors' intentions and risk* (e.g. Rousseau et al., 1998). A trust situation itself can be divided into the three basic components of *the trustor, the trustee and the trust object* (e.g. Hardin, 2003). My working definition is based

on a *behavioral perspective of interpersonal trust*, understanding trust as a choice which entails risk. Besides the advantage that the *behavioral perspective* incorporates factors like attitudes and emotions, it furthermore allows for a “straightforward operationalization of trust in terms of a risky dependence choice” (Thielmann, 2015, p. 13), which was especially beneficial for the development of valid items for a new measure of interpersonal trust, as conducted in Paper I.

3 Measurement of interpersonal trust

For the measurement of interpersonal trust, both trust games and different questionnaires can be found in the literature. Trust games, in which interpersonal trust is operationalized using the exchange of monetary units, certainly capture one important facet of trust and have several advantages, like the systematical evaluation and comparison of intra- and inter-individual trust propensities. However, in everyday life, interpersonal trust situations are not limited to financial situations only. Besides this, interpersonal dependencies like they are often found in trusting interactions (e.g. with close friends, family members or partners) are not mirrored adequately in trust games. Trust games thus cannot assess “real-world” issues with interpersonal trust realistically (e.g. Borum, 2010). Rotter (1967) summarizes the criticism regarding the validity of trust games:

“...if the results of these studies were characteristic of everyday behavior, the normal adult is so competitive, uncooperative, and untrusting that he could hardly get through a normal day’s activities.” (p. 444).

Besides this, it is not clear if trust games really measure trust or rather other constructs, such as inequity aversion (Ashraf, Bohnet & Piankov, 2006; Cox, 2004; Fehr, 2009; Karlan, 2005). Next to trust games, a handful of questionnaires can be found which are presented and discussed in the introduction of Paper I. What is problematic about the questionnaires is that

they often treat only one specific group of interaction partners and cover only the cognitive component of trust (Lewis & Weigert, 1985), not the emotions and behavioral tendencies which are also important aspects of interpersonal trust (e.g. Simpson, 2007). Thus, a measure which reflects “real-world” trust situations with a greater variety of interaction partners and trust objects, i.e. what others are entrusted with (e.g. personal things or secrets), and including emotions and behavioral tendencies would be helpful in advancing our understanding of interpersonal trust.

4 Autobiographical memories of interpersonal trust

One possible origin of current trust behavior is prior trust experience, as mentioned in the conceptualization section. In earlier psychological theories, early trust experiences are even described as the foundation of the propensity to trust, e.g. in Bowlby’s attachment theory (1969) or in the theory of psychosocial development (Erikson, 1963). More up-to-date models of interpersonal trust understand the construct to be influenced by a variety of different factors as outlined above. However, all models agree that interpersonal trust is strongly influenced by learning. Firstly through early experiences with caregivers and the development of attachment styles, secondly through social interaction experiences or just the observation of such experiences made by others, and thirdly through exposure to information about human nature in general (Hiraishi et al., 2008; Van Lange, 2014; Van Lange, Vinkhuyzen, & Posthuma, 2014). In line with this, Thielmann and Hilbig (2015) describe trust experiences as influencing trustworthiness expectations, and Glaeser (2000) names trust experiences to be the best predictor for future trust behavior. Even though trust experiences might not be the only influential factor on differences in interpersonal trust, they certainly play a crucial role. A storage and information source of experiences from an individual is the autobiographical memory (ABM). Different models of ABM support the idea that current social interaction behavior is influenced by past experiences stored in the ABM (e.g. Bluck, Alea, Habermas, &

Rubin, 2005). One model which serves as a good example for how individuals might use of past experiences to guide their present thought and behavior is provided by Conway and Pleydell-Pearce (2000). The authors introduce the so-called self-memory system, consisting of the autobiographical knowledge base and the working self. The autobiographical knowledge base is understood as a “database” containing information about the self from the past, the present and ideas about possible future selves (Conway, 2005). Within the autobiographical knowledge base, information is stored on hierarchical levels, ranging from rather generic knowledge (e.g. in which city one went to university) to event-specific and experience-near knowledge (e.g. the ingredients and the taste of the meal one ate on the last day of university). As an executive instance helping to navigate through these levels and to encode and retrieve self-referential knowledge in a reasonable way, Conway and Pleydell-Pearce (2000) have introduced the working-self in their model. The working-self is understood to contain self-schemata consisting of beliefs, evaluations and self-images which are developed during infancy and adapted over one's life-span, depending on experience (Conway & Pleydell-Pearce, 2000). Each self-schema is associated with the goals an individual tries to reach when the schema is active. Coming back to interpersonal trust, negative trust experiences might be stored in the autobiographical knowledge base, and make an individual form a self-schema of “the betrayed one” associated with the goal of avoiding future betrayal. When this self-schema is triggered by an interaction with a person who resembles somebody who has betrayed one’s trust before, one might try to avoid betrayal by refraining from showing trust. One important area in which negative trust experiences and current alterations in interpersonal trust play a crucial role is interpersonal trust in patients with mental disorders.

5 Interpersonal trust in mental disorders

Mental disorders are a common burden for individuals all over the world. In Germany, 27.7% struggle with one or more mental health issues (Jacobi et al., 2014). Interpersonal trust

difficulties might play a significant role in mental disorders; however, research is sparse to non-existent within some diagnostic groups. In the following section, interpersonal trust in patients with Borderline Personality Disorder (BPD), Major Depressive Disorder (MDD), Social Anxiety Disorder (SAD) and Post-traumatic Stress Disorder (PTSD) – all conditions implying some extent of interpersonal difficulties - should be reflected upon. Borderline Personality Disorder plays a special role in this context, as interpersonal difficulties are especially accentuated in BPD and observations in the clinical context suggest alterations within the realms of interpersonal trust (e.g. Fonagy & Allison, 2014). This assumption is further stressed by the fact that the majority of studies on interpersonal trust were conducted with patients with BPD. However, interpersonal difficulties play a crucial role in other disorders like SAD and PTSD too; therefore this seems an important gap to close within research of interpersonal trust in mental disorders.

5.1 Interpersonal trust in patients with Borderline Personality Disorder

BPD is the most prevalent personality disorder to be found both within in- and outpatient settings (Korzekwa, Dell, Links, Thabane & Webb, 2008), and treatment accounts for about 30% of the total costs spent on psychiatric inpatients in Germany (Bohus & Schmahl, 2007). In treatment settings, the gender ratio of 3:1 (with women being affected more often by BPD) can be found. However, it is not clear whether women generally suffer more often from BPD or if the gender ratio is caused by different treatment-seeking behavior and gender-specific differences in comorbidities, such as eating disorders in female patients and substance abuse disorders in male patients (Skodol & Bender, 2003). The gender differences which can be observed in treatment settings were not replicated in epidemiological studies (e.g. Grant et al., 2008) so the gender ratio remains an unanswered question. Symptomatology in BPD is marked by a pervasive pattern of instabilities in affect, interpersonal relationships, behavior and self-identity (DSM-5, American Psychiatric Association, 2013). This symptom pattern is associated

with severe deficits in psychosocial functioning. In self-report studies, patients with BPD reported more severe difficulties in the psychosocial realm than patients with, for example, mood disorders (e.g. Ansell, Sanislow, McGlashan & Grilo, 2007).

One area which is especially challenging for patients with BPD is interpersonal relationships, which are often marked by the alternation of idealization and devaluation, and extreme effort to avoid imagined or real abandonment (DSM-5, American Psychiatric Association, 2013). Fonagy and colleagues (Fonagy, Luyten, Campbell & Allison, 2014) have introduced a concept called epistemic trust, which could partially account for the problematic relationship behavior so commonly found in patients with BPD. Epistemic trust describes “trust in the authenticity and personal relevance of interpersonally transmitted information”, Fonagy & Allison, 2014, p. 3). Fonagy and Allison (2014) describe BPD as a condition that is marked by epistemic mistrust, which means being closed off to learning from social experiences. Epistemic mistrust stems from interactions with early caregivers who did not adopt a mentalizing stance towards their child, i.e. perceived the child as an intentional individual whose behavior arises from underlying mental states (Bateman & Fonagy, 2012).

Establishing epistemic trust through mentalizing is seen as a common factor underlying successful therapeutic interventions, especially for patients with BPD (Fonagy & Allison, 2014). In a condition of epistemic trust, the therapist is seen as a trustworthy source of information and patients can regenerate their capacity for social understanding (Fonagy, Luyten, Allison & Campbell, 2017). Empirical studies investigated the effects of mentalizing during therapy in patients with BPD; however, studies investigating the more basic relationship between epistemic trust and BPD do not, to date, exist. Epistemic trust and interpersonal trust are not equivalents. Even though epistemic trust seems to be one form of interpersonal trust, as it is defined as a form of trust which one can feel and show regarding another human being like

a care-giver or a therapist, the construct still covers only one facet as it specifically means trust in the authenticity and personal relevance of transmitted information.

Interpersonal trust on the other hand, incorporates trust towards different interaction partners and concerning different trust objects, i.e. not only the authenticity and relevance of information. Nevertheless, the line of thought provided by Fonagy and colleagues concerning epistemic trust in BPD is supported by existing empirical studies investigating interpersonal trust more generally in BPD. Even though interpersonal trust in BPD has not yet received the amount of attention it deserves regarding the severity of interpersonal difficulties, there are still a handful of studies on the subject to be found in the literature (for a review, see Lazarus, Cheavens, Festa & Rosenthal, 2014). Unoka, Seres, Aspán, Bódi and Kéri (2009) for example compared patients with BPD to patients with MDD and healthy controls in a 5 round trust game, and found that patients with BPD showed less trusting behavior than both of the other groups. Besides this, trust game performance was predicted by the interpersonal and cognitive sector scores of a BPD questionnaire. A more detailed description of results from other studies on interpersonal trust in patients with BPD can be found in the introduction of Paper I.

Generally, results from these studies suggest that the propensity to trust in patients with BPD is impaired when compared to healthy individuals or patients with mental disorders other than BPD (e.g. Lazarus et al., 2014). Besides the fact that interpersonal trust in BPD has not yet been studied much in detail, another reason for concern is that studies have used trust games to assess the propensity to trust in patients with BPD. The exchange of monetary units, as used in trust games, certainly captures an important facet of trust, but it remains questionable whether this really captures the interpersonal trust issues experienced by patients with BPD. This skepticism is mostly stressed by experiences in clinical contexts. Patients with BPD seem to have trust deficits especially towards intimate partners (e.g. Unoka et al., 2009) and in scenarios

in which they entrust others with rather personal things like their emotional and physical well-being, their secrets or the improvement of their mental health.

In summary, there is both clinical and empirical evidence suggesting that the propensity to trust is altered in patients with BPD. However, as the construct of interpersonal trust encompasses so many different facets, it seems necessary to investigate different scenarios with differing situational aspects (e.g. what is entrusted) and different interaction partners with varying familiarity to learn about interpersonal trust in BPD beyond the results of trust games.

5.2 Interpersonal trust in patients with Major Depressive Disorder

With lifetime prevalence rates of 20.6% and 10.4% for 12 months (Hasin et al., 2018), Major Depressive Disorder (MDD) is one of the most common mental disorders in the world. In 2017, the World Health Organization (WHO) stated that MDD is the leading cause for disability worldwide. This could partly be due to the recurrence of MDD, which, with 75% of individuals experiencing at least one second episode of acute depression, is very high (Boland & Keller, 2009). MDD is characterized by “sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration” (WHO: Depression and Other Common Mental Disorders, Global Health Estimates, 2017, p. 7). Women seem to have a higher risk of developing a depression with 1.5 – 3 higher prevalence rates (Kessler, 2000). Typical comorbidities are substance use disorders and anxiety disorders (Hasin et al., 2018). When taking a closer look, MDD also seems to be an interpersonal disorder. Uebelacker, Battle, Friedman, Cardemil, Beevers and Miller (2008) asked inpatients with MDD “what part of your life would you like treatment to address?” and the most common answer, reported by 83%, was to improve their relationships with others (Uebelacker et al. 2008).

Hirschfeld et al. (2000) found significant and pervasive impairments of social functioning (e.g. size of social network, frequency of social activities etc.) in patients with

depressive disorders, and so did Saris, Aghajani, van der Werff, van der Wee and Penninx (2017), who even found social functioning to be impaired more strongly in patients with depressive disorder when compared to patients with anxiety disorders (Saris et al., 2017). Concerning interpersonal trust, very little research has been undertaken with patients with MDD. Unoka et al. (2009) and Preuss, Brändle, Hager, Haynes, Fischbacher and Hasler (2016) compared patients with MDD to patients with BPD in a trust game and both found interpersonal trust to be unaltered in patients with MDD. It might be that impairments in social functioning in MDD might not stem from a place of mistrust towards other people but rather from a place of disinterest and a lack of energy, which are typical in MDD (Kennedy, 2008).

5.3 Interpersonal trust in patients with Social Anxiety Disorder

Social Anxiety Disorder (SAD) is common in the general population, with lifetime prevalences of 4.0% and 12-month prevalences of 2.4% across the world (Stein et al., 2017), and lifetime prevalences of 12.1% within the USA (National Comorbidity Survey Replication, Kessler et al., 2005). In community samples, women were found to have had around a twofold risk of developing SAD (OR=2.1) (Fehm, Beesdo, Jacobi & Fiedler, 2008). Interestingly, this gender difference did not show up in clinical samples, suggesting that SAD interferes more strongly with daily functioning in men than in women (Lieb & Müller, 2002).

SAD is characterized by a fear of embarrassment, humiliation, critique and judgement by others in social situations (e.g. speaking in front of a group of people, going to a party, asking someone on a date) and associated substantial distress and avoidance (DSM-5.). The most feared situation reported is public speaking, followed by meeting strangers and eating in public (Jalnapurkar, Allen & Pigott, 2018). Comorbidities are frequently found in SAD too: Jalnapurkar et al. (2018) reported numbers between 60-80% in their review of lifetime risks for developing a comorbid disorder additional to SAD. Common comorbidities were found to be depressive disorders (Jalnapurkar et al., 2018), the same as other anxiety disorders and

substance-related disorders (Fehm et al., 2008). SAD is associated with impairments in psychosocial functioning; patients with SAD are less likely to be married (Bruch, Fallon & Heimberg, 2003), have smaller social networks (Dahl & Dahl, 2010) and report lower satisfaction in their social relations compared to individuals without SAD (Fehm et al., 2008).

Even though social anxiety is known to go along with impaired interpersonal relationships, interpersonal trust did not receive much attention amongst patients with SAD. Trust games have been applied to samples with SAD, however not for the examination of interpersonal trust. Hoge, Lawson, Metcalf, Keshavia, Zak, Pollack and Simon (2012) compared oxytocin (OXT) levels from patients with SAD and healthy controls during a trust game. Patients with SAD were found to have lower OXT levels, which could account for alterations in social affiliative behavior in SAD. Sripada, Angstadt, Banks, Nathan, Liberzon & Phan (2009) compared patients with SAD to healthy controls during trust games with human interaction partners and with computers. They found less activation in the prefrontal cortex during the trust game with a human interaction partner, which could play a role in the social-cognitive pathophysiology in patients with SAD. Only last year, another study was published which also examined interpersonal trust in the context of social anxiety. However, this study compared individuals with high and low social anxiety but not a clinical sample with a control group (Anderl, Steil, Han, Hitzeroth, Reif & Windmann, 2018). They found that among highly socially anxious individuals reciprocal but not trustful giving decreased, compared to low socially anxious individuals. Furthermore, both social anxiety symptoms and reciprocal giving were negatively associated with self-reported, real-life, interpersonal functioning. Results suggested responsiveness to be impaired in SAD rather than interpersonal trust. However, these results should be replicated with clinical samples and other measurement methods than trust games.

5.4 Interpersonal trust in patients with Post-traumatic Stress Disorder

DSM-5 (American Psychiatric Association, 2013) defines Post-traumatic Stress Disorder (PTSD) as a trauma and stressor-related disorder, which is caused by the exposure to actual or threatened death, serious injury or sexual violation. Exposure means that an individual directly experienced or witnessed a traumatic event, learned that the traumatic event occurred to a close friend or family member, or experienced first-hand repeated or extreme exposure to aversive details of the traumatic event (DSM-5, American Psychiatric Association, 2013). Interestingly, a majority (over 70%) of the general population experience at least one traumatic event during their lifetime (Benjet et al., 2016). However, only about 6.8% (lifetime) will develop a consequent PTSD (Kessler et al., 2005).

The symptomatology of PTSD is structured into symptoms of re-experiencing, avoidance of trauma-related stimuli, negative alterations in thoughts and feelings and hyperarousal (DSM-5, American Psychiatric Association, 2013). Common comorbidities are depression (e.g. Flory & Yehuda, 2015; Husky, Mazure & Masfety, 2018), substance abuse, other anxiety disorders and chronic pain (Husky et al., 2018; Sareen et al., 2007). Women have a higher risk of developing PTSD, with lifetime prevalences of 10-12% in women and 5-6% in men (Olf, 2017). The results of several studies suggest that interpersonal trauma more often causes PTSD than, for example, natural catastrophes (Maercker, Michael, Fehm, Becker & Margraf, 2004; Charuvastra & Cloitre, 2008) and that intimate interpersonal trauma (traumatization by a close person, e.g. a family member) is associated with particularly severe post-traumatic symptoms (Forbes et al., 2014).

Bell, Robinson, Katona, Fett and Shergill (2018) describe how, in the cognitive model of PTSB made by Clark and Ehlers (2000), the interpretation of the intentions of an interaction partner are considered to be more relevant to the development of post-trauma symptoms than the actual response and behavior which – remembering the definition of interpersonal trust -

makes PTSD a disorder prone to be associated with trust deficits. Bell et al. (2018) compared trust game performances with cooperative and un-cooperative trustees from patients with PTSD to healthy controls, in order to investigate dynamic trust in interpersonally caused PTSD. Results suggested an effect for lower basic investment in PTSD when compared to healthy controls, though this effect was not significant. Nevertheless, a significantly lower investment was found in PTSD towards cooperative trustees, suggesting insensitivity to social rewards and inflexible negative beliefs about others (Bell et al., 2018). In line with this, Cias et al. (2000) found self-reported interpersonal trust assessed by one item from the positive and negative symptoms scale (PANSS: Kay, Fiszbein, & Opler, 1987) to be the only variable to distinguish patients with PTSD from patients with depression. Besides this, interpersonal trust is considered a fundamental variable in the treatment of interpersonal trauma survivors (Hermann, 1992), as for recovery, patients with PTSD need to re-learn how to establish mutual cooperation with significant others (Williams et al. 2014, Chouliara et al., 2017).

Chouliara et al. (2017) found, in their study about group therapy for complex interpersonal traumatization, that one crucial factor which distinguished those who completed therapy from those who did not was building empathic trusting relations to other group members, further highlighting the importance of interpersonal trust for the treatment of those patients. From a cognitive-behavioral perspective, PTSD seems to be a disorder perpetuated by maladaptive beliefs about the self, other people and the world in general (e.g. Ehlers & Clark, Resick & Schnicke, 1992, 1993). Even though interpersonal trust goes beyond cognitions and beliefs, it should be of certain relevance within the thematic content of maladaptive beliefs from patients with PTSD, especially within beliefs towards other people.

Both Janoff-Bulman (1992) and McCann (1988) picked up on the topic of interpersonal trust in their models on basic beliefs before and after traumatization. Janoff-Bulman (1992) proposed that one of the main assumptions healthy individuals hold and individuals with post-

traumatic distress often find to be shattered within themselves is that “other people are trustworthy and misfortunes occur infrequently” (p.51). McCann (1988) identifies trust as one of the five major themes of maladaptive beliefs in individuals with PTSD, next to control, esteem, power and intimacy. The topic of interpersonal trust in PTSD has gained some attention, though not in as much detail as association to trauma characteristics, or in samples other than adults. Those topics will be addressed in Paper III.

6 Research objectives

Before outlining the research objectives of this thesis, I will try to integrate the state of research of interpersonal trust that I have outlined above. Firstly, interpersonal trust is a heavily studied construct with high context-specificity for which many conceptualizations and definitions can be found. Interpersonal trust is influenced by a range of variables, of which each can be assigned to either *the trustor*, *the trustee* or *the trust situation*. Within the trustor, both *personality characteristics* and *prior trust experiences* form a propensity to trust, while the trustee's *ability*, *benevolence* and *integrity* influence the level of trust shown in a specific situation. In addition, situational features like the kind of *trust object* (i.e. what is entrusted) or the *degree of temptation to betray* influence the degree of trust given in a specific situation. In the literature, two broad conceptualizations of interpersonal trust can be found: *attitudinal* and *behavioral conceptualizations*, both of which were described above. In this thesis, I have adopted the *behavioral perspective* on interpersonal trust as I think it is the most comprehensive, including important aspects like attitudes, emotions and behavioral tendencies. A definition from Thielmann & Hilbig (2015), who also followed a behavioral approach, can be directly translated into observable trust behavior, which was of great use for the development of a new realistic measure for interpersonal trust in Paper I. The second goal of the paper was to examine interpersonal trust in patients with BPD, MDD and SAD, in order to further elucidate possible trust alterations which might account for interpersonal difficulties within these types of disorders.

Paper II targets one possible origin of current trust behavior: prior trust experiences. For this purpose, autobiographical memories from patients with BPD and non-clinical controls were examined. In patients with BPD, alterations in interpersonal trust seem to be a robust finding. However, more detailed information about alterations in this multifaceted construct is still lacking. To come to terms with the possible origins of trust alterations in patients with BPD,

trust memories were investigated with special attention to different facets (i.e. different interaction partners and different trust objects) of interpersonal trust.

Paper III focuses on interpersonal trust in another type of mental disorder marked by difficulties in interpersonal and psychosocial functioning: patients with PTSD after interpersonal traumatization. The important role of interpersonal trust in PTSD has been mentioned in other studies. However, to date, only adult interpersonal trauma survivors have been examined, and not in a greatly differentiated way (e.g. distorted beliefs about interpersonal trust in association to specific trauma characteristics). In Paper III, we examined adolescent patients with PTSD after interpersonal traumatization. Interpersonal trust amongst other thematic categories in post-traumatic cognitions was investigated.

The main goals of this thesis were to expand our knowledge about the construct of interpersonal trust in general, and to elucidate its role in patients with mental disorders who suffer from impairments in interpersonal functioning.

7 Paper I: Interpersonal Trust: Development and Validation of a Self-Report Inventory and Clinical Application in Patients with Borderline Personality Disorder

A slightly adapted version of the following paper was published in Journal of Personality Disorders as:

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7.1 Abstract

Based on typical everyday trust situations, a short and ecologically valid self-report instrument for the assessment of interpersonal trust was developed (Interpersonal Trust Scenario Questionnaire – ITSQ). Overall, data from $N= 1359$ clinical and non-clinical participants were analyzed to examine psychometric properties and group differences. We assessed interpersonal trust in patients with borderline personality disorder (BPD), patients with major depressive disorder and patients with social anxiety disorder. Lastly, the relationship between interpersonal trust and the perceived quality of the therapeutic alliance was examined.

The ITSQ showed satisfactory reliability, Cronbach's $\alpha=0.72$. Convergent and discriminant validity was obtained for correlations with a hypothetical trust game, another interpersonal trust scale (KUSIV-3), risk-propensity, optimism and pessimism and the HEXACO-60. Patients with BPD showed lowest interpersonal trust scores compared to all other groups. Interpersonal trust and the perceived quality of the therapeutic alliance were significantly associated within the group of patients with BPD only.

7.2 Introduction

Trust is a key aspect for human interaction and essential for the development and maintenance of good and stable relationships. Given the importance of trust for everyday-life, this construct received considerable attention from various scientific fields (e.g., economics, sociology, or psychology), resulting in a variety of conceptualizations. These conceptualizations can be broadly differentiated into attitudinal and behavioral perspectives (for reviews, see Thielmann, 2015). The attitudinal perspective understands trust primarily as expectancies and intentions towards others. Accordingly, this perspective defines trust as “an expectancy held by an individual or a group that the word, promise or statement of another can be relied upon” (Rotter, 1967, p. 1) and stresses the importance of intentions like “the willingness to be vulnerable to another party” (Mayer, Davis & Schoorman, 1995). The behavioral perspective primarily focuses on the trustful act, such as lending money to somebody (e.g. Coleman, 1990; Fehr, 2009). Behavioral conceptualizations of trust consider attitudinal aspects (and related emotions) as prerequisites for trusting behavior (Deutsch, 1973). Furthermore, the behavioral perspective in opposite to the attitudinal perspective includes risk (-taking) as well, which has been understood as a key characteristic of trust by many different scholars (Coleman, 1990; Das & Teng, 2004; Thielmann & Hilbig, 2015). In this article we adopt a behavioral perspective, because trust behavior might represent the propensity to trust most comprehensively. The propensity to trust includes cognitions or attitudes towards the trusted person as well as emotional states, which have been found to influence trust behavior too (Dunn & Schweitzer, 2005).

In line with the importance of interpersonal trust for human interactions, the study of trust has received growing attention in patients with interpersonal difficulties, particularly in Borderline Personality Disorder (BPD, for a review see Lazarus, Cheavens, Festa & Rosenthal, 2014). BPD is characterized by significant problems in interpersonal functioning. More

specifically, patients with BPD show a pattern of unstable relationships alternating between extremes of idealization and devaluation and extreme effort to avoid imagined or real abandonment, as described in DSM- 5 (American Psychiatric Association, 2013). Previous studies suggest that BPD is characterized by dysfunctional beliefs, that others are hostile and untrustworthy, that they themselves will be rejected and abandoned, and that they have to protect themselves to prevent negative events (Butler, Brown, Beck & Grisham, 2002, Renneberg, Schmidt-Rathjens, Hippin, Backenstrass & Fydrich, 2005).

There is evidence that the propensity to trust in patients with BPD is impaired in comparison to healthy individuals or patients with mental disorders other than BPD (e.g. Lazarus, Cheavens, Festa & Rosenthal, 2014). To our knowledge, all published studies used trust games to examine trust and cooperation in patients with BPD. In trust games, there are two players, the sender and the receiver. At the beginning of the game, both sender and receiver have a certain amount of money. The sender decides how much of her/his money she/he would like to invest and keeps the money that she/he does not invest. The receiver gets a multiple (e.g. triple) of the amount that the sender invests. Finally, the receiver decides how much money to return to the sender. To study trusting behavior, the participants are usually put into the role of the sender (e.g. Glaeser, Laibson, Scheinkman & Soutter, 2000), whereas the role of the receiver is used to study trustworthiness and cooperation (e.g. Thielmann, Hilbig & Niedtfeld, 2014). Bartz et al. (2011) and Ebert, Kolb, Heller, Edel, Roser and Brüne (2013) both examined participants in the role of the sender and additionally administered intranasal OXT, which in healthy individuals enhances trust (Kosfeld, Heinrichs, Zak, Fischbacher & Fehr, 2005). Both Bartz et al. (2011) and Ebert et al. (2013) showed that patients with BPD displayed a reversed behavioral pattern: they showed decreased trust in the OXT-condition in comparison to the non-OXT condition. In the study of King-Casas, Sharp, Lomax-Bream, Lohrenz, Fonagy and Montague (2008), participants were examined in the role of the receiver. Results suggested that patients with BPD, in contrast to healthy controls, could not maintain cooperation over multiple

rounds of the trust game, and furthermore did not retrieve cooperation through coaxing. Lastly, Unoka, Seres, Áspán, Bódi and Kéri (2009) as well as Preuss, Brändle, Hager, Haynes, Fischbacher and Hasler (2016) examined patients with BPD in the role of the sender, and compared them not only to healthy controls but also to patients with Major Depression (MDD). Results from Unoka et al. (2009) replicated the effect that patients with BPD showed less trusting behavior than healthy controls and patients with MDD as well, whereas patients with MDD did not differ from healthy controls. Preuss et al. (2016) on the other hand did not find group differences for trust, but less consistent trust behavior in patients with BPD in comparison to healthy controls and patients with MDD. However, Preuss et al. (2016) used a single shot trust game, whereas all other mentioned studies applied consecutive trials. This may be a possible explanation for the discrepant results.

In patients with social anxiety disorder (SAD) trust games have been applied as well, however, not for the investigation of interpersonal trust. Sehkar-Sripada, Angstadt, Banks, Nathan, Liberzon & Phan (2009) for example found less activation in the prefrontal cortex in patients with SAD compared to healthy controls during a trust game with a human interaction partners relative to a trust game with a computer, which could play a role in the social-cognitive pathophysiology in patients with SAD. Hoge, Lawson, Metcalf, Keshavia, Zak, Pollack & Simon (2012) found lower OXT levels in patients with SAD compared to healthy controls during a trust game, which could account for alterations in social affiliative behaviors in SAD.

The method of using games to assess interpersonal trust in patients with BPD and MDD certainly captures one important facet of trust and has several advantages, but some considerable disadvantages, too. In trust games, interpersonal trust is operationalized by using the exchange of monetary units. This allows researchers to systematically classify the intra-individual propensity to trust and to investigate inter-individual differences in trust behavior. Furthermore, the outcome reproduces not only the subjective and cognitive component of trust

but rather objective behavioral data. Nevertheless, interpersonal trust in everyday life is not limited to financial situations, hence; trust games do not cover everyday “real-world” issues of interpersonal trust adequately (e.g. Borum, 2010). Patients with BPD, for instance, typically experience mistrust in close relationships. These interpersonal dependencies are not adequately mirrored in trust games. Thus, a simple measure of interpersonal trust scenarios might help to further advance our understanding of trust in clinical populations. Based on the extant clinical literature, these scenarios should reflect real life trust situations with different interaction partners and a greater variety of situational aspects what others are trusted with (e.g. personal things or secrets). Besides, it is not clear if trust is measured, or rather fairness, inequity aversion or altruism (Ashraf, Bohnet und Piankov 2006, Cox 2004, Fehr 2009, Karlan 2005). Next to trust games, there are a handful of questionnaires for the assessment of interpersonal trust, such as the prominent and most cited Interpersonal Trust Scale (ITS) by Rotter (1967). In addition, questionnaires exist to measure trust in romantic relationships (Larzelere & Huston, 1980; Rempel, Holmes & Zanna, 1985), in one specific person (Buck & Bierhoff, 1986; Johnson-George & Swap, 1982) and trust in humans in general (Beierlein, Kovaleva, Kemper & Rammstedt, 2012, Evans & Revelle, 2008). Nevertheless, those measures cover only the cognitive component of trust, but not emotions and behavioral tendencies that are included in theoretical models of trust, too (Simpson, 2007). Therefore, we concluded that another, more ecologically valid measure of interpersonal trust is needed.

Another important issue in the context of interpersonal trust in patients with mental disorders is interpersonal trust within the therapeutic alliance. Especially in the treatment of personality disorders like BPD, the establishment and maintenance of a beneficial therapeutic alliance is a considerable challenge, as most of those patients problems manifest in interpersonal realms (Beck et al., 1990). The importance of the therapeutic alliance is underlined by several studies indicating that the perceived quality of the alliance is strongly associated with therapy outcome (e.g. Lambert & Barley, 2001; Bender, 2005). In BPD, the growth of the therapeutic

alliance during the first year of treatment rated by patients with BPD facilitated the reduction of BPD symptomatology (Spinhoven, van Dyck & Arntz, 2007). Likewise, the therapeutic alliance and the patients' perception of symptom reduction were associated in patients with BPD (Marziali, Munroe-Blum and McCleary, 1999). In line with this research, Fonagy and Allison (2014) described patients with BPD as one particular group, who gain from beneficial therapeutic alliances, especially when their subjective view is understood - i.e. if they are mentalized. Mentalizing is regarded as an important interpersonal process for the establishment of epistemic trust: "trust in the authenticity and personal relevance of interpersonally transmitted information" (see Fonagy & Allison, 2014, page 3). Establishing epistemic trust during therapy is assumed to be a common factor underlying beneficial therapeutic alliances and successful interventions, especially for patients with BPD (Fonagy & Allison, 2014). To our knowledge, no study so far examined the association between trust and the quality of the therapeutic alliance. Thus, we would like to examine this association in an exploratory way and in the different clinical groups separately to investigate disorder specificity in BPD.

Despite manifold findings from the various disciplines in the trust literature, we remark some considerable gaps to close: Interpersonal trust in patients with BPD has been investigated many times, but only with the use of trust games. In addition, to our knowledge no clinical groups other than patients with BPD and patients with MDD (the latter only in two studies) have been examined, at least not with regards to interpersonal trust (in patients with SAD trust games have been applied to examine mentalizing and OXT levels, as described above). Furthermore, the association of interpersonal trust and treatment-related constructs like the perceived quality of the therapeutic alliance should be investigated, too.

Therefore, the present study comprised two main goals: (1) the development of a new, ecologically valid self-report questionnaire on interpersonal trust (2) the clinical application of the questionnaire.

7.3 Study 1: Development and validation of the Interpersonal Trust Scenario Questionnaire

7.3.1 Research questions

Study 1 describes the initial development of the Interpersonal Trust Scenario Questionnaire (ITSQ). In addition, we determined the psychometric properties of the questionnaire and evaluated the construct validity of the ITSQ. Construct validity was examined by investigating convergent and divergent validity of the instrument with a hypothetical trust game, a different self-report inventory for interpersonal trust as well as several additional questionnaires. Finally, we conducted exploratory and confirmatory factor analyses in two independent samples.

7.3.2 Initial development process

First, we conducted 15 unstructured interviews with people from the general population (8 women and 7 men between 20 to 54 years of age). These individuals were recruited online over social media platforms by means of convenience sampling. Participants were asked to describe everyday trust situations and corresponding trust behaviors. This resulted in the formulation of 25 items. Next, a sample of 10 clinical researchers and therapists rated the adequacy of each item for the concept of interpersonal trust as well as the clarity and comprehensiveness of the formulations. Based on these ratings, we selected 20 items with the highest ratings of adequacy, clarity and comprehensiveness.

Items describe different interpersonal situations and corresponding trust behaviors. For instance, “A friend asks you if he/she can borrow your very valuable SLR camera for their holiday. You have had varied experiences trusting your friend in the past. You give your friend the camera.”. Then participants rated how strongly they agree or disagree with the described

behavior on a Likert Scale from 1-5 (“would not agree” to “would completely agree”). All items of the final questionnaire are provided in the Supplementary Material.

7.4 Method

7.4.1 Participants

We conducted two different web-based studies to evaluate the psychometric properties of the questionnaire. The first sample comprised 308 participants (64% female, age: $M = 28.5$, $SD = 14.2$). The second sample comprised 713 participants (72% female, age: $M = 29.6$, $SD = 9.4$). Participants were recruited via flyers, emails and postings in internet forums. Sensitivity analyses were conducted showing that the sample sizes allow detecting correlational associations between two variables of $|r| > .15$ (sensitivity analysis with alpha = .05, power = .8, two-tailed).

7.4.2 Additional measures

Trust Game: We used a hypothetical version of this paradigm to assess trust behavior (Kosfeld et al. 2005). Participants received an endowment of 12 monetary units and had to decide how many units they wanted to send to a hypothetical second player. We used a two-round game. In the first round, participants should imagine splitting the monetary units with an unknown person. In the second round, they should imagine the second player was a known person like a friend or partner.

Collection of Items and Scales for the Social Sciences: We used three different items and scales from this collection. First, KUSIV-3 measures interpersonal trust with three items (Beierlein, Kemper, Kovaleva & Rammsted, 2014). More specifically, this scale assesses beliefs about the trustworthiness of others on a 5-point Likert scale from 1 = strongly disagree to 5 = strongly agree. The questionnaire is based on the definition of interpersonal trust by Rotter (1967) and formulation of the items was oriented on the items from the widely used ITS.

Second, we applied the Optimism-Pessimism Scale. This scale consists of two items asking how optimistic/pessimistic one feels in general on a scale from 1 (not optimistic/pessimistic at all) to 7 (very optimistic/pessimistic). Previous work showed that each scale is related with interpersonal trust, in particular, that optimism is moderately and positively associated with interpersonal trust and that pessimism is moderately and negatively associated with interpersonal trust (Beierlein, Kemper, Kovaleva & Rammstedt, 2012). In addition, we used an item asking how willing one feels to take risks from 1 (not willing to take risks at all) to 7 (very willing to take risks). Risk-Propensity is moderately to strongly and positively associated with interpersonal trust (e.g. Colquitt, Scott & LePine, 2007). The reliability indices for all three scales were satisfactory (R-1 $r_{tt}=0.74$ ((Beierlein, Kovaleva, Kemper & Rammstedt, 2014), O-P-1 $r_{tt} = 0.59-0.83$ (Kemper, Beierlein, Kovaleva & Rammstedt, 2012), KUSIV-3 Cronbach's $\alpha=0.85$ (Beierlein, Kovaleva, Kemper & Rammstedt (2012).

HEXACO Personality Inventory (HEXACO-60): The German version of the HEXACO Personality Inventory–Revised (Ashton & Lee, 2009; Moshagen, Hilbig & Zettler, 2014) is a self-report measure to assess six basic personality dimensions (honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, openness to new experiences). Responses are given on a 5-point Likert-type scale ranging from strongly disagree to strongly agree. Cronbach's α for all scales ranged between 0.76 - 0.80 in both samples (Ashton & Lee, 2009). Previous work highlighted that HEXACO Emotionality, Honesty-Humility and Agreeableness represent underlying factors of prosocial behavior and trust and that Extraversion might be a determinant of trust as well (for a discussion see Thielmann & Hilbig, 2015).

Social Desirability Scale-17 (SES-17): The SES-17 is a self-report measure consisting of 17 items to assess answering biases in terms of social desirability. We applied this measure to avoid previously found influences by social desirability on trust measured by self-report

inventories (Amelang, Gold & Külbel, 1984). Internal consistency of this scale is good with Cronbach's $\alpha=0.72-0.75$ (Stöber, 1999).

7.4.3 Procedures

Participants completed the questionnaire battery online (15-20 minutes). Eligible for the study were people over 18 years of age with sufficient knowledge of the German language to understand the questionnaires. As compensation for participation, student participants could collect credit points, whereas non-student participants could win one out of ten vouchers for a major retail company. All participants gave written informed consent prior to participation. The ethics committee of Freie Universität Berlin approved the study protocol. The experiment was performed in accordance with relevant guidelines and regulations.

Participants in the first sample completed the ITSQ, the KUSIV-3, the Optimism-Pessimism Scale, the Risk-Propensity Item, the HEXACO-60 as well as the SES-17. Participants in the second sample completed the ITSQ, the KUSIV-3, the Risk-Propensity Item, the HEXACO-60 and the hypothetical trust game.

7.4.4 Statistical Analyses

Item Analyses, reliability, and validity estimates were calculated using SPSS (Version 24.0, 2016.). After checking for normal distribution of the data, we calculated non-parametric correlation coefficients to estimate convergent validity with alternative measures. Exploratory and confirmatory factor analyses were conducted for ordinal data with WLMSV estimators and oblique rotation technique. We chose an oblique rotation technique since inter-correlation of the factors could be expected (Costello & Osborne, 2005). Both factor analyses were conducted with MPLUS (Muthén & Muthén, 1998).

7.5 Results

7.5.1 Item characteristics and exploratory factor analysis in Sample 1

Item characteristics: Skew and kurtosis were within normal limits for all items, i.e., absolute skew and kurtosis values between +1.5 and -1.5 (Tabachnick & Fidell, 2013). We excluded two items from the questionnaire because of minor item-test-correlations ($r_{it} < .30$, for more information see e.g. Nunnally & Bernstein, 1994). One additional item was eliminated because of extreme difficulty ($M = 1.78$). The mean item-test-correlation for the remaining 17 items was $r_{it} = 0.5$.

Homogeneity: Mean inter-item- correlation was acceptable ($r = 0.24$; Briggs and Cheek (1986).

Exploratory factor analysis: The Kaiser-Meyer-Olkin value of .85 indicated that factor analysis was appropriate for the data. The exploratory factor analysis with 17 items revealed a two-factor solution. Nine items were eliminated due to significant double loadings. Thus, the final questionnaire comprised eight items.

The two-factor solution was maintained for the final eight items as the root means square error approximation model fit index was at .092, the CFI at .967 and the TLI at .928, which indicates reasonable fit of the two-factor model (Hu & Bentler, 1999; Vandenberg & Lance, 2000). All eight items from the final version of the ITSQ showed significant factor loadings of at least .55 on one of the two factors, indicating simple structure. All factor loadings are displayed in Table 7 in the appendix.

7.5.2 *Confirmatory factor analysis and reliability in Sample 2*

Fit indices of the 2-factor solution showed a reasonable model fit with a χ^2 to degrees-of-freedom-ratio of less than 3:1 (78.47 : 41) (Kline, 2005), CFI at .968 and the TLI at .953 (Hu & Bentler, 1999; Vandenberg & Lance, 2000). In addition, all standardized factor loadings were significant (for additional information see Table 2 in the appendix). We labeled the two factors

as follows: ITSQ subscale 1 = entrusting known people with material items, ITSQ subscale 2 = entrusting unknown people with ones well-being.

Internal Consistency: Cronbach's Alpha was calculated for the final version of the questionnaire. The coefficient was at $\alpha=0.72$, which can be considered acceptable.

Validity: We found significant positive correlations ranging between .15-.24 with the sum score and subscale 2 "entrusting unknown people with ones well-being" of the ITSQ and the outcome in the conditions of the hypothetical trust game. Additionally, we found positive correlations ranging between .16-.35 with the sum score and both subscales of the ITSQ and an alternative questionnaire for the assessment of interpersonal trust (KUSIV-3).

In contrast, there was no significant association between the ITSQ and social desirability, a control variable. For all correlations between the ITSQ and the measures of our study, see Appendix Table 8.

7.6 Summary of Study 1

We developed a short self-report questionnaire for the assessment of interpersonal trust behavior. Our focus was to establish high ecological validity and practicability, so we eliminated all items following the statistical guidelines for item selection and developed a short and handy measure. The evaluation of the questionnaire in two different samples resulted in a final version of eight items. Exploratory and confirmatory factor analyses showed two underlying factors. The first factor was labeled, "entrusting known people with material items", whereas the second factor was labeled "entrusting unknown people with ones well-being". Our questionnaire seemingly lack scales like entrusting material items to unknown people or entrusting ones well-being to known people. This is the result of following statistical guidelines for item selection. As a result, items assessing these aspects include situations with very high

or very low response difficulty that do not differentiate adequately between individuals (e.g. lending one's phone to an unknown person or driving in a car with a known person).

Reliability for the total score can be considered acceptable. We found weak to moderate correlations with alternative measures of trust and trust behavior establishing convergent construct validity.

7.7 Study 2: Interpersonal trust behavior in Borderline Personality Disorder

7.7.1 Research questions

We investigated interpersonal trust behavior using the ITSQ and a hypothetical trust game in patients with BPD, patients with current Major Depression (MDD), and Social Anxiety Disorder (SAD).

In line with existing research, we hypothesized significantly lower trust scores in patients with BPD compared to non-clinical controls (CG) and patients with MDD (Bartz et al., 2011; Ebert et al., 2013; King-Casas et al., 2008; Preuss et al., 2016; Unoka et al., 2009). In contrast, we did not expect abnormal trust behavior in patients with MDD compared to the CG (Unoka et al., 2009; Preuss et al., 2016). In patients with SAD, we did not formulate any hypothesis, as to our knowledge this is the first time interpersonal trust is examined in this group.

Finally, we conducted an additional exploratory analysis on the association between interpersonal trust and the perceived quality of the therapeutic alliance in clinical groups.

7.8 Methods

7.8.1 Participants

$n=41$ patients with BPD, $n=30$ patients with MDD, $n=31$ patients with SAD, and $n=236$ CG's participated in the study. Patients were recruited in different in- and outpatient settings (large majority of patients with BPD at an inpatient center, MDD and SAD at outpatient centers). All patients were in current treatment and were diagnosed using the Structured Clinical Interview for DSM-IV Axis-I and Axis-II (Wittchen, Zaudig & Fydrich, 1997; Fydrich et al.1997). Non-clinical controls were recruited via flyers, e-mails and postings in internet forums. Sensitivity analyses were conducted showing that the sample sizes allow detecting differences of at least $d > .54$ between the patient samples and healthy controls (e.g., BPD vs HC), and $d > .73$ between the patient samples (e.g., BPD vs MDD).

7.8.2 Measures

We applied again the HEXACO-60 and the trust game (see Study 1 for a detailed description). Furthermore, we used the following instruments:

Questionnaire of thoughts and feelings 14 (QTF-14): The QTF-14 is a short self-report measure for the assessment of borderline-specific cognitions. Reliability (Cronbach's $\alpha=0.96$) and validity coefficients are good to very good (Renneberg et al., 2005; Renneberg & Seehausen, 2010).

Symptom checklist 9 (SCL-K-9): The SCL-K-9 is a short form of the Symptom Checklist 90 and was used to assess current subjective experience of symptoms. Reliability for the SCL-K-9 is good with Cronbach's $\alpha=0.87$ (Klaghofer & Brähler, 2001).

Helping alliance questionnaire (HAQ-12): This self-report measure assesses the perceived quality of the therapeutic alliance from the patients' perspective. Reliability for the HAQ-12 is good with Cronbach's $\alpha=0.89$ (Bassler, Potratz & Krauthauser, 1995).

7.8.3 *Procedures*

Patients completed the study in a paper-pencil version; non-clinical controls participated online. Completion of the complete questionnaire-battery took about 20-25 minutes. As compensation for participation, participants could win one out of ten vouchers for a major retail company. All participants provided written informed consent prior to participation. The ethics committee of Freie Universität Berlin approved the study protocol. The experiment was performed in accordance with relevant guidelines and regulations.

The questionnaire versions for patients and the CG were identical except that all patients additionally completed a questionnaire concerning the perceived quality of the therapeutic alliance (Helping Alliance Questionnaire - HAQ-12). In addition, patients with BPD completed the hypothetical trust game described in Study 1. For organizational reasons, non-clinical controls from Study 2 did not complete the hypothetical trust game. Instead, results from the hypothetical trust game from patients with BPD were compared to the results from non-clinical controls from Study 1.

7.8.4 *Statistical Analyses*

Group differences in ITSQ-scales were assessed with ANOVAs comprising the factor group (BPD, MDD, SAD; and CG). Groups differed substantially in their socio-demographic characteristics. Thus, additional ANCOVAs with age and gender as covariates were calculated. Bonferroni correction was applied for post-hoc comparisons. In addition, we conducted a repeated measures ANOVA for monetary units transferred with the factors group (BPS vs. CG) and condition (known vs. unknown player) and a repeated measures ANCOVA for with age and gender as covariates, too.

7.9 Results

Table 1

Demographic and psychometric characteristics of Borderline Personality Disorder, Major Depressive Disorder, Social Anxiety and Healthy Controls

	BPD (n=41)	MDD (n=30)	SAD (n=31)	CG (n=236)	Group statistics
Demographics					
Age	29.61 (10.00)	37.40 (13.60)	33.61 (9.05)	29.43 (11.63)	$F(3, 334) = 5.18, p < .05$
Gender (% female)	85	53	52	75	
Clinical characteristics					
SCL-K-9	2.63 (0.75)	1.71 (0.84)	1.73 (0.88)	1.18 (0.78)	$F(3, 334) = 41.64, p < .0001$
QTF-14	3.79 (0.59)	2.50 (0.78)	2.43 (0.61)	1.96 (0.74)	$F(3, 334) = 79.37, p < .0001$

ITSQ and HAQ-12										
ITSQ total		2.24 (0.72)		2.93 (0.76)		2.76 (0.92)		2.72 (0.77)		$F(3, 334) = 5.76, p < .05$
ITSQ 1	ITSQ 2	2.5	1.76	2.96	2.88	2.94	2.47	3.05	2.16	$F(3, 334)$
		2(0.88)	(1.08)	(0.84)	(1.41)	(0.93)	(1.27)	(0.85)	(1.20)	$= 4.43, p < .05$
HAQ-12		3.92 (1.00)		4.36 (0.86)		4.41 (0.89)				$F(2, 99) = 3.15, p = .047$

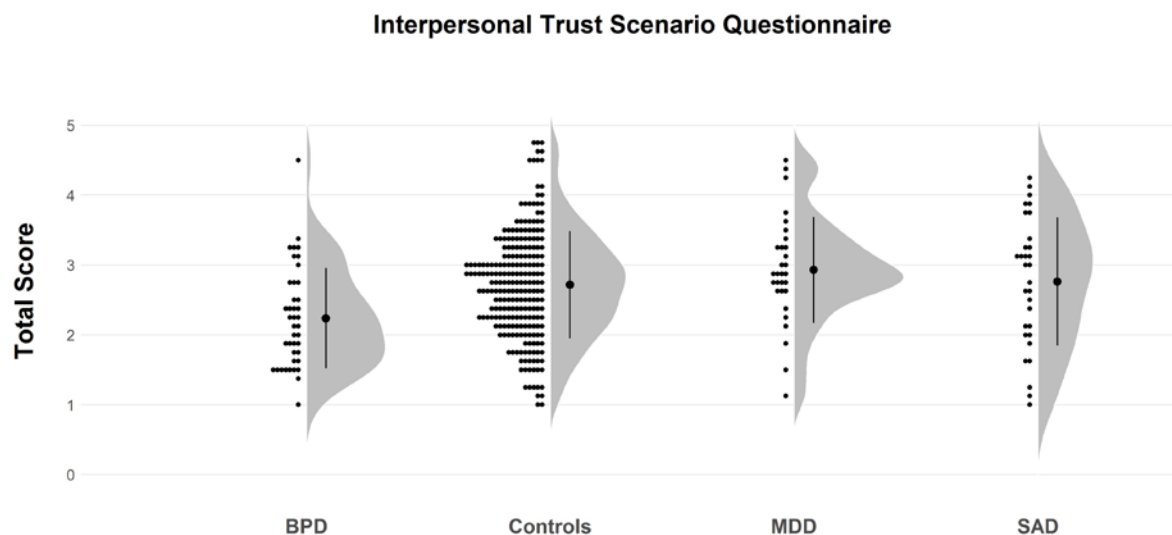
Note: BPD = patients with borderline personality disorder from study 2, MDD = patients with major depressive disorder from study 2, SAD = patients with social anxiety disorder from study 2, CG = non-clinical control participants from study 2, ITSQ total = total score from ITSQ, ITSQ 1 = entrusting known people with material items, ITSQ 2 = entrusting unknown people with ones well-being, HAQ-12 = The Helping Alliance Questionnaire

Interpersonal Trust Scenario Questionnaire: Descriptive statistics of ITSQ in the different clinical samples and the CG are presented in Table 1. As expected, groups differed significantly in the total scale of the ITSQ ($F(3, 334) = 5.76, p < .05$), the subscale “entrusting known people with material items”: $F(3, 334) = 4.43, p < .05$, and the subscale “entrusting unknown people with ones well-being”: $F(3, 334) = 5.49, p < .05$).

Group effects in all three analyses remained stable when controlling for age and gender: ITSQ total: $F(3, 332) = 5.41, p < .05$; ITSQ – entrusting known people with material items: $F(3, 332) = 4.58, p < .05$, and ITSQ – entrusting unknown people with ones well-being: $F(3, 332) = 3.63, p < .05$. We conducted post-hoc comparisons from the ANCOVA’s. Results highlighted that on ITSQ total patients with BPD showed significantly lower levels of interpersonal trust than patients with MDD and non-clinical controls (see Figure 3), whereas on ITSQ - entrusting known people with material items - patients with BPD showed lower levels of trust than non-clinical controls only. On ITSQ – entrusting unknown people with ones well-being, patients with MDD showed significantly higher levels of interpersonal trust than patients with BPD and non-clinical controls [all p ’s $< .05$ (Bonferroni corrected)]. All other comparisons were non-significant (all p ’s $> .05$).

Figure 3

Means and standard deviations of ITSQ total scores from all groups



Note. BPD = patients with borderline personality disorder from study 2, MDD = patients with major depressive disorder from study 2, SAD = patients with social anxiety disorder from study 2, CG = non-clinical control participants from study 2

Hypothetical trust game: As predicted, patients with BPD transferred significantly less monetary units than non-clinical control participants (BPD: $M = 9.61$, $SD = 6.38$; CG: $M = 13.34$, $SD = 6.81$; main effect of group: $F(1, 731) = 9.52$, $p < .05$; controlling for age and gender: $F(1, 729) = 8.20$, $p < .05$). In addition, all participants transferred significantly less monetary units to the “unknown” compared to the “known” player (unknown player: $M = 5.01$, $SD = 4.06$; known player: $M = 8.16$, $SD = 3.86$; main effect of condition: $F(1, 731) = 106.42$, $p < .05$; when controlling for age and gender: $F(1, 729) = 27.31$, $p < .001$). The interaction of group and condition was not significant ($p > .05$).

Helping Alliance Questionnaire: First, an ANOVA with factor group (BPD, MDD and SAD) and HAQ-12 as the dependent variable was conducted. There was a significant effect of group (see Table 1). Post-hoc tests revealed that patients with BPD scored significantly lower on HAQ-12 than patients with MDD and SAD (both p 's $< .05$), whereas patients with MDD and SAD did not differ from each other ($p > .05$).

Results from the correlation analyses between HAQ-12 and ITSQ total revealed a significant association within the group of patients with BPD ($r = .32, p = .04$). In patients with MDD and SAD the association was not significant ($r = -.09$ and $r = -.00$, both p 's $< .05$).

7.10 Summary of Study 2

In comparison to non-clinical controls, patients with BPD displayed lower levels of interpersonal trust as measured by the total score of the questionnaire as well as the hypothetical trust game. Notably, patients with BPD displayed lower level of interpersonal trust than patients with MDD but not than patient with SAD. The association between the perceived quality of the therapeutic alliance and interpersonal trust was significant only within the group of patients with BPD.

7.11 Discussion

We developed a short scenario based questionnaire for the assessment of interpersonal trust in different non-clinical and clinical groups. Applying this measure in different clinical and non-clinical groups, we found that only patients with BPD showed lower levels of interpersonal trust in comparison to non-clinical controls. Notably, our findings of BPD patients' impaired interpersonal trust were reinforced by the results of a hypothetical trust game. Patients with MDD and SAD did not show abnormal levels of interpersonal trust compared to non-clinical controls.

7.11.1 Questionnaire development

As first part of our study, we developed an 8-item questionnaire (i.e. Interpersonal Trust Scenario Questionnaire) with satisfactory psychometric properties for the assessment of interpersonal trust. Item analyses revealed good discriminatory power, and reasonable item difficulty and test homogeneity. Exploratory factor analysis revealed two factors: 1. “entrusting known people with material items” and 2. “entrusting unknown people with ones well-being”. The factor structure was confirmed by confirmatory factor analysis and construct validity was established. Our questionnaire correlated significantly with both the KUSIV-3 and the hypothetical trust game, with the respective coefficients ranging from .16 - .32 (for more detailed information see Table 8 in the appendix). While this establishes convergent validity with alternative measures of interpersonal trust, this also highlights that these scales and measures assess different aspects or conceptualizations of trust. For instance, within the hypothetical trust game entrusting more monetary units to a known interaction partner heightens the chance to gain more monetary units, whereas entrusting an item to a friend on our questionnaire rather results in more subtle rewards like not having to go to the post-box oneself. Moreover, the respective material in the trust game and the ITSQ differ in their value (i.e.: twelve monetary units vs. the price of a flight or a SLR camera). Thus, although both measures are about entrusting something material (items and money) to (known) interaction partners; the content of these two measures for trust still differs substantially. This may also reflect what is mentioned in most articles about trust: trust is a complex construct with many different facets and there are many different ways to operationalize trust (e.g. Colquitt et al., 2007).

In line with our hypotheses, the total score of the ITSQ showed positive associations with agreeableness and extraversion, but negative associations with emotionality as measured by the HEXACO (see Table 8 in the appendix). Although it may be surprising at first, we found no significant correlation with the scale honesty-humility. This personality dimension reflects

“the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation” and could be related to interpersonal trust through social projection (Thielmann & Hilbig, 2015). However, empirical studies linked honesty-humility rather to cooperation than interpersonal trust (Hilbig, Zettler, Leist & Heydasch 2013, Thielmann, Hilbig & Niedtfeld, 2014, Hepp et al., 2014). The highest correlations were found between ITSQ and risk propensity, with moderate correlation coefficients. This result corresponds with other research suggesting that trust by definition includes risk, as it addresses future expectations (e.g. Das & Teng, 2004).

7.11.2 Clinical results

The second aim from our study was the clinical application of the ITSQ and the investigation of interpersonal trust in patients with mental disorders. Results were partially in line with our hypotheses: patients with BPD displayed lower levels of interpersonal trust compared to non-clinical controls and patients with MDD. This result replicates the findings from former studies on trust in BPD (Bartz et al., 2011; Ebert et al., 2013; King-Casas et al., 2008; Preuss et al., 2016; Unoka et al., 2009). However, patients with BPD did not differ from patients with SAD.

Our findings of BPD patients’ impaired interpersonal trust were supported by the results of a hypothetical trust game. This measure was only applied in patients with BPD and non-clinical control participants. Results indicate that patients with BPD show less trust than non-clinical control participants.

Patients with MDD did not differ from non-clinical controls in the total score of the ITSQ. This is in line with previous studies, which did not show abnormal trust behavior in depression (Unoka et al., 2009; Preuss et al., 2016). When analyzing the subscales of the questionnaire, we found that patients with MDD scored significantly higher on entrusting

unknown people with ones well-being patients compared to patients with BPD as well as the non-clinical controls. All other groups showed low levels of trust on this scale, which suggests that they considered this type of scenario especially challenging and risky. Therefore, the question arises, why patients with MDD have more trust in unknown people with their well-being. One possible explanation could be the loss of energy and interest in depression (Kennedy, 2008). Taking a deeper qualitative look into the items of this subscale, one realizes that not showing trust in those situations means the need to find alternatives, which demands energy. For example finding another way to get home from the bus station. The lack of energy and interest could have influenced the decision to trust in patients with MDD.

The association between the perceived quality of the therapeutic alliance and interpersonal trust revealed a significant correlation only in patients with BPD. This result is in line with the theoretical work by Fonagy and Allison (2014), who argue that patients with BPD benefit more strongly from the establishment of epistemic trust, which is related to a beneficial therapeutic alliance and therapy outcome. Even though epistemic trust and interpersonal trust measured by the ITSQ are not equal, it is likely to assume that they do share some content. In particular, epistemic trust can be understood as interpersonal trust towards a person who is transmitting information.

7.11.3 Limitations and Conclusion

We would like to address a set of limitations. First, the clinical groups had rather small sample sizes, so all interpretations and conclusions should be drawn cautiously. On the other hand, our results stem from individuals who fulfilled the required criteria for the diagnosis of a mental disorder opposite to studies investigating analogue samples. Second, our newly developed scale shows a rather moderate internal consistency, however, we emphasized on creating a short and ecologically valid scale. Third, trust is a construct that is influenced by culture (Yamagishi & Yamagishi, 1994); our data were all collected in Germany. Thus,

conclusions cannot be generalized to other countries or cultures. Fourth, the recruitment of the people who underwent unstructured interviews for the formulation of items was done over social media and with the use of convenience sampling. This means people were not randomly selected and the sample could be biased by the reachability of social media and their willingness to participate in such a study. Besides this, the range of situations could be limited, too. Furthermore, sample sizes in our clinical study could have restricted finding group differences between the clinical groups (e.g. between BPD and MDD on entrusting unknown people with ones well-being), as sensitivity analyses suggested that only relatively large differences could have been detected. Fifth, we did not assess medication in our clinical groups. Even previous studies did not find a confounding effect from antidepressants and anxiolytics in the trust game (e.g., Unoka et al., 2009), it could be that our results are confounded by medication status of the participants. Minor limitations in the results could be due to different incentives (credit points for students vs. the chance to win a voucher for other controls) and that the test was partly carried out online and partly with a paper-pencil version. Future studies should apply test-retest data as well as longitudinal data on the development and change of interpersonal trust. This would be valuable in patients with BPD for example, specifically in relation to therapy progress and success.

In conclusion, alterations in interpersonal trust in patients with BPD seem to be a robust finding. In contrast, patients with MDD and SAD do not seem to display any impairments in interpersonal trust. Our results broaden the picture by providing more realistic information on impairments patients with BPD show in the realms of interpersonal trust. Our findings highlight the importance of considering trust difficulties for individual treatment planning and the importance of emphasizing interpersonal trust between patient and practitioner for the development of a favorable therapeutic alliance and therapy outcome.

Supplementary materials

The following supplementary materials related to Paper I are available in the appendix.

- The Interpersonal Trust Scenario Questionnaire (ITSQ)
- **Table 7** Factor Loadings of exploratory and confirmatory factor analyses
- **Table 8** Correlations between ITSQ and other trust measures in non-clinical samples and patients with BPD

8 Paper II: Autobiographical memories of interpersonal trust in Borderline Personality Disorder

A slightly adapted version of the following paper was submitted to Borderline Personality Disorder and Emotion Dysregulation as:

Botsford, J & Renneberg, B. (submitted). Autobiographical memories of interpersonal trust in Borderline Personality Disorder.

8.1 Abstract

Establishing and maintaining interpersonal trust is often difficult for patients with Borderline Personality Disorder (BPD). How we trust is influenced by prior trust experiences. For the investigation of trust experiences, autobiographical memories of $n=36$ patients with BPD and $n=99$ non-clinical controls were examined. Trust objects and interaction partners, emotional valence, perceived relevance and memory specificity were analyzed. Content analyses revealed that patients with BPD recalled mostly situations in which their trust was failed by family members or romantic partners. In addition, patients with BPD considered memories with trust and mistrust more relevant for their current lives than the control group. Our results correspond with findings that BPD patients have difficulties trusting close others as well as with theoretical assumptions about deficits in mentalizing and epistemic trust in patients with BPD.

8.2 Introduction

“Trust is essential to initiate, establish and maintain social relationships.” This quote from Balliet and Van Lange (2013, p.1) illustrates the importance of interpersonal trust for the development and maintenance of beneficial social relationships. Borderline Personality Disorder (BPD) is characterized by marked difficulties in interpersonal functioning (DSM- 5, American Psychiatric Association, 2013). Prior research shows that patients with BPD display alterations in interpersonal trust (for a review see Lazarus, Cheavens, Festa & Rosenthal, 2014). Nevertheless, alterations in interpersonal trust do not seem to occur in all facets of the construct of trust. In a recent study by our research group (Botsford, Bohländer, Schulze & Renneberg, in press), patients with BPD showed greater difficulties entrusting material items to people they know such as friends or partners compared to non-clinical control participants. However, when entrusting their well-being to unknown people, patients with BPD did not report less trusting behavior than the control group.

In mentalization-based therapy (MBT) the construct of epistemic trust has gained much attention. The capacity to mentalize has received most attention in patients with BPD (Bateman & Fonagy, 2010) as these patients seem to display poor mentalization skills and are characterized by epistemic mistrust (Bateman & Fonagy, 2010; Fonagy, Luyten & Allison, 2015). Epistemic trust differs from interpersonal trust: Interpersonal trust generally refers to all kinds of trust objects (e.g., personal information or worthy items) in situations with different interaction partners, while epistemic trust describes and focusses on “openness to the reception of social communication that is personally relevant and of generalizable significance” (Fonagy, Luyten, Allison & Campbell, 2017, p. 01). Epistemic trust usually occurs for the first time in early social learning environments and early attachment experiences (Fonagy, Luyten & Bateman, 2014). It is supposed to influence the ability to mentalize, indicating the ability to recognize and correctly name mental states and to use this ability in a flexible way and as a

reliable source of information for choices and behaviors (e.g., Dimaggio, Salvatore, Popolo & Lysaker, 2012). Even though the two trust concepts are not equal, they do seem to share content. Epistemic trust could be understood as interpersonal trust towards a person who is transmitting personally relevant information.

Different studies suggest that trust experiences influence a person's trust behavior to a large degree (Glaeser, Laibson, Scheinkmann & Soutter, 2000; Hiraishi et al., 2008; Van Lange, 2014; Van Lange, Vinkhuyzen, & Posthuma, 2014; Thielmann & Hilbig, 2015). To learn about trust experiences of patients with BPD and to deepen our understanding of trust alterations in BPD, we investigated autobiographical memories (ABMs) about trust.

Autobiographical memories (ABMs) are personal memories about events an individual has experienced and are therefore always self-referential. ABMs hold an identity-establishing function (e.g., Prebble, Addis & Tippett, 2013) because by integrating memories from the past, meaningful narratives about the self are established (Jetten, Haslam, Puliese, Tonks & Haslam, 2010). In his book "Searching for memory: the brain, the mind and the past" Schacter (1999) emphasizes the importance of the ABMs for the self. Functions of the self such as problem solving, mood regulation, and social interaction are based on ABMs (e.g., Williams et al., 2007) as experience-based information can be used as a reference point for current situations (Bech, Elklit & Simonsen, 2015). One clinically relevant feature of ABMs is the specificity of the memory (for a review see Williams et al., 2007). The idea is that memories are restored on different levels of specificity: for instance, lifetime periods: „During my childhood I had a pet“ versus general events: „During the last year of my marriage, my husband and I were fighting a lot“ versus event-specific knowledge: „The last dinner we ate together before we separated was salmon, spinach and potatoes. It tasted great.“. Studies on ABMs in the context of mental disorders primarily investigated this feature of the retrieved memories (Bech, Elklit & Simonsen, 2015; Williams & Broadbent, 1986; Williams et al. 2007). In patients with Major

Depression (MDD), overgeneralized autobiographic memories (OGM) are a robust finding (e.g., Rybak-Korneluk, Wichowicz, Zuk, Dziurkowski, 2016; Williams et al. 2007), whereas in patients with BPD research results on specificity are inconsistent. Bech, Elkilit and Simonsen (2015) in their systematic review reported no OGM in BPD when comorbid depression was controlled for. Beran, Richman and Unoka (2018) on the other hand found a large effect size for OGM in BPD. One explanation for the diverging results could be that Beran et al. (2018) did not control for comorbid MDD. One possible interpretation of the differences of retrieval style between patients with MDD and patients with BPD is provided by Conway and Pleydell-Pearce's model (2000) about ABMs and the working self. The idea is that each individual has a set of different self-schemata that are connected to specific goals. When a person wants to pass a test in college for example, the self-schema of the successful academic individual might be activated. The working self/activated self-schema subsequently determines from which level of specificity information can be recalled. According to this theory, an individual with the goal of wanting to pass a test should be able to recall relatively specific information (e.g., „On page 4 of the biology book the process of cell division was explained. Cell division works as follows: ...”). An individual with the goal to relax, however, would be able to recall rather generic information (e.g., „During our last holiday the kids were watching TV most of the time.”). It may be that in research settings patients with BPD activate a performance oriented working self and want „to do their best“. Subsequently, they are able to recall relatively specific information. Patients with MDD on the other hand often suffer from a ruminative cognitive style, often show deficits in executive functioning and may have difficulties motivating themselves, which makes it more difficult for them to activate a performance oriented working self. Besides the retrieval style, another important characteristic of ABMs of patients with BPD is the emotional valence. Patients with BPD seem to recall more negative life events than non-clinical controls (Arnou & Harrison, 1991; Jørgensen et al., 2012; Korfine, 1998; Niggs et al. 1992; Renneberg et al., 2005; Rosenbach et al. 2015), pointing towards a bias for negative memory retrieval and the

prevalence of a negative view of self and others (Renneberg et al., 2005). Rosenbach and Renneberg (2015) additionally reported that patients with BPD considered their ABMs about rejection as more relevant for their current lives than non-clinical controls, which would speak for the heightened sensitivity and relevance towards this topic.

For a comprehensive understanding of trust memories and alterations in trust behavior, it is interesting to investigate also the content of ABMs. So far, only one published study examined thematic content of memories of patients with BPD. Guruprasad and Bohla (2014) examined themes and structure of self-narratives from five patients with BPD to explore their history of psychological difficulties. The themes of the memories were agency (themes of power, achievement, mastery, independence, autonomy, separation), communion (themes of relationship, connection, intimacy, nurturance, helping, closeness), redemption (negative events that begin with struggles, obstacles, and setbacks, but end with moments of triumph, growth, rejuvenation, and positive emotion) and contamination (sequences begin with hope or positive circumstances and end in frustration, disappointment, and dejection). Results suggested that the narratives tended to be generic in nature, were not well-integrated within the larger self-concept and contained predominantly “contamination” themes. These results correspond with findings about disrupted self-concepts as well as with experiences of abuse, neglect and lack of support, which are all characteristic of BPD (e.g. Widom, Czaja, & Paris, 2009).

To our knowledge, there are no studies on ABMs of trust in BPD yet. However, for a deeper understanding of alterations in trust behavior in BPD, it seems necessary to examine trust experiences. Having in mind that patients with BPD do not seem to display trust alterations on all facets of interpersonal trust (i.e., only when entrusting material items to people known to them; see Botsford et al., 2019), we wanted to examine if those features were reflected within their ABMs of trust, too. The first aim of the present study was to investigate ABMs of trust regarding the interaction partners and trust objects in both patients with BPD and non-clinical

controls. Our second aim was to compare interaction partners and trust objects between patients with BPD and non-clinical controls. Our third aim was to investigate whether alterations in ABMs in BPD – namely the negative emotional valence of memories, specificity, and today's relevance of the retrieved memories – can be found in ABMs of trust. We hypothesized that patients with BPD recall more negative trust situations, consider their ABMs of trust as more relevant to their current lives and do not display more generalized ABMs than non-clinical controls. The first two aims were examined in an exploratory way.

8.3 Methods

8.3.1 Participants

$N=36$ patients with Borderline Personality Disorder (30 female, 6 male, $M_{age} = 29.6$, $SD_{age} = 9.9$) participated in our study, of whom 12 (33.3%) had a comorbid MDD. Furthermore, $n = 99$ non-clinical controls (70 female, 29 male, $M_{age} = 39.1$, $SD_{age}=17.9$) participated. Patients with BPD were recruited at a borderline-specific inpatient treatment facility. Non-clinical controls were recruited in different settings: the majority of non-clinical control participants was recruited at a public event (Lange Nacht der Wissenschaften / Long Night of the Sciences) at Freie Universität Berlin, a smaller part ($n = 15$) was recruited via emails and postings in internet forums and on social media platforms. Eligible for the study were people over 18 years of age with sufficient knowledge of the German language to understand the questionnaires. Current mood in non-clinical controls was assessed via the 5-item World Health Organization Well-Being Index (WHO-5) (Topp, Ostergaard, Sondergaard & Bech, 2015). The ethics committee of Freie Universität Berlin (No. 182/2018) approved the study protocol.

8.3.2 *Measures*

8.3.2.1 Well-Being Index

The WHO-5 is a short self-report measure for the assessment of well-being and at the same time serves as a screening instrument for current depressive symptoms. The measure has good construct validity as a unidimensional scale measuring well-being (Topp et al., 2015).

8.3.2.2 Questionnaire for the assessment of ABMs

In the self-report questionnaire, participants were asked to describe two memories of interpersonal trust situations. For situation 1, participants were asked to describe a situation in which they actually showed trust (e.g., “My housemate proposed that he/she could take care of my dog while I am away and I let him/her do it”). For situation 2, participants were asked to describe a situation in which trust could have been shown but was not (e.g., “A friend asked me to buy a concert ticket for him/her and said that he/she would reimburse me as soon as possible. I did not do it, because I know from previous situations that the friend is unreliable and probably would not give me the money”). Furthermore, participants were instructed to write down their emotions related to these situations, how important the situation is for their current life on a scale from 1 (not relevant at all) to 5 (very relevant) and indicate for the first situation whether their trust was failed or not.

8.3.3 *Procedures*

Of the complete sample ($n = 135$), most participants ($n = 120$) completed a paper-pencil version of the questionnaire. Only a small number of the control group ($n = 15$) participated online. The groups (online vs paper-pencil version) did not differ significantly from each other in age, gender, and length of the texts. First, basic demographic information (age and gender) was completed, followed by the WHO-5 and the questions on ABMs, associated emotions, relevance and – for situation 1 – whether trust was failed or not. Two trained research assistants

transcribed all handwritten situation descriptions in Microsoft Excel. Spelling errors were not corrected as we analyzed content only (in opposite to linguistic patterns for example). Text analysis was run in MaxQDA and the analysis was conducted based on the qualitative text analysis approach by Mayring (2010).

8.3.4 Development of the category system

Category systems for trust objects and interaction partners were developed. Deductive categories for trust objects were derived using facets of published questionnaires ($n=6$) on interpersonal trust (Amelang, Gold & Külbel, 1984; Couch, Adams & Jones, 1996; Beierlein, Kemper, Kovaleva & Rammstedt, 2012; Buck & Bierhoff, 1986; Botsford et al., 2019; Johnson-George & Swap, 1982; Kassebaum, 2004; Krampen, Viebig & Walter, 1982; Naef & Schupp, 2009; Petermann, 2013; Rempel, Holmes & Zanna, 1985; Rotenberg et al., 2005; Rotter, 1967). After the facets were controlled for overlapping content, the following categories were identified: general trust, trust in a person's benevolence, trust in a person's dependability, trust in a person's reliability, trust in a person's honesty, and trust in a person's competency. Two independent evaluators, who were trained to a minimum of 80% agreement, assigned the text material to the relevant categories using a detailed coding manual (Rohm, 2019). Interaction-partner categories were inductively formed during the coding process. The following interaction-partner categories were derived: family, friends, romantic partners, colleagues, healthcare professionals and strangers. During the coding process, more specific subcategories were developed. For example, for the category trust into a person's competency, subcategories like trust into a person's competency during counseling were developed. Almost all subcategories could be applied to both situations with one exception: the subcategory "instruction misunderstood" was developed for situation 2 only. This subcategory had to be developed because some participants misunderstood the instruction ("Please describe a situation in which you could have shown trust, but after all you did not.") and described a

situation, in which indeed they did show trust, but the trust was failed by the interaction partner. For both category systems, a number of decision rules were established before and during the rater training. For example, if a sentence contained two different statements, which clearly represented different trust contents, the sentence was separated and each part coded according to the fitting category (e.g., “Trust at home with the family. One can rely on the others and have trust that secrets will not be told to other people and that the others will tell the truth.” – Codes: emotional reliability and honesty). If the two raters disagreed, a short discussion took place and a decision on the category was made. If discrepancies could not be resolved, the statement was coded “irrelevant”. In both cases, the statement was counted as “no agreement” in the calculation of Cohen’s kappa. After the described training, the two coders reached a good interrater agreement of $\kappa = .80$.

8.3.5 *Ratings of emotional valence and specificity*

Valences of emotions assigned to the trust situations were categorized as positive, negative or mixed (e.g., sad and relieved). Agreement between raters $\kappa = .94$ was very good.

Specificity of memories was categorized as specific (e.g., “In 2013 when I traveled through South America with my best friend, we had a car accident. I called my brother, asked him to send me money, and begged that he would not tell my parents. He kept my secret and sent me the money.”), categorical (e.g., “The times I have talked to my social worker about my anxiety, I trusted that she would not tell anybody else.”) or extended (e.g., “In general, I find trust in marriages extremely important, nevertheless, I don’t trust and I have never trusted.”). Very good agreement of $\kappa = .89$ was reached.

8.3.6 *Statistical analysis*

Frequencies and percentages of trust objects and interaction partners were determined for patients with BPD and non-clinical controls. Relationships between group (patients with

BPD vs. non-clinical controls) and trust objects, interaction partners, valence of emotions, specificity and whether the trust in situation 1 was failed or not were conducted using Chi Square Tests of Independence because data were categorical. Last, comparison of the relevance of the described ABMs was conducted using non-paired t-tests.

8.4 Results

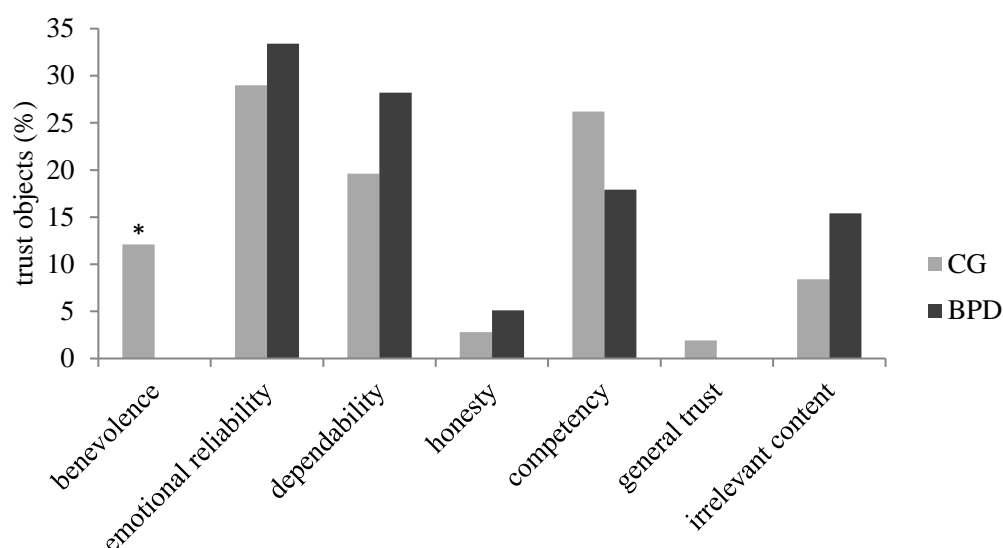
8.4.1 Situation 1: A situation in which trust was shown

8.4.1.1 Frequencies of trust objects and interaction partners

Frequencies (in percentage of all recalled memories) of trust objects are presented in Figure 4. Patients with BPD reported no trust memories at all when dealing with trust into the benevolence of another person, thus a significant difference to the control group was found $\chi^2(1) = 5.23, p = .02$. All other comparisons were non-significant ($p > .05$).

Figure 4

Frequencies (percentage of all recalled memories) of trust objects described in situation 1

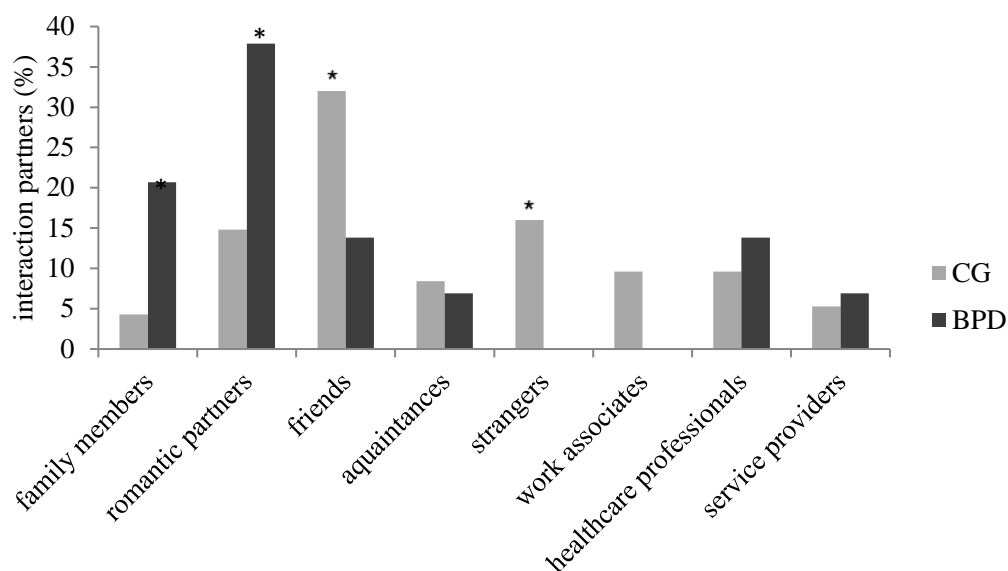


Note. BPD = patients with borderline personality disorder; CG = non-clinical control participants

Figure 5

Frequencies (percentage of all recalled memories) of interaction partners described in situation

1



Note. BPD = patients with borderline personality disorder; CG = non-clinical control participants

Frequencies (in percentage of all recalled memories) of interaction partners are presented in Figure 5. Compared to control participants, patients with BPD reported significantly more trust memories with family members $\chi^2(1) = 6.14, p = .01$ and romantic partners $\chi^2(1) = 4.71, p = .03$, whereas non-clinical controls reported significantly more trust memories with friends $\chi^2(1) = 5.16, p = .02$, and strangers $\chi^2(1) = 6.14, p = .01$ as interaction partners. All other comparisons were non-significant ($p > .05$).

8.4.1.2 Emotional Valence

Patients with BPD reported more negative and mixed emotions in situations where they showed trust, whereas non-clinical controls reported more positive emotions in association with trust memories (CG vs. BPD percentages of positive emotions: 65.6% vs. 36.7%; negative

emotions: 30.0% vs. 50.0%; mixed emotions: 4.4% vs. 13.3%). These differences were significant $\chi^2 (1) = 8.46, p = .015$.

8.4.1.3 Trust Situation Outcome

Patients with BPD reported significantly more often that their trust was failed (36.7%) compared to non-clinical controls (4.4 %;) $\chi^2 (1) = 21.36, p < .0001$.

8.4.1.4 Specificity

The specificity of the described trust memories did not differ between the groups (CG vs. BPD percentages of specific memories: 67.8% vs. 60.0%; categorical memories: 13.3% vs. 20.0%; extended memories: 18.9% vs. 20.0%).

8.4.1.5 Relevance

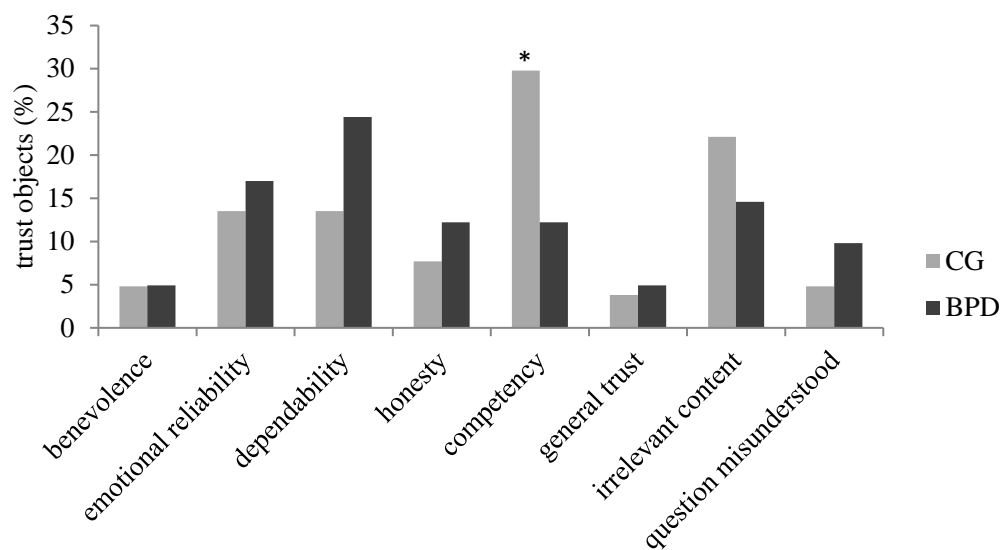
Patients with BPD rated their trust memories as significantly more relevant ($M = 4.57, SD = 0.77$) for their current lives than non-clinical controls ($M = 3.64, SD = 1.25$) $t = -3.81, p < .001$.

8.4.2 Situation 2: A situation in which trust could have been shown but was not

5.4.2.1 Frequencies of trust objects and interaction partners

Figure 6

Frequencies (in percentage of all recalled memories) of trust objects in situation 2

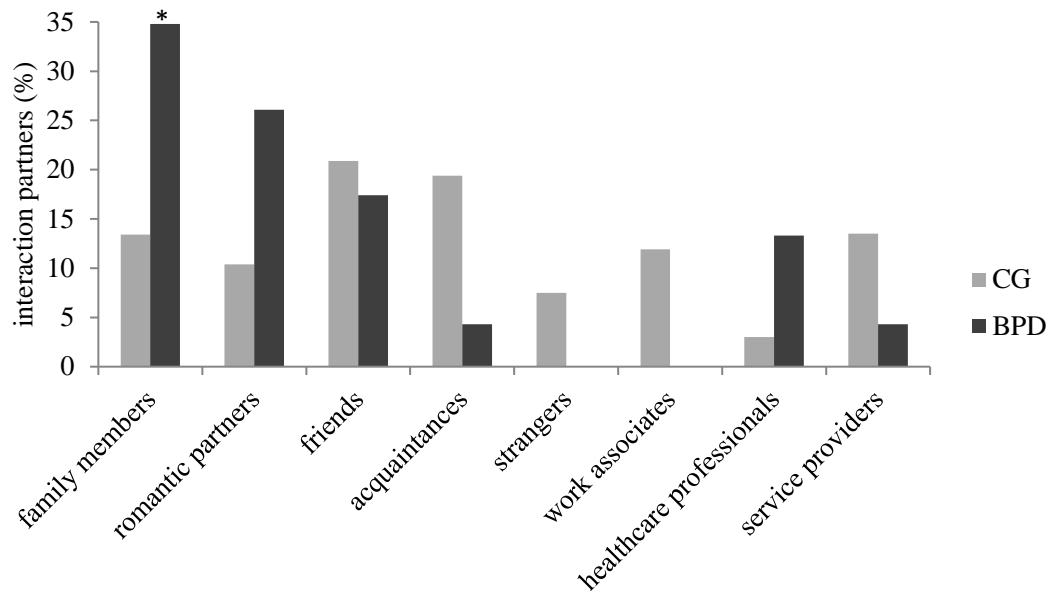


Note. BPD = patients with borderline personality disorder; CG = non-clinical control participants

Frequencies (in percentage of all recalled memories) of trust objects are presented in Figure 6. Patients with BPD reported significantly fewer memories about failing to trust into someone's competency than non-clinical controls $\chi^2(1) = 4.10, p = .04$. All other comparisons were non-significant ($p > .05$).

Figure 7

Frequencies (in percentage of all recalled memories) of interaction partners in situation 2



Note. BPD = patients with borderline personality disorder; CG = non-clinical control participants

Frequencies (in percentage of all recalled memories) of interaction partners are presented in Figure 7. Patients with BPD reported significantly more memories about failing to trust into family members than non-clinical controls $\chi^2(1) = 4.14, p = .04$. All other comparisons were non-significant ($p > .05$).

8.4.2.2 Emotional Valence

Both groups rated the emotional valence of memories of situation 2 as negative. Non-clinical controls and patients with BPD did not differ significantly from each other (CG vs. BPD percentages of positive emotions: 7.9% vs. 0.0%; negative emotions: 90.8% vs. 100.0%; extended memories: 1.3% vs. 0.0%).

8.4.2.3 Specificity

The specificity of the described trust memories did not differ between the groups (CG vs. BPD percentages of specific memories: 71.1% vs. 56.7%; categorical memories: 17.1% vs. 33.3%; extended memories: 11.8% vs. 10.0%).

8.4.2.4 Relevance

Patients with BPD rated their trust memories as significantly more relevant ($M = 3.91$, $SD = 1.28$) for their current lives than non-clinical controls ($M = 3.13$, $SD = 1.26$) $t = -2.66$, $p = .01$.

8.5 Discussion

The purpose of the current study was to provide insight into autobiographical memories (ABMs) of trust in patients with BPD compared to non-clinical controls. To our knowledge, our study is the first to provide information about ABMs of trust in patients with BPD.

The main result suggests that patients with BPD, when remembering trust, mainly recall memories in which their trust was failed by family members or romantic partners. Interestingly, they also recalled memories where they themselves failed to trust their family members. This result corresponds with findings on self-reported difficulties in trusting close others by patients with BPD (Botsford et al., 2019).

The first aim of our study was to provide insight into what and whom participants of both groups trusted. Current results suggest that especially trust into a person's emotional reliability (30.1%) followed by trust into a person's dependability (21.9%) and competency (24.0%) were the major trust objects named. Similarly, competency (14.4%), dependability (16.6%), and emotional reliability (14.4%) were also the most frequently named categories in trust situations in which individuals did not show trust (situation 2). Participants of both groups reported most often to trust friends (27.6%) and romantic partners (20.3%). Besides this, they

reported most often friends (20.0%), family (18.9%), acquaintances (15.5%) and romantic partners (14.4%) in situations in which they could have trusted but did not (situation 2). Emotional factors like empathetic listening and practical aspects like trusting into each other's competencies make trust one of the most important factors for beneficial human relationships.

Our second aim was to examine differences in trust objects and interaction partners between patients with BPD and non-clinical controls. Non-clinical controls remembered trust into a person's benevolence significantly more often than patients with BPD, who did not report such memories at all. An illustrative example of such a situation was:

"After a fight with a friend I walked by myself through a district quite far away from the city. It was late at night and I was far away from home and I did not know how to get home. A taxi driver passed by and asked me if he could take me somewhere. As I did not know how to help myself and felt a bit drunk, too, I just got in the car. The taxi driver was very kind and drove me to where I wanted to go. Even though I felt insecure at that time, I just trusted him."

Interestingly, in both groups, participants' trust into a person's benevolence was always related to unknown interaction partners. One explanation for this might be that benevolence (the entrusted interaction partner does not want to harm the trusting person's emotional and physical well-being) is something that is usually expected as given in relationships with close others, while in interactions with unknown people one does not have any information about the entrusted person's intentions. However, patients with BPD do not seem to expect the benevolence of close others as given.

Patients with BPD remembered family members and romantic partners as interaction partners significantly more often than non-clinical controls, while non-clinical controls remembered friends and strangers significantly more often than patients with BPD. In fact, patients with BPD did not remember any situation at all in which strangers were their interaction

partners, which corresponds with the above described result on trust into someone's benevolence. The result that patients with BPD remembered mostly situations with family members and romantic partners corresponds with the results from a study about memories of rejection (Rosenbach & Renneberg, 2015). In a linguistic analysis of ABMs of rejection, patients with BPD remembered rejection by family members significantly more often than patients with MDD and healthy controls. Besides this, in our study patients with BPD indicated significantly more often than non-clinical controls that their trust was failed. This result corresponds with results from Guruprasad and Bohla (2014), who found that participants described mostly situations that started with hope and optimism and ended with a failure of those positive expectations. In the current study, an illustrative example of such a situation from a patient with BPD was:

“My car was broken and standing in front of my house. I had to go to the hospital and could not take care of it, so my dad promised to me to bring it to the garage. When I returned from the hospital, the car was still standing in the same place and my father obviously again did not stick to his word.”

It is striking that the patient who described this memory seems to have frequently experienced similar situations (my father obviously again did not stick to his word). As trust behavior is influenced by trust experiences (e.g., Thielmann & Hilbig, 2015), it does not seem surprising at all that patients with BPD reported difficulties trusting close others (Botsford et al., in press). Conway and Pleydell-Pearce's (2000) model about ABMs provides possible explanations for how trust experiences might influence current trust behavior. As described in the introduction, the model assumes that individuals contain sets of different self-schemata that are connected to specific goals. A person who has made repeated negative trust experiences with close others might develop the self-schema of “the betrayed one” with the goal to not be

betrayed again. This goal could be attained by not showing trust towards close others in the first place.

The two groups differed in situations in which trust could have been shown but was not (situation 2). Patients with BPD recalled fewer memories about failing to trust into someone's competency than non-clinical controls. One explanation for this finding could be that patients generally experience more situations in which they have to trust in a person's competency, such as those in psychotherapy for example. Besides this, patients with BPD were in therapy when they participated in our study. An illustrative example addressing a situation during psychotherapy was:

“During sessions with my therapist. I trust that we can take breaks whenever I want to. That we can do things without any pressure. That I can even say negative things out loud and still I will not be abandoned. That I am even allowed to scream. That he will not blame me, even if I will not accomplish my goals. That he will approach me. That there is not so much I can do wrong.”

Besides, in situations in which trust could have been shown but was not (situation 2), patients with BPD named family members as interaction partners significantly more often than the control participants did. This result supports the idea that patients with BPD develop difficulties in trusting family members already early in life. Besides, this corresponds with research results indicating a high amount of childhood maltreatment in BPD (Cicchetti & Valentino, 2006; Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004; Widom, Czaja, & Paris, 2009) and the assumptions by Fonagy and colleagues that epistemic mistrust in BPD may be rooted in dysfunctional early attachment experiences (e.g. Fonagy, Luyten, Allison & Campbell, 2017).

The third aim of our study was to investigate whether alterations in ABMs from patients with BPD - for example, emotional valence of memories - can be found in ABMs of trust. In

line with our hypotheses, patients with BPD related their ABMs of trust mostly to negative emotions and considered those memories as more relevant for their current lives than non-clinical controls. Prior studies on ABMs of patients with BPD found a tendency to recall mostly negatively valenced memories (Arnow & Harrison, 1991; Jørgensen et al., 2012; Korfine, 1998; Nigg et al. 1992; Renneberg et al., 2005; Rosenbach et al. 2015). Bech, Elklit and Simonsen (2015) argue that this tendency could be explained by a higher amount of negative life experiences in comparison to non-clinical controls. Another explanation is provided by Renneberg et al. (2005), who state that this tendency could also reflect the extremely negative view patients with BPD have of themselves, other people, and the world in general.

Concerning relevance ratings, our results correspond with the results from Rosenbach and Renneberg (2015) who also found that patients with BPD rated their ABMs of rejection as more relevant for their current lives than non-clinical controls. These results support the idea that current difficulties with trust and rejection are strongly influenced by prior negative experiences and speak for a heightened sensitivity towards these topics. Regarding the specificity of memories, our results suggest that patients with BPD do not display OGM when remembering trust, even when controlling for comorbid depression. This result corresponds with findings by a majority of studies concerning OGM in BPD (e.g. review by Bech, Elklit & Simonsen, 2015).

Limitations of the current study are that generalization of the current results is limited due to the small number of male patients in our study. Furthermore, BPD symptomatology was not assessed in the control group, as our assessment took place in a public and anonymous setting in which task duration was limited, which made it difficult to assess more sensitive information.

Current results emphasize the role of family members and romantic partners within memories of trust in patients with BPD. More specifically, patients with BPD mainly recall

trust situations in which their trust was failed by family members and romantic partners. This is highly relevant for the current lives of the patients, as indicated by relevance ratings. Consequently, patients with BPD report mostly negative emotions when recalling ABMs of trust.

Taken together, our study is the first to provide insights into the nature of ABMs of trust from patients with BPD. Our work contributes to a better understanding of alterations in interpersonal trust and especially their possible origins. Specifically, our findings encourage addressing difficulties to trust close others such as family members or romantic partners, omniscient negative memory and interpretation biases.

Supplementary materials

The following supplementary materials related to Paper II are available in the appendix.

- **Table 9** Overview of all main and some subcategories from the category system with illustrative text examples from our participants
- Coding rules (Rohm, 2019)

9 Paper III: Maladaptive Post-Traumatic Cognitions in Interpersonally Traumatized Adolescents with Post-traumatic stress disorder: An Analysis of “Stuck-Points”

A slightly adapted version of the following paper was published in Cognitive Therapy and Research as:

Botsford, J., Steinbrink, M., Rimane, E., Rosner, R., Steil, R., & Renneberg, B. (2019). Maladaptive post-traumatic cognitions in interpersonally traumatized adolescents with post-traumatic stress disorder: An analysis of “stuck-points”. *Cognitive Therapy and Research*, 43 (1), 284-294. <https://doi.org/10.1007/s10608-018-9928-3>

9.1 Abstract

This study investigated maladaptive post-traumatic cognitions, so-called “stuck-points”, from forty-three adolescent survivors of interpersonal traumatization. Thematic content and relationships between stuck-points and trauma characteristics as well as PTSD symptom severity were analyzed. Guilt, esteem and trust were the most frequently named themes. Physical abuse was related to stuck-points in the categories trust and control, sexual abuse was related to the categories safety and guilt. Penetration, female sex, an older age at trauma onset and a closer relationship to the perpetrator were related to the category guilt. Injuries through physical violence were related to the category trust. Physical violence and a longer duration of the index trauma were related to a higher number of stuck-points overall. Lastly, a higher number of stuck-points in the category trust was related to higher PTSD symptom severity. Therapists should pay attention to these different themes in order to provide the best possible treatment for each patient individually.

9.2 Introduction

Prevalence rates of post-traumatic stress disorder (PTSD) in adults are about 6.8% in the general population (Kessler et al., 2005). In adolescents (13 to 17 years), prevalence rates are estimated to be 2.2% for boys and 7.3% for girls (McLaughlin et al., 2013). PTSD is associated with a heightened risk for re-victimization, which is especially important for the later development of adolescents with PTSD (e.g. Arata, 2008).

An important finding for the adult survivor population of interpersonal trauma is the association of post-traumatic stress disorder (PTSD) and distorted cognitions about the self, the world and other people (e.g., Mechanic & Resick, 1993). A multitude of information processing theories of PTSD have emerged in an attempt to explain which cognitive processes may be impaired in people developing PTSD, from basal network approaches (Brewin, Dalgleish & Joseph, 1996; Chemtob et al., 1999; Foa, Steketee, & Rothbaum, 1989; Lang, 1977; Litz & Keane, 1989) to complex models of appraisal (Ehlers & Clark, 2000).

Resick and Schnicke (1992, 1993) created a theoretical model specifically tailored for survivors of interpersonal trauma (i.e., sexual and physical abuse). The main assumption of this model is that a person who is involved in a traumatic event is confronted with new information that usually does not fit into his or her pre-existing cognitive schemata. Resick and Schnicke (1992, 1993) propose that two processes called “accommodation” and “assimilation” occur within the attempt to integrate the information of the traumatic experience. Accommodation means that an individual adjusts their pre-existing schema so that the new information can be integrated without difficulty. Accommodation usually leads to functional and healthy beliefs: e.g., “I am always in control of what is happening to me” becoming “In most situations I am in control of what is happening to me”. The exceptions are situations when accommodation is exaggerated, so-called “over-accommodation”, e.g., “I am in control of what is happening to me” becoming “I am never in control of what is happening to me”. Assimilation on the other

hand describes the process by which an individual alters the information provided by the trauma to make it fit into the existing schemata. This process leads to maladaptive beliefs: e.g., “I am in control of what is happening to me” remains a schema and the information of the traumatic event is altered leading to the belief “it was my fault I was raped”. The resulting maladaptive cognitions of both assimilation and over-accommodation are often referred to as “stuck-points”. These stuck-points prevent trauma survivors from integrating the experience and processing the traumatic events (Resick & Schnicke, 1992, 1993). There is ample evidence that supports the association between maladaptive post-traumatic cognitions and PTSD symptom severity in adults (Dunmore, Clark, & Ehlers, 2001; Owens & Chard, 2001; Owens et al. 2008; Sobel, Resick, & Rabalais, 2009; Steil & Ehlers, 2000; Vaile Wright, Collinsworth, & Fitzgerald, 2010; Wenninger & Ehlers, 1998).

Based on these theoretical assumptions, Resick and Schnicke also developed a new form of treatment for PTSD known as Cognitive Processing Therapy (CPT). A primary goal of CPT is to modify assimilated and over-accommodated thoughts by identifying and challenging maladaptive beliefs and suggesting more adaptive thoughts. For this purpose, at the start of a CPT course of treatment, patients write so-called impact statements in which they describe the meaning of the traumatic event and how it has affected their thoughts about themselves, other people, and the world. The patients then elaborate on their beliefs in conjunction with the therapists to derive stuck-point lists from the impact statement. In CPT, a significant reduction of maladaptive cognitions from pre- to post-treatment has been demonstrated (Resick & Schnicke, 1992; Resick, Nishith, Weaver, Astin, & Feuer, 2002; Resick et al. 2008). Sobel, Resick, and Rabalais (2009) examined impact statements from 37 adult female rape survivors before and after treatment. Results demonstrated that adaptive beliefs increased and over-accommodated and assimilated thoughts decreased from pre- to post-treatment. The hypothesis that higher numbers of maladaptive beliefs are related to higher PTSD symptom severity, and

that an increased number of accommodated thoughts are related to lower PTSD symptom severity was partially supported by this study.

In taking a closer look at the association between maladaptive post-traumatic cognitions and PTSD, an area of concern emerges, namely the thematic content of these cognitions and possible differences in the importance of certain themes. The body of research dealing with these issues is mostly influenced by Janoff-Bulman (1992) and McCann and colleagues (1988). Janoff-Bulman (1992) proposed that people hold three fundamental assumptions about the self and the world: 1) The world is benevolent (other people are trustworthy and misfortunes occur infrequently), 2) The world is meaningful (people get what they deserve and the distribution of outcomes follows justice), and 3) The self is worthy (the self is seen as competent and lovable). A traumatic event shatters these positive assumptions and consequently the individual experiences post-traumatic distress.

McCann et al. (1988) identified five major themes of basic beliefs through clinical experience and theoretical work that comprise safety, trust, control, esteem and intimacy. These authors assume that all basic beliefs a person holds – whether positive or negative – occur within these thematic categories. The theory posits that a traumatic event influences individuals differently depending on how positive or negative their basic beliefs are. If a person who grew up in a very safe neighborhood created the belief “The world is a safe place” is then involved in a crime, this person will likely experience a greater degree of suffering than a person with a more realistic belief such as “The world is a safe place, though there are also places that are not safe.”

A handful of studies have examined the link between PTSD symptom severity and the thematic content of maladaptive post-traumatic cognitions in adult samples. These studies used the World Assumptions Scale (WAS) designed by Janoff-Bulmann (1989) and the Personal Beliefs and Reactions Scale (PBRs), which measures cognitions in the five areas proposed by

McCann and colleagues (Mechanic & Resick, 1993). Results suggested that the number of maladaptive post-traumatic cognitions was associated with PTSD symptom severity (Mechanic & Resick, 1993; Owens & Chard, 2001; Wenninger & Ehlers, 1998), and that especially the themes trust, power, esteem and intimacy displayed strong correlations with PTSD symptoms (Wenninger & Ehlers, 1993). Additionally, the “worthiness of the self” scale correlated significantly with PTSD symptom severity, and the WAS subscales “beliefs”, “safety”, and “power” predicted PTSD symptom severity (Owens & Chard, 2001).

An additional question, yet to be explored, would be whether trauma characteristics such as the nature or frequency of the abuse are related to the amount of maladaptive cognitions in specific thematic categories. It has already been shown that trauma- and person-characteristics of the survivor influence PTSD symptom severity, especially frequency of the abuse (Wenninger & Ehlers, 1998), the number of assailants, perceived life threat, injury threat, and perceived lack of control (Dunmore, Clark, & Ehlers, 2001). Owens and Chard (2001) examined the predictability of pre-treatment cognitive distortions by trauma event characteristics in their sample of adult female childhood sexual abuse (CSA) survivors. Results suggested that out of a number of event characteristics only penetration predicted cognitive distortions in the areas of trust and power.

In the field of childhood and adolescent PTSD, research on these relationships and content of maladaptive post-traumatic cognitions is sparse to non-existent. Tyler (2002) examined the relationship between trauma characteristics and PTSD symptom severity in children and adolescents. Female sex, age at trauma onset, frequency of the abuse, duration of the abuse, and type of the abuse - sexual versus physical - as well as severity of the abuse and the relationship to the perpetrator were identified to influence both the emergence and the severity of PTSD symptoms. One longitudinal study (Palosaari, Punamäki, Diab, & Qouta, 2013) examined the relationship between post-traumatic cognitions and post-traumatic stress

symptoms in a sample of 240 ten- to twelve-year-old children from Gaza, who experienced shelling during the 2008-2009 war between Israel and Palestine. Data were collected 3, 5, and 11 months following the end of the war. Results indicated that the number of post-traumatic cognitions predicted the level of post-traumatic stress symptoms over time, but the level of post-traumatic stress symptoms did not predict the amount of post-traumatic cognitions. These results are consistent with the assumption that post-traumatic cognitions play a central role in the development and retention of post-traumatic stress symptoms.

The aim of the present study was to provide a first insight into maladaptive post-traumatic cognitions of adolescents with a history of interpersonal traumatization. First, we examined the thematic content and the dispersal of the cognitions amongst thematic categories. Second, we investigated the relationship between trauma characteristics such as the nature of the trauma and the number of maladaptive cognitions overall, and the number of maladaptive cognitions within categories. Third, we determined whether adolescent survivors of physical and sexual traumatization with more cognitive distortions overall and more cognitive distortions in certain thematic categories also displayed a greater PTSD symptom severity, as shown in former studies with adult samples (e.g., Owens & Chard, 2001; Wenninger & Ehlers, 1998).

Because of the lack of studies in this area, our study was exploratory in nature. Our research questions were as follows: 1) What is the thematic content and how are the cognitions dispersed in thematic categories? 2) What is the relationship between trauma characteristics, the number of maladaptive cognitions overall and the number of maladaptive cognitions within categories? Regarding the latter question, only Owens and Chard (2001) examined this type of relationship, but with an adult sample. All other researchers investigated PTSD symptom severity instead of cognitive distortions. 3) What is the relationship between PTSD symptom severity and the number of maladaptive cognitions overall and the number of maladaptive

cognitions within categories? This type of analysis has been conducted before in adult samples (Owens & Chard, 2001; Wenninger & Ehlers, 1998). Despite these two studies with adults, we explored this relationship by an exploratory approach, because we assumed that cognitions may differ between adults and adolescents. However, there is little empirical evidence examining the difference between adolescents' and adults' cognitions. Thus, our study provides the opportunity to examine possible differences in relevance to specific schemata between adolescents and adults. Adolescence is seen as a period of life with heightened vulnerability (Steinberg, 2005). Compared to adulthood, adolescence is a particularly sensitive period for the effects of stress on mental health (Fuhrmann, Knoll & Blakemore, 2015). In this period of life, the brain is still developing, and behavioral and cognitive systems mature at different rates, especially in brain regions that are key to regulation of emotions and behavior and to the perception of risk (Steinberg, 2005). Additionally, the evaluation of the self continues to change and becomes further differentiated with time (Harter, 1990). These factors may influence vulnerability to the development of PTSD and the subjective importance of specific schemata.

In contrast to most former studies addressing maladaptive post-traumatic cognitions, we used qualitative material in place of questionnaire data. We would like to highlight this fact, as it allowed us to examine the content of the maladaptive cognitions from the individuals in our sample in a less-restrictive manner. We would further like to highlight the fact that the current paper presents results from a secondary analysis of data, which were collected for a multicenter randomized controlled trial (RCT) of Cognitive Processing Therapy for PTSD in adolescents (Rosner, König, Neuner, Schmidt & Steil, 2014).

9.3 Method

9.3.1 Participants

The sample consisted of patients from the pilot study and first patients from a multicenter randomized controlled trial (RCT) in which a developmentally adapted form of

Cognitive Processing Therapy (D-CPT; Matulis et al., 2014) was compared to treatment as usual. We included all patients, who already completed treatment and whose stuck-point lists were available. At the time of our data collection, 44 patients had completed treatment. The data from 5 out of 44 patients could not be included in the current sample due to missing stuck-point lists. Treatment took place at three outpatient centers in Germany, namely in Berlin, Eichstätt-Ingolstadt and Frankfurt am Main (Rosner et al., 2014). Eligible for the treatment study were adolescent subjects between 14 and 21 years, who were diagnosed with PTSD after Childhood Sexual Abuse (CSA) or Childhood Physical Abuse (CPA). CSA was defined as the coercion of sexual activity onto a minor person by an older person (American Psychological Association, 2001). CPA was defined as intentional injury of a child by a parent or caretaker by any action that leads to physical injury like striking, kicking, beating or biting (American Psychological Association, 2013). Exclusion criteria were: a pervasive developmental disorder (e.g., autism), diagnosed intellectual disability (defined as $IQ < 75$), abuse only before the age of three, withdrawal of the informed consent before randomization, inability to be fluent in German, unstable housing conditions, a lifetime diagnosis of schizophrenia, a schizo-affective disorder or bipolar disorder, a current diagnosis of substance dependence (full remission < 6 months), a suicidal attempt or life-threatening self-harming behavior within 6 months prior to admission to the study, or other current psychotherapy. Patients were recruited via flyers, newspapers, referrals from hospitals, private practitioners, and advertisement on several websites including the project's homepage. Data for the current study were collected from 43 patients who had reached a therapy phase, in which stuck-point lists could be derived from analyzing the written impact statements. The sample consisted of 88% ($n = 38$) female and 12% ($n = 5$) male patients. Mean age was 17.3 years (range 14 - 21 years). The study protocol was approved by the ethic committees of all three participating Universities.

9.3.2 *Measures*

9.3.2.1 Basic documentation of trauma characteristics

One part of pre-therapy assessment was a study specific standardized questionnaire called “Basic Documentation of Trauma” in which diagnosticians documented characteristics of the traumatic events. Variables assessed were (separately for physical and sexual traumata): number of trauma clusters, number of perpetrators, age at the beginning of the trauma, duration of the trauma, number of assaults, time passed since the last assault, relationship to the perpetrator as well as injuries through physical violence and specific type of sexual assault (e.g., penetration).

9.3.2.2 Clinician administered PTSD scale, children and adolescent version (CAPS-CA, IBS-KJ in German)

The German Version of the CAPS, the IBS-KJ, can be used to assess PTSD symptomatology and symptom severity according to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM-IV, American Psychiatric Association, 2000). Both frequency and intensity scores of each symptom are obtained, resulting in a sum score for PTSD severity. The reliability and validity of the IBS-KJ diagnoses and severity scores are good (Steil & Fücksel, 2006).

9.3.2.3 University of California Los Angeles PTSD reaction index (UCLA, German Version)

The UCLA PTSD Reaction Index is an instrument to assess post-traumatic stress symptoms and trauma exposure among children and adolescents. It contains three sections of which the first one is a screening for trauma exposure (section I), the second one is an evaluation of the A criterion for PTSD according to DSM-IV criteria (section II), and the third one is a 22-item assessment of symptom severity by frequency of individual symptoms (section III). The validity and reliability of the UCLA are well-documented (e.g., Elhai et al., 2013).

9.3.2.4 Beck Depression Inventory (BDI-II, German Version)

The BDI-II is a 21-item self-assessment instrument for the rating of current depressive symptoms (Beck, Steer, & Brown, 1996). The BDI-II psychometric properties can be considered as good (Kühner, Bürger, Keller, & Hautzinger, 2007).

9.3.2.5 Stuck-point logs

Stuck-point logs contain the patients' maladaptive beliefs that were identified within the therapeutic process. At the beginning of treatment, patients wrote an impact statement about the assumed reasons for the traumatic event and its impact on their life today in the thematic categories safety, trust, control, esteem and intimacy. In a next step, patients and therapists analyzed this impact statement and created a stuck-point log with the specific basic maladaptive beliefs of the patient (see Table 2 for examples).

Table 2

Examples of stuck-points from the current study

Category	Example
Safety	"The world is a cruel place."
Trust	"I can't rely on anyone."
Control	"I have no influence over what is happening to me."
Esteem	"I am a bad person."
Intimacy	"If someone comes close, something bad will happen."
Guilt	"The rape wouldn't have happened if I had behaved differently."

9.3.3 Procedures

Copies of all stuck-point logs of the patients were obtained from the three study centers. A category system for the contents of the beliefs was developed and two independent evaluators, who were trained to a minimum of 80% agreement, assigned the stuck-points to the relevant categories using a detailed coding manual by Rabenau (2014). For additional guidance in the rating process, the procedure described by Sobel et al. (2009) was taken into account. A number of decision rules were established before and during the rater training. For example, if a sentence contained two different statements which clearly represented different stuck-points, these statements were separated and counted as two stuck-points. In accordance with Sobel et al. (2009) sentences that expressed feelings rather than thoughts were still counted as stuck-points, in case a belief could be derived from the statement (e.g., “I don’t feel safe.” (feeling) was counted as “I believe I am not safe.” (thought)).

The coding followed the general definition of stuck-points by Resick et al. (2008). Stuck-points are distorted cognitions, which often take the form of extreme statements like “The world is a bad place”. Based on the CPT manual by Resick, Monson, and Chard (2014) specific thematic categories of stuck-points were analyzed; namely: safety, trust, control, esteem, intimacy, guilt, denial, and one category, which was named “irrelevant content” and served as a residual category for statements that did not contain any profound content (e.g., “Only Micky Mouse is my friend.”).

If the two raters disagreed, a short discussion took place and a decision on the category was made. If discrepancies could not be resolved, the statement was coded “irrelevant”. In both cases, the statement was counted as “no agreement” in the calculation of Cohen’s Kappa. After the described training, the two coders reached a very good interrater agreement of 87% and a Cohen's Kappa of .84.

9.3.4 Statistical Analysis

Frequencies of stuck-points were determined for each thematic category and a mean value over all categories. Relationships between numbers of stuck-points overall and in specific categories and demographic and trauma-relevant measures, as well as relationships between stuck-point numbers overall and in specific categories and symptom severity were evaluated using Pearson correlations. We computed partial correlations to control for a confounding effect of PTSD symptom severity on stuck-point frequencies. Mean values of different subsamples were compared using non-paired t-tests and one-way analysis of variance (ANOVA). If the data did not meet the criteria of normality, non-parametric alternatives, i.e., Mann-Whitney-U Test and Kruskal-Wallis Test, were used. Despite multiple testing, we resigned to adjust the alpha level (5%), as our results are based on a small sample size and our study provides preliminary insights into a new topic.

9.5 Results

9.5.1 Sample Characteristics

The total sample comprised 43 patients. Further information on more detailed sample characteristics can be obtained from Table 3.

Table 3

Sample Characteristics

Demographic Variables	<i>M</i>	<i>SD</i>	Range
Age	17.3	2.3	14-21
Sex			
Male % (<i>n</i>)	12% (5)		
Female	88% (38)		

	N	%
Age at Trauma Onset	10.1	5.09
Duration ^a (Index Trauma)	34.7	49.6
Frequency (Index Trauma)	135.8	258.4
Number of Trauma Clusters ^b	4.7	3.4
<hr/>		
Physical abuse ^c	38	88,4
<hr/>		
Sexual abuse ^c	31	72,1
<hr/>		
Penetration	17	39.5
<hr/>		
Injuries from physical abuse		
None	9	20.9
Light ^d	15	34.9
Severe ^e	19	44.2
<hr/>		
Relationship with Perpetrator		
Family ^f	18	41.9
Social Environment	17	39.5
Stranger	6	14.0

Note. *SD*= standard deviation; *n*=number of cases. ^a Duration in months. ^b Trauma Clusters= sexual/physical abuse, natural disaster, war, medical treatment, accident, death of a relative, neglect. ^c number of patients who experienced physical abuse/sexual abuse exclusively or in combination with other types of trauma. ^d light = e.g., blue spots, scratch marks. ^e severe= e.g., fracture, burns, contusion. ^f family= also including extended family like uncles or step-parents.

9.5.2 *Stuck-Points*

Participants' stuck-point lists contained on average $M = 11.8$ ($SD = 5.5$) stuck-points. The most frequently named were in the categories esteem (18.6%), guilt (18.6%) and trust

(12.5%). Denial occurred only twice (0.4%) and was therefore excluded from further analysis.

Table 4 shows information about frequencies and means for stuck-points in the other categories.

Table 4

Frequencies and means of stuck-points in all categories

Stuck-Point	<i>N</i>	%	<i>M</i>	<i>SD</i>
Categories				
Safety	37	7.3	0.9	0.8
Trust	63	12.5	1.5	0.9
Control	40	7.9	0.9	1.1
Esteem	94	18.6	2.2	1.8
Intimacy	44	8.7	1.0	1.3
Guilt	94	18.6	2.2	1.6
Denial	2	0.4	0.1	0.2
Irrelevant content	132	26.1	3.7	2.7
Total	506	100	11.8	5.5

9.5.3 Relationships between stuck-points and demographic and trauma-relevant variables

Correlations between stuck-points and demographics as well as trauma-relevant variables controlled for the effect of PTSD symptom severity are presented in Table 5. We found a higher number of stuck-points overall to be significantly related to a longer duration of the index trauma ($r(41) = 0.364^*$, $p < .05$). Furthermore, the older the patients at trauma onset, the more guilt stuck-points they displayed ($r(41) = 0.390^*$, $p < .05$).

Table 5

Partial Pearson Correlations between stuck-points and demographic and trauma-relevant variables controlled for PTSD symptom severity

Demographic/ Trauma- relevant Variables	Total number of stuck- points	Safety	Trust	Control	Esteem	Intimacy	Guilt
Age at Trauma Onset	-0.035	0.245	-	-0.029	-0.064	-0.202	0.390*
Duration	0.364*	-0.114	0.084	0.201	-0.077	0.205	-0.116
Frequency	-0.074	-0.261	-	-0.067	-0.252	-0.132	-0.186
Number of Trauma Clusters	-0.048	0.081	-	-0.093	0.347	-0.048	-0.073

* $p < .05$.

Patients with a history of physical abuse displayed significantly more stuck-points overall ($U = 50.5, p = .046$) and more stuck-points in the categories trust ($U = 25.0, p = .003$) and control ($U = 50.0, p = .046$) than patients without a history of physical abuse. Patients who experienced sexual abuse displayed more stuck-points in the categories safety ($U = 92.0, p = .005$) and guilt ($U = 114.0, p = .026$) compared to patients who did not experience sexual abuse. Female patients showed more stuck-points in the categories safety ($U = 46.4, p = .033$) and guilt ($U = 46.5, p = .033$) compared to male patients. Patients with sexual abuse, who experienced penetration, showed more stuck-points in the category guilt ($U = 110.0, p = .003$) than patients who did not experience penetration.

Furthermore, the average number of guilt stuck-points was significantly elevated for patients who had experienced the abuse with a perpetrator from their family in comparison to patients whose perpetrators were part of the social environment or complete strangers ($H(2) = 6.93, p = .03$).

The average number of trust stuck-points was significantly elevated for patients who had a severe injury in comparison to patients who had a slight injury or no injury at all from physical violence ($H(2) = 6.59, p = .04$).

9.5.4 Relationship between number of stuck-points and psychopathology

Pearson correlations were conducted to examine the relationships between stuck-points and measures of psychopathology (see Table 6). Results show that patients with a higher number of stuck-points in the category trust displayed a higher PTSD symptom severity (IBS-KJ).

Table 6

Pearson Correlations between measures of psychopathology and number of stuck-points

Demographic/ Trauma- relevant Variables	Total stuck- point number	Safety	Trust	Control	Esteem	Intimacy	Guilt
IBS-KJ	0.176	0.095	0.307*	0.043	0.074	0.130	0.160
UCLA	0.161	0.184	0.205	0.256	-0.023	0.183	0.183
BDI	0.198	0.171	0.107	0.268	0.271	0.149	0.172

* $p < .05$.

9.6 Discussion

The purpose of the current study was to offer first insights into the nature of maladaptive post-traumatic cognitions of adolescents who experienced interpersonal traumatization. To our knowledge, this is the first study examining the thematic content of maladaptive cognitions of adolescent survivors of interpersonal trauma. We explored the differences between the impact of sexual versus physical abuse on post-traumatic cognitions of adolescents.

The most crucial themes of the stuck-points were trust, esteem and guilt. The five themes proposed by McCann et al. (1988) and the themes guilt and denial (König et al., 2012) covered the thematic content of stuck-points. There were no other statements in the residual category that indicated another significant theme. Stuck-points in the category of denial occurred only twice (e.g., “I am exaggerating, this was not a traumatic event.”). This result may seem surprising in the first place. However, trauma survivors who deny the traumatic event usually don't seek treatment and hence are not included in the sample.

Our results also indicated a relationship between the nature of the trauma and the importance of specific thematic categories. Physical abuse was related to a significantly higher number of stuck-points in the categories of trust and control. It is not surprising that victims of physical abuse display difficulties related to trust and an increased need for control. Trust is defined as “a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behavior of another” (Rousseau, Sitkin, Burt, & Camerer, 1988). This positive expectation is shattered in victims of physical abuse. As the propensity to trust is influenced by learning (e.g., Simpson, 2007) this negative experience will most likely lead towards difficulties to trust in the future. Furthermore, it seems likely that difficulties related to trust and relying on others can result in a heightened need for control. Physical abuse in children often happens within the context of a disciplinary interaction in which parents try to control their children's behavior using physical forms of punishment (e.g.,

Ateah & Durrant, 2005, Kandushin & Martin, 1981). It seems likely that this extreme method to gain control over another person can lead to resistance in this person and a need to regain control.

Sexual abuse was related to significantly more stuck-points in the categories of guilt and safety. These results in the category of guilt are in line with previous studies on adult samples that found sexual abuse to be linked to feelings of guilt (i.e., Briere & Runtz, 1993; Resick et al., 2002; Vaile Wright et al., 2010; Wenninger & Ehlers, 1998), and safety (Vaile Wright et al., 2010; Wenninger & Ehlers, 1998). One explanation for the emergence of feelings of guilt after sexual abuse could be the often held prejudice that victims of sexual abuse partly carry responsibility. Consequently, some victims of sexual abuse do not receive needed support while some even experience victim blaming (e.g., Ullmann & Peter-Hagene, 2014). Furthermore, it seems likely that one would not feel safe in the absence of understanding and support. Those findings suggest that there is a differential cognitive impact of sexual abuse compared to physical abuse in adolescent survivors of interpersonal trauma.

Furthermore, injuries through physical violence and penetration in the case of sexual violence displayed significant relationships with stuck-points in the categories of trust and guilt, two categories that are most relevant to the specific type of abuse. This finding suggests that injuries and penetration are markers for the severity of the violence. The heightened number of guilt stuck-points matches other research results, i.e., penetration is associated with a heightened risk for dissociation and PTSD (Collin-Vézina & Hébert, 2005; Owens & Chard, 2001). In contrast to Owens and Chard (2001), we did not find penetration to be associated to trust and power. Possible reasons for this discrepancy could be that Owens and Chard (2001) used questionnaire data and examined an adult sample. In addition, their sample size was larger than that of the current study. However, penetration seems to play a crucial role, as it was related to more post-traumatic cognitive distortions in general.

Female patients reported more “guilt” stuck-points than did male patients. However, the finding about the sex difference should be interpreted cautiously, as our sample included only five male patients. Nevertheless, it should be mentioned, since it is in line with several other studies and thus seems to be a robust effect (e.g., Colin & Foa, 2006). Furthermore, the older the patients were at trauma onset and the closer the perpetrator was, the more guilt stuck-points they displayed. These findings partly agree with former research. Wenninger and Ehlers (1998) found a significant relationship between depression symptoms and a closer relationship to the perpetrator. Tyler (2002) reported mixed findings on that relationship in her review. The relationship between age at trauma onset and the number of guilt cognitions seems partly surprising, as most former studies reported no significant relationship between age at trauma onset and any trauma outcome (Hagenaars, Fisch, & van Minnen, 2013; Tyler, 2002). Only Ackermann et al. (1998) found a significant negative relationship between age at onset and number of diagnoses in a sample of children who experienced sexual and physical abuse, indicating that the younger the children were when the assault began the higher the subsequent psychological distress they displayed. Our present result suggests that older children display more distorted cognitions about guilt. One possible explanation for those mixed results may be that age at trauma onset was examined in combination with different outcome variables. Furthermore, we know from clinical experience that adolescents who experienced abuse at an older age, feel guilty for not having defended themselves, whereas adolescents who experienced abuse as young children usually understand that they could not have defended themselves.

The number of stuck-points overall was related to a longer duration of the index trauma and physical abuse. Former studies presented mixed results concerning the relationship between duration of the abuse and PTSD symptom severity. Tyler (2002) for example reported no significant association in children with a history of sexual abuse, whereas Wolfe et al. (1994) did find a significant relationship in a sample of children who experienced sexual abuse. The association between the number of stuck-points and physical abuse compared to sexual abuse

seems somewhat surprising, as two other studies found that sexual violence compared to other trauma was associated with a higher risk for mental health issues (Kelley et al., 2009; Vaile-Wright et al., 2010). However, Kelley et al. (2009) did not include victims of physical abuse in their comparison and Vaile-Wright et al. (2010) compared mixed sexual- and non-sexual trauma groups. Based on these findings, one cannot conclude that sexual trauma is associated with a higher risk for psychopathology. More in line with the present result is a study by Ackermann et al. (1998) who found combined sexual and physical abuse and physical abuse only to involve a higher risk for PTSD compared to sexual abuse only.

One last important finding is that a higher number of trust stuck-points was related to higher PTSD symptom severity. Wenninger and Ehlers (1992) reported a significant relationship between trust, power, esteem and intimacy and PTSD symptom severity in adults. In addition, Owens and Chard (2001) found all subscales from the PBRIS and the worthiness of the self-scale from the WAS to be related to symptom severity, and trust displayed the second strongest correlation. The results of our study are not completely identical with these results. However, one has to bear in mind that we examined an adolescent sample and we used qualitative data instead of questionnaire data. Furthermore, cognitions were categorized differently compared to the studies of Owens and Chard (2001) and Wenninger and Ehlers (1992). Still, trust stuck-points seem to play a crucial role in association to PTSD symptom severity.

In contrast to former studies, we did not find a significant relationship between the number of stuck-points overall and PTSD symptom severity (Dunmore, Clark, & Ehlers, 2001; Owens & Chard, 2001; Owens et al., 2008; Sobel, Resick, & Rabalais, 2009; Vaile Wright, Collinsworth, & Fitzgerald, 2010; Wenninger & Ehlers, 1998). This could be due to the different assessment of cognitive distortions as well as a set of limitations that are discussed below.

Our study is the first to provide an insight into maladaptive post-traumatic cognitions of adolescents with a history of interpersonal traumatization. Our findings provide preliminary evidence for the importance of the stuck-point categories of esteem, guilt and trust. We found associations between the nature of the trauma, a number of objective trauma characteristics, and specific thematic categories of stuck-points. Current findings are useful for future individual treatment planning as therapists can anticipate specific cognitive distortions and address them directly in therapy. Furthermore, our findings on trust may be relevant to the mindful creation of a stable therapeutic relationship.

Nevertheless, we would like to address a set of limitations. First, as we used original therapy material, stuck-point numbers may have been influenced by distracting variables. For example, the number of stuck-points could vary depending on the individual therapeutic styles, the patients' cognitive abilities, and verbal fluency. This fact, along with a lack of statistical power due to a limited sample size, could explain why we did not replicate the relationship between PTSD symptom severity and cognitive distortions in general. Furthermore, the application of qualitative material restricted the quantitative analyses we could conduct. In addition, it should be mentioned that only two results in our correlational analysis were significant, which could be due to chance. Thus, all findings presented in this article should be understood as preliminary. Yet, they present an encouraging first step to a better understanding of maladaptive post-traumatic cognitions in adolescents, the central factor in the development of PTSD. Another limitation involves the presetting of the development of the stuck-point lists. The themes proposed by McCann et al. (1988) and the theme of guilt were addressed directly in the instructions on how to write the impact statements. Patients may have felt restricted to write down thoughts that fell into these themes. However, sentences with content other than maladaptive beliefs indicated that patients may have written down other cognitions, too. Referring to the generalizability of our results, we are aware that all studies mentioned were conducted in Western societies and results cannot be generalized to other societies.

Future studies that address maladaptive post-traumatic beliefs of adolescents with interpersonal traumatization should use a combination of qualitative and quantitative data to broaden the possibilities of data analysis and subsequent interpretation. For example, a standardized measure like the Personal Beliefs and Reactions Scale (PBRs) that measures cognitions in the five areas proposed by McCann and colleagues (Mechanic & Resick, 1993) or the World Assumptions Scale (WAS) designed by Janoff-Bulmann (1989), along with the stuck-point logs to assess possible discrepancies between the different methods. Furthermore, it would be useful to examine the different stuck-point categories and their relation to outcome measures and symptom reduction after the completion of treatment. It is possible that certain highly relevant thematic categories have a stronger relationship to symptom reduction than others. Experimental paradigms like the Stroop task could be used to assess the cognitive interference through stuck-points. It would be interesting to investigate whether the cognitive distortions concerning the typical stuck-point themes are also reflected in an attentional bias.

Taken together, our study is the first to provide insight into the nature of maladaptive post-traumatic cognitions in a sample of interpersonally traumatized adolescents – a population that has been largely neglected in PTSD research. Our findings contribute to a better understanding of this population and encourage a focus on typical stuck-point themes in individual treatment planning.

Supplementary materials

The following supplementary materials related to Paper III are available in the appendix.

- **Table 10** Overview of all main and some subcategories from the category system with illustrative text examples from our participants

10 General discussion

The current thesis aimed to expand our knowledge on the construct of interpersonal trust and its role in mental disorders in general, and in Borderline Personality Disorder (BPD) in particular. In the following chapters, I will summarize the main findings of the three studies conducted within this dissertation briefly. Thereafter, I will thoroughly discuss their implications for the theoretical understanding of interpersonal trust and its measurement, how the propensity to trust is formed, and its meaning for mental disorders and their treatment. This section will be followed by a brief discussion of some additional findings on age and gender effects on interpersonal trust. In the last chapter, I will discuss study limitations, provide an outlook for future research and present implications for clinical practice.

10.1 Summary of findings

10.1.1 *Paper I*

In Paper I, a short self-report questionnaire for the assessment of interpersonal trust behavior was developed. The focus was on establishing high ecological validity to provide information about interpersonal trust beyond the results of trust games and other questionnaires for interpersonal trust. The final version of the questionnaire consists of eight items and two factors. The first factor was labeled “entrusting known people with material items” and the second factor was labeled “entrusting unknown people with one’s well-being”. Psychometric properties can be considered acceptable to good. By establishing convergent validity, we found small to medium correlations with alternative measures of trust and trust behavior.

In the second part of Paper I, results concerning interpersonal trust in three mental disorders (BPD, MDD and SAD) are presented. Patients with BPD displayed lowest levels of interpersonal trust both on the ITSQ and in a hypothetical trust game. The association between the perceived quality of the therapeutic alliance and interpersonal trust was significant only

within the group of patients with BPD. Patients with MDD and SAD do not seem to display impairments in interpersonal trust behavior.

10.1.2 Paper II

In patients with BPD, alterations in interpersonal trust seem to be a robust finding. However, this is not so for all facets of interpersonal trust. Prior trust experiences influence our propensity to trust to a profound degree (e.g. Hiraishi et al., 2008). In Paper II, prior trust experiences were investigated through autobiographical memories (ABM) of trust from patients with BPD and non-clinical controls. In both groups, trust in a person's emotional reliability, trust in a person's dependability and trust in a person's competency were the most frequently-named trust objects. Concerning interaction partners, participants most often named friends and romantic partners in whom they trusted, and friends, family, familiars and romantic partners in whom they did not trust. When comparing ABMs from patients with BPD and non-clinical controls, the results showed that patients with BPD primarily retrieve situations in which their trust was failed by their family members or romantic partners, while non-clinical controls mostly retrieve situations in which their trust was honored by their friends. Patients with BPD seem to consider experiences with trust and mistrust as significantly more relevant for their current lives than non-clinical controls. Results from patients with BPD correspond with their self-reported trust behavior as assessed in Paper I, as well as theoretic assumptions about fragile mentalizing and epistemic trust in patients with BPD (e.g. Fonagy et al., 2014).

10.1.3 Paper III

In Paper III, post-traumatic cognitions from interpersonally traumatized adolescents with PTSD were examined. Earlier studies have found that after interpersonal traumatization, PTSD is associated with distorted cognitions about the self, the world and other people (Mechanic and Resick 1993). These distorted cognitions are often referred to as “stuck-points”

because they prevent trauma survivors from integrating the traumatic experience and recovering from it (Resick and Schnicke 1992, 1993). We examined stuck-points from adolescent survivors of interpersonal traumatization. First, we examined the thematic content and then analyzed associations to trauma-specific variables and PTSD symptom severity. Generally, guilt, esteem and trust were the most frequently cited themes. Besides this, sexual abuse was associated with more guilt and safety stuck-points, while physical abuse was related more to control and trust stuck-points. Stuck-points dealing with trust stood out, as they were the only ones to predict PTSD symptom severity, suggesting a crucial role in PTSD symptomatology.

10.2 Theoretical understanding of interpersonal trust

As described in the introduction of this thesis, a great variety of scientific approaches, conceptualizations and definitions of interpersonal trust can be found in the literature. Scholars investigating interpersonal trust refrain from making generalizations about the construct and seem to agree upon the fact that interpersonal trust cannot be captured in one single and static definition (e.g. Lewicki and Bucker, 1995). The results of the first part of Paper I support the idea that interpersonal trust is a construct with high context-specificity. We found small to medium correlations between the newly developed ITSQ and two alternative measures for interpersonal trust (hypothetical trust game and the KUSIV-3 questionnaire), suggesting that all three approaches measure the same construct from different perspectives. While trust games measure interpersonal trust from a behavioral and materialistic perspective, the KUSIV-3 questionnaire measures it from an attitudinal and rather generic perspective (item example: “in general, people are trustworthy.”). The newly-developed ITSQ takes a behavioral perspective as well. Unlike trust games and other trust questionnaires, it covers more facets of interpersonal trust by including both unknown and known interaction partners and two different trust objects - material items and one’s well-being.

Despite the differences in theoretical approaches towards interpersonal trust, there seem to be some basic components of trust situations that scholars do agree upon: a trust situation is constituted of a *trustor*, a *trustee* and *situational features* like trust objects (e.g. Hardin, 2003; Simpson, 2007, Thielmann & Hilbig, 2015). Their interplay forms the degree of interpersonal trust apparent in a specific situation (e.g. Thielmann & Hilbig, 2015). The results of Paper I contributed empirical evidence for the theoretical work by Thielmann and Hilbig (2015) on the personality characteristics, which are supposed to influence a trustor's propensity to trust. Thielmann and Hilbig (2015) highlighted neuroticism/emotionality, agreeableness, honesty-humility and extraversion as the most relevant personality traits to influence the propensity to trust. Results from correlational analyses of Paper I suggest that emotionality, agreeableness and extraversion are indeed related to interpersonal trust, as measured by the ITSQ. However, we did not find a relationship to honesty-humility in our study. Honesty-humility reflects "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them without suffering retaliation", and seems to account for differences in trustworthiness expectations through social projection of one's own trustworthiness (Thielmann & Hilbig, 2014; Thielmann & Hilbig, 2015). However, results from empirical studies linked honesty-humility rather to trustworthiness than trusting behavior (Hilbig, Zettler, Leist & Heydasch 2013, Thielmann, Hilbig & Niedtfeld, 2014, Hepp et al., 2014).

Interestingly, the highest correlation was found between the ITSQ and risk-propensity measured by a one-item scale ("generally, how willing are you to take risks?" – Likert scale from 1: not willing to take risks at all, to 7: very willing to take risks). While correlations between the ITSQ and the HEXACO scales were all small to moderate ($r = .16 - .36$), the correlation between the ITSQ and risk-propensity was moderate to strong ($r = .38 - .51$). This result highlights the importance of risk as one precondition of trust (e.g. Borum, 2010, Lewis & Weigert, 1985, Thielmann & Hilbig, 2015). From a behavioral perspective, trust behavior is

sometimes even understood as a special form of risk-taking (e.g. Coleman, 1990; Fehr, 2009), as the trusting act as opposed to the intention to trust (i.e. attitudinal perspective of trust) means actually taking a risk. It is noteworthy that the correlation found in our analysis is higher than correlations between interpersonal trust and risk-taking from other studies using trust-games which measure interpersonal trust from a behavioral perspective, too (e.g. Altmann et al., 2008; Bigoni et al., 2013; Karlan, 2005; Thielmann & Hilbig, 2014, 2015). Possible explanations for these differences can be found in our operationalization of interpersonal trust and the formulation of ITSQ items, which should be explained with the help of two examples from each ITSQ scale:

ITSQ scale 1: Entrusting known people with material items

“A friend asks to borrow your expensive stereo system for a party, and assures you that if it were to be damaged in anyway, they would have it repaired. You have had varied experiences with trusting this friend in the past.”

ITSQ scale 2: Entrusting unknown people with one’s well-being

“You would like to make a surprise visit to your mother on her birthday. You do not have a lot of money, and you can only find one seat left for the trip on an internet ride-sharing site. The driver has had no reviews from any passengers, so you are unsure if the driver is friendly or will drive safely. You have no other information about the driver.”

Within all items, the ambivalence of trust cues is directly mentioned (e.g. varied experiences with the friend; no information about the driver) in order to highlight the risk inherent in trust situations. Other trust questionnaires do not provide any information about situational cues, and in trust-games the trustor and trustee usually do not get any information about each other’s reputation. The inherent risk of the situation thus seems to be presented more directly in ITSQ items than in other measures for interpersonal trust. Besides this, the value of

the entrusted goods – both of the material items (e.g. SLR camera, money for a flight ticket, external hard-drive) and even more so for one’s well-being – seem higher than the small amounts of monetary units (a common amount is 12) which are usually used in trust-games. In line with this reasoning, we found a higher correlation between ‘ITSQ scale 2: Entrusting unknown people with ones well-being and risk-propensity’ than ‘ITSQ scale 1: Entrusting known people with material items’ and risk-propensity. However, this difference might also be influenced by the type of interaction partner. Interaction partners on scale 2 are unknown people, unlike known people like on scale 1, which heightens the risk of a trust situation (Thielmann & Hilbig, 2015). Taken together, our results highlight the importance of risk within trust situations. For a deeper understanding of the exact interplay of the determinants and the perceived height of risk in a specific trust situation, further research is needed.

To summarize the implications from our findings for the theoretical understanding of interpersonal trust, it seems that conceptualizations of interpersonal trust do indeed vary and the most important reason might be the high context-specificity of the construct. At the same time, there seem to be higher-ordered components of trust situations, which seem valid for different conceptualizations and definitions, like the triangle of *trustor*, *trustee* and *situational context*. Interpersonal trust seems to be associated with specific features from these components, like personality traits of the trustor, or the risk inherent in a trust situation. The strength of the influence from these features and their exact interplay needs to be addressed in future research. One possibility would be to assess personality traits from the trustor as well as the perceived trustworthiness of a trustee, and the perceived risk of a trust situation. With the use of path analysis for example, theoretical ideas about the interplay of these variables as well the strengths of their influences on the outcome of trust can be examined.

10.3 Measurement of interpersonal trust

As described in the introduction to this thesis, methods used to measure interpersonal trust are currently mostly trust-games and a handful of questionnaires. Both measures have their advantages and disadvantages, however discussion of these should, for the sake of brevity, not be repeated in this section and can be found within the general introduction and the introduction of Paper I.

The newly developed ITSQ is a scenario-based questionnaire and is supposed to measure trust from a behavioral perspective. I think that, unlike existing trust questionnaires based on an attitudinal understanding of trust, targeting trust as a certain behavior incorporates important aspects like emotions. However, the ITSQ is still a self-report measure, which relies on honesty, the ability for introspection, and interpretations of the items, alongside other limitations of self-report assessments. Experiments like trust games certainly measure trust behavior more objectively, but besides the weaknesses described in the introduction (e.g. that it is not clear whether trust games really measure trust, but fairness) they also come with high costs. Nevertheless, one might argue that within an experimental setting, trust-related emotions and behavioral tendencies were activated more securely and intensely than in survey settings. One method which has been found to integrate some advantages of self-report and experimental measures is a scenario-based questionnaire (Westermann, Spies, Stahl & Hesse, 1996). Westermann et al. (1996), in their meta-analysis, found that scenario-based questionnaires provide enough situational cues to actually activate emotions and behavioral tendencies within the individual, so that valid information about potential behavior can be given. Besides this, scenario-based questionnaires come with much lower time and effort costs than experiments like trust games.

Generally, the ITSQ is a short and practical questionnaire which can be applicable to the clinical context when time is short. However, the fact that the trust scenarios were mainly

created based on trust situation scripts from a student sample might restrict applicability for older people or people from different social backgrounds. The items from scale 2: Entrusting one's well-being to unknown interaction partners reflect a quite specific context, with items like:

“You would like to make a surprise visit to your mother on her birthday. You do not have a lot of money, and you can only find one seat left for the trip on an internet ride-sharing site. The driver has had no reviews from any passengers, so you are unsure if the driver is friendly or will drive safely. You have no other information about the driver.”

The relevance of such situations most probably will not be the same for people of different ages and social backgrounds, and should be considered before applying the questionnaire. Besides this, reliability was only acceptable. However, internal consistency is usually lower in short measures like the ITSQ than in measures with more items (e.g. Tavakol & Dennick, 2011).

For the scientific investigation of interpersonal trust, one should bear in mind that though the ITSQ incorporates different interaction partners and trust objects, it does not measure all of the important facets of interpersonal trust. For patients with BPD, interpersonal trust towards known interaction seems to be difficult, as suggested by the results of Paper I. However, the results of paper II highlighted trust alterations towards family members and romantic partners, but not friends for example. In Paper II, participants reported more trust objects than material items and one's well-being, which are included in the ITSQ. To understand interpersonal trust behavior in more detail, future research needs to address even more trust facets than we could with the ITSQ and a hypothetical trust game. Nevertheless, the ITSQ is an innovative measure, enabling researchers to examine two facets of interpersonal trust at the same time, and discover intra-individual differences in trust behavior on the two facets from the questionnaire. Depending on inter-individual differences in trust determinants

such as personality traits and former trust experiences, people may display different amounts of trust in different facets of trust. In line with this, the results from Paper I suggest that patients with BPD display trust alterations only with one of the two facets, a novel finding which expands our knowledge of trust behavior in BPD.

In summary, the ITSQ is an innovative method for the measurement of interpersonal trust with high ecological validity, practicability and very low costs. Applicability might be restricted due to trust scenario specificity. The ITSQ might be most suitable for measuring interpersonal trust in adolescents and young adults in clinical contexts, or as a complementary measure next to other, possibly more costly measures of interpersonal trust in scientific studies.

10.4 Autobiographical memories of interpersonal trust

One goal of this dissertation was to learn more about the possible origins of the propensity to trust. The propensity to trust seems to be formed and influenced by a variety of factors, like different personality traits (e.g. Thielmann & Hilbig, 2015), attachment styles (e.g. Simmons, Gooty, Nelson & Little, 2009), emotional states (e.g. Mislin, Williams & Shaughnessy), genetic variations (e.g. Van Lange et al., 2014), some situational factors (e.g. Thielmann & Hilbig, 2015) and trust experiences (e.g. Simpson, 2007). Trust experiences are one influential factor that many scholars seem to agree upon (e.g. Hirashai et al., 2008). Even though trust experiences might not be the only influential factor on the propensity to trust, they seem to be of great importance. Van Lange et al. (2014) argue that most human behavioral traits are inheritable. However, they have found interpersonal trust to be one of the few social traits which are rather influenced by experience or the observation of other people's experiences. To examine trust experiences, we assessed autobiographical memories (ABMs) of trust. Furthermore, we compared memories from patients with BPD and non-clinical controls to learn more about the possible origins of differences in interpersonal trust behavior. We found that patients with BPD mostly recalled situations in which their trust was failed by family members

or romantic partners. Non-clinical controls, on the other hand, mostly recalled situations in which they trusted their friends and situations which turned out well.

When interpreting these results as influential experiences on current trust behavior, some things should be kept in mind. ABMs include self-referential experiences of an individual, though it cannot be assured that all important trust experiences will be recalled in one specific test situation. Recall can be understood as a reconstruction process, and past experiences are sometimes distorted due to conditions like moods (e.g. Lewis, Critchley, Smith & Dolan, 1991), mental disorders (e.g. Watkins, Mathews, Williamson & Fuller, 1992) or brain injuries (e.g. Yeates, Gracey & Mcgrath, 2008). In patients with BPD, a tendency to recall mostly negative memories was found in several studies (e.g. Arnow & Harrison, 1991; Jørgensen et al., 2012; Korfine, 1998; Nigg et al. 1992; Renneberg et al., 2005, Rosenbach et al. 2015) and is further supported by our results. Patients with BPD often have made more negative life experiences (e.g. Widom, Czaja, & Paris, 2009), and the fact that they recall mostly negative experiences could simply stem from the fact that they have more negative events to choose from. However, results from other studies suggest that patients with BPD display a negativity bias in social information processing (e.g. Winter, Herbert, Koplin, Bohus & Lis, 2014) and a negative recall pattern when recalling emotions (Ebner-Premier et al., 2006). Recalling mostly negative memories will naturally be connected to negative emotions, which in turn can lead to the recall of more mood-congruent negative memories (e.g. Wenzlaff, Wegner & Roper, 1988).

Considering this, results of Paper II do not necessarily provide information about all trust experiences which influenced our participants' trust behavior. Nevertheless, autobiographical memory, even as a constructed script of the self, does serve as an information base which individuals use to decide how to act in certain situations (e.g. Bluck, 2003). It is unclear whether difficulties in trusting those close to them, displayed by patients with BPD as shown in Paper I, stem from actual negative trust experiences with close others or rather the

pattern of mostly recalling only those negative experiences. Healthy individuals sometimes use the retrieval of positive memories to repair negative moods (e.g. Smith & Petty, 1995). This function does not seem to be possible for patients with BPD.

In sum, our results do not provide detailed information about the exact origins of trust alterations patients with BPD display, as trust experiences are only one influential factor and memory retrieval might not mirror all their relevant experiences. However, the results of papers I and II correspond with each other (in Study 2, patients with BPD recalled situations in which their trust was let down by family members and romantic partners, and in Paper II they reported difficulties trusting those close to them), which speaks for a certain relevance of retrieved memories for current trust behavior. Relevance ratings from Paper II further support this idea, as patients with BPD rated their memories as highly relevant for their current lives. Besides this, our results fit into the picture of information processing patterns in patients with BPD, which cause their highly negative views of themselves, other people and the world in general.

Another interesting result from Paper II was that patients with BPD did not display over-generalized memory retrieval. This corresponds with some studies on OGM in BPD (e.g. review by Bech, Elkilit & Simonsen, 2015). However, other studies have found OGM in BPD (e.g. meta-analysis by Beran, Richman & Unoka, 2018). According to a theory from Conway and Pleydell-Pearce (2000), patients with BPD might activate the self-schema of “the good study participant” during a test situation in which they have to fill out a questionnaire, and might thus be able to retrieve specific memories. This explanation would integrate both possibilities - that patients with BPD in everyday life might actually display OGM to some degree, but that in test situations they activate a certain self-schema which makes them strain themselves so much that they become able to recall specific memories. This possibility is supported by the fact that, in our study, the instruction actually prompted participants to describe specific trust memories (“Please describe a specific trust situation (when, where and with whom) that you have

experienced in your life.”). To shed further light into the specificity of ABMs in patients with BPD, it would be helpful to assess memory specificity with less prompting instructions.

10.5 The role of interpersonal trust in mental disorders

The positive effects of interpersonal trust on mental and physical health are manifold. A higher degree of interpersonal trust goes hand in hand with more satisfaction at work, in relationships and life in general, as well as more self-efficacy (Beierlein, Kemper, Kovaleva & Rammstedt, 2012). Schneider, Konjin, Righetti and Rusbult (2011) found that trust was strongly associated with physical health, though this association was mediated over a decrease in anxiety and depression. Study results showing alterations in interpersonal trust in patients with BPD and clinical observations about epistemic mistrust in BPD suggest an important role of interpersonal trust in mental disorders, especially disorders with prominent interpersonal difficulties like BPD. In patients with BPD, alterations in interpersonal trust have been found in several studies (for a review, see Lazarus et al. 2014). However, those results do not provide details of what and whom patients with BPD have difficulties trusting. Furthermore, for mental disorders like MDD or SAD study, results are scarce.

The results of this thesis expand our knowledge concerning these issues. Firstly, the results provide support for alterations in interpersonal trust in patients with BPD, secondly they show that alterations seem to be mainly displayed when entrusting material items to known interaction partners (vs. entrusting one’s well-being to unknown interaction partners), and they thirdly suggest that patients with MDD and SAD do not display impairments in interpersonal trust. Interestingly, adolescent patients with PTSD after interpersonal traumatization are also shown, as in Paper III, to seem to struggle with maladaptive beliefs concerning interpersonal trust, and the amount of those thoughts had even predicted PTSD symptom severity. The two groups of patients for whom strongest evidence for alterations in interpersonal trust were found within this thesis - patients with BPD and patients with PTSD after interpersonal traumatization

- share some similarities. Those similarities can be found in neuropathological functioning (Amad, Radua, Vaiva, Williams & Fovet, 2019), disturbances of self-regulation (at least for complex PTSD) (Cloitre, Garvert, Weiss, Carlson & Bryant, 2014) and most importantly for this thesis, a history of interpersonal traumatization, which occurs in up to 80% of patients with BPD (Widom, Czaja, & Paris, 2009). Taking into account that learning influences interpersonal trust it does not seem surprising at all that these groups of patients show alterations in interpersonal trust.

For the treatment of patients with PTSD it was shown that the establishment of interpersonal trust plays a crucial role. Chouliara et al. (2017) found that during group therapy with patients with PTSD after interpersonal traumatization, the only variable distinguishing those who completed therapy from those who did not was consciously building trusting relationships with other group members. In patients with BPD, Fonagy and Allison (2014) outlined the importance of trust within the therapeutic alliance, though only theoretically. Results of Paper I support this, with a significant association between the perceived quality of the therapeutic alliance and interpersonal trust. This association was found in patients with BPD only compared to patients with SAD and MDD.

Taking a deeper look into the results concerning patients with MDD and SAD, the results of this thesis support the little research which exists on interpersonal trust in MDD (Unoka et al., 2009; Preuss et al., 2016) and SAD (Anderl et al., 2018), in which impairments in interpersonal trust were not found. In Paper I, patients with MDD reported higher trust scores on ITSQ scale 2 (entrusting unknown people with one's well-being). However, as described in the discussion of Paper I, this result might be an artefact of the loss of energy and interest patients with MDD display (Kennedy, 2008). Comparing the trust alterations found in patients with BPD and PTSD and the "normal" trust behavior found in patients with MDD and SAD, the question arises as to from where these differences stem. All of the groups seem to display

interpersonal difficulties to some degree. However, these difficulties differ. While patients with MDD might display interpersonal difficulties because of a strong engagement in self-focused rumination and a lack of energy to foster relationships, patients with SAD may be afraid of being judged or humiliated in front of others. Patients with BPD and PTSD after interpersonal traumatization might experience existential anxiety during social interactions and especially in situations in which they make themselves vulnerable like in trust situations. Patients with BPD and patients with PTSD thus seem to face greater emotional challenges in trust situations than patients with MDD or SAD. One reason for the differences in interpersonal trust could be that patients with BPD and patients with PTSD are much more likely to have had negative trust experiences (such as interpersonal traumatization) than patients with MDD or SAD.

There are a couple of other differences between our samples which should be considered when interpreting the results of Paper I. Firstly, patients with SAD and MDD displayed significantly lower symptom severities than patients with BPD. As a weak but significant negative correlation between symptom severity (SCL-9) and interpersonal trust as measured by the ITSQ was found, differences in interpersonal trust could stem partly from differences in symptom severity. On the other hand, we also found a significant negative correlation between borderline-specific symptoms (QTF-14) and interpersonal trust (ITSQ), which speaks in favor of a disorder specific difference in interpersonal trust.

Secondly, patients with MDD and SAD might not have fulfilled MDD and SAD criteria at the point of our study. Diagnostic information was adopted from interviews at the beginning of therapy and not repeated before the data assessment from our study. Patients with MDD, who usually display MDD symptoms in a cyclic course, might not have displayed MDD symptoms when they took part in our study. Lastly, due to self-selection, more strongly impaired patients might not have been included in our study. Patients with strong SAD symptomatology may have been too afraid to participate, while more severely depressed

patients could have suffered from such a strong lack of energy, meaning they too could not participate. In sum, our results suggest that patients with MDD and SAD do not display impairments in interpersonal trust which corresponds with results of the few former studies that have been conducted with those samples. However, more studies with samples of patients with secured acute symptoms might be beneficial to rule out the above described doubts and furtherly reinforce the so far found results speaking for unimpaired interpersonal trust behavior in patients with MDD (Unoka et al., 2009, Preuss et al., 2016) and SAD (Anderl et al, 2018).

10.6 Additional findings

In the following section, the influence of age and gender on interpersonal trust is presented and briefly discussed. The influence of age and gender on interpersonal trust was not directly addressed within this dissertation. However, as former studies found gender and age effects on interpersonal trust, this topic should still be considered. In the following section, results from former studies on the association between interpersonal trust, age and gender, as well as results on the association between ITSQ scores and age and gender, will be presented and discussed briefly.

Interpersonal trust scores might differ as a function of age (e.g. Sutter & Kocher, 2007) and gender (e.g. Zhao & Zhang, 2016). Results on the association between interpersonal trust and age vary across studies. While some studies found a significant positive correlation (Sapienza, Toldra-Simats & Zingales, 2013), indicating that interpersonal trust increases with age, others found a negative association (Fehr et al., 2003; Kassebaum, 2004) indicating that older people trust less. Again, other studies found that middle-aged people trust most (Glaeser et al., 2000, Van Lange, 2015). In Paper I, a significant but weak negative correlation between interpersonal trust as measured by the ITSQ and age was found ($r = -.14$). However, our samples comprised very few participants over the age of 65 ($n = 4$), thus results are not representative for this group of people. Besides this, ITSQ items and especially those from Scale 2 (entrusting

unknown people with one's well-being) may not be of similar relevance for older people. In sum, our results are not representative for older people. Nevertheless, we still controlled for the confounding effects of age on interpersonal trust behavior differences in Paper I. Future studies examining age differences in interpersonal trust should include equal amounts of people of different age groups, and assess trust with more age-neutral methods.

Concerning traditional gender categories (female and male), results have been equally mixed. In studies about gender differences concerning personality traits, women were found to score more highly on emotionality (Schmitt, Realo, Voracek, & Allik, 2009; Thielmann & Hilbig, 2015; Weisberg, DeYoung, & Hirsh, 2011) which would speak in favor of less trusting behavior than men. However, women were also found to score more highly on agreeableness (Schmitt et al., 2009; Weisberg et al., 2011), which would speak in favor of more trusting behavior than men.

Studies which examined gender differences in interpersonal trust also gave mixed results. While some studies found women to show more trust than men (Bellemare & Kröger, 2007; Feingold, 1994), other studies found the opposite pattern (Ben-Ner & Halldorsson, 2010; Glaeser et al., 2000; Schechter, 2000). Again, other studies did not find gender differences in interpersonal trust at all (Fehr et al., 2003; Sapienza et al., 2013; Evans & Revelle, 2008; Kassebaum, 2004). For the ITSQ, gender differences were only found on ITSQ scale 2 (entrusting unknown people with one's well-being) ($t = 7.07, p < .01$) with men trusting more than women. One explanation for this finding could be that the element of risk in the items of scale 2 is much higher for women (e.g. sleeping at a stranger's house). Higher trust scores from men on scale 2 could be explained by a higher risk-propensity which is usually found in men (Eckel & Wilson, 2004; Schechter, 2007) and a lower realistic risk for men concerning trust situations like those ones described in ITSQ scale 2.

We controlled for confounding gender effects when conducting interpersonal trust differences between our groups. Our samples comprised more women than men (especially the clinical samples), thus the results are not as representative for men as for women. Generally, it seems that gender differences in interpersonal trust vary depending on the specific trust situation. There might be more basic gender differences originating from differences in personality traits like agreeableness and neuroticism/emotionality (e.g. Weisberg et al., 2011; Schmitt et al. 2009). Besides this, the element of risk might be one important, situation-specific variable which determines gender differences in interpersonal trust in specific trust situations.

10.7 Limitations and future research

The findings presented have some limitations, which are addressed in the following section.

Firstly, the newly-developed ITSQ has only moderate psychometric properties, and comprises a limited range of situations which do not mirror all facets of interpersonal trust and might not be suitable for all kinds of samples. However, it is still a practical and ecologically valid measure for interpersonal trust, and the first to differentiate between known and unknown interaction partners. In sum, it could easily be used in the clinical context or as a complementary measure, next to other measures for more facets of interpersonal trust.

Secondly, the in Paper I investigated groups of patients with SAD and MDD might share high rates of comorbidities with the other disorder. Patients in Paper I were assigned to groups based on their primary diagnosis. Thus, it cannot be assured that the participants were representative for the respective disorder. Future studies should consider controlling for comorbidities when comparing interpersonal trust between these groups.

Thirdly, control participants in papers I and II were mostly recruited over social media and partly at the public event “Lange Nacht der Wissenschaften”. They were not randomly

selected and representativeness could be limited due to reachability of social media and the public event.

Fourthly, the usage of qualitative material in papers II and III restricted the use of quantitative analyses. Future studies should combine both qualitative and quantitative methods to measure interpersonal trust when comparing the results. The ITSQ, for example, could be used in combination with interviews about trust experiences with the respective trust objects and interaction partners, in order to learn more about the relationship between current trust behavior and trust experiences. Furthermore, personality traits associated with interpersonal trust could be assessed and the predictive value of both trust experiences and personality variables could be investigated and compared with the use of path analyses.

Fifthly, age and gender effects in papers II and III were not controlled for. Gender differences in ABM have not been reported yet, however reported trust objects and interaction partners could be influenced by the gender and age of participants. The sample from Paper III consisted of patients from the pilot study and first patients from a multi-centre RCT of a developmentally adapted form of CPT, and the sociodemographic characteristics of this sample were thus determined by the recruitment for the therapy study. Stuck-points may also be influenced by age and gender. Future studies should pay attention to these variables when comparing trust-related entities like ABMs or stuck-points of trust. Besides this, to find results representative for all genders, more men and people with other gender identities should also be examined. Generally, interpersonal trust behavior in people who identify as genders other than male and female is still a completely open field, for which no studies have yet been conducted.

Sixthly, within this thesis, interpersonal trust was assessed at one point in time. As interpersonal trust is strongly influenced by learning (e.g. Hirashai et al., 2008), longitudinal data is needed to learn more about the exact influence trust experiences have on current trust

behavior. It would be especially interesting to assess interpersonal trust during therapy, to learn more about the effects of therapy on interpersonal trust.

Seventhly, the results of this thesis suggest that, especially for patients with BPD, alterations seem to be a robust finding. For patients with PTSD after interpersonal traumatization, results on alterations in interpersonal trust have also been found in earlier studies. Our results provide additional evidence by suggesting the high relevance of trust within maladaptive beliefs and even symptom severity. As interpersonal traumatization is common in BPD, too, it would be interesting to examine the influence of interpersonal trauma on interpersonal trust. Future studies could compare patients with BPD both with and without a history of interpersonal traumatization, and patients with PTSD similarly, in order to learn more about this. More specifically, the influence of beneficial trust experiences in therapy could be examined in both groups (BPD and PTSD) and their subgroups (with and without history of interpersonal traumatization) in a longitudinal study design. For this, interpersonal trust should be assessed with different measures to capture different facets of interpersonal trust (e.g. ITSQ and a trust game) at different points in time (pre, post and follow up). Besides this, it would be interesting to examine whether interpersonal trust alterations towards specific interaction partners vary according to the type of perpetrator (e.g. family member vs. stranger) that caused the traumatization.

Lastly, future studies comparing interpersonal trust between patients with BPD and patients with PTSD after interpersonal traumatization should compare different age groups. The results of the studies in this thesis suggest that both adult patients with BPD and adolescent patients with PTSD after interpersonal traumatization share issues with interpersonal trust. This makes perfect sense when taking into account that interpersonal trust is a construct influenced by learning (Van Lange, 2014). However, more studies on this topic are needed to learn about the influence of age on the association between the specific type of disorder and alterations in

interpersonal trust. It would thus be interesting to compare interpersonal trust behavior between these groups (BPD vs. PTSD) and subgroups (adult vs. adolescents).

10.8 Clinical implications and conclusion

The results presented within this thesis hold some implications for clinical practice. Firstly, patients with SAD or MDD do not seem to display any impairments in the realm of interpersonal trust. For patients with BPD, however, alterations in interpersonal trust seem to be a robust finding, and results from our and earlier studies leave a similar impression of patients with PTSD. For these patients, the establishment of interpersonal trust during therapy was already found to be highly relevant for psychotherapeutic success (e.g. Chouliara et al., 2017).

Our findings further highlight the importance of addressing trust stuck-points during therapy, to ensure a decrease of symptom severity and a favorable therapy outcome. Similarly, in patients with BPD the establishment of interpersonal trust between them and practitioners seems necessary in order to ensure a favorable therapeutic alliance and a positive therapy outcome. Besides this, it might be of great value to discuss the interpretation of former and new trust experiences, as patients with BPD might display negative interpretation biases. The correction of those via Socratic dialogues should enable patients with BPD to integrate beneficial trust experiences and subsequently adapt their trust behavior, and they might actually benefit from it, with healthy and secure relationships.

Interestingly, our results suggest that patients with BPD display alterations in interpersonal trust only towards known others, while they do not trust differently to healthy controls when encountering strangers. Clinical and research-related experiences, as well as the fact that patients with BPD display high levels of impulsivity, suggest openness towards strangers. In a former study of our research group, for example, one patient with BPD gave a research assistant she met for the first time a detailed description about the rape she had experienced. From this, one might expect high levels of interpersonal trust towards strangers

from patients with BPD. However, both researchers and clinical practitioners should carefully differentiate between constructs like impulsivity and interpersonal trust same as between different facets of interpersonal trust. Patients with BPD may show high levels of interpersonal trust when disclosing intimate information in therapy or research contexts. However, they do not seem to display alterations in interpersonal trust in situations such as driving with strangers. Besides the variety of different trust situations and trust objects, underlying mechanisms like schema activation should be taken into consideration as well – both in research and clinical practice. The patient in the example above may have acted from the activated schema of “the good study participant”. Thus, interpersonal trust should always be treated as the multifaceted construct that it is. While researchers should pay attention to the different facets of trust, clinical practitioners should take enough time to get a well-differentiated and integral understanding of the trust alterations their patients display, in order to provide the best possible treatment for the individual.

11 References

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12 List of abbreviations

ABM	Autobiographical Memory
ANCOVA	Analysis of Covariance
ANOVA	Analysis of Variance
APA	American Psychological Association
BPD	Borderline Personality Disorder
CFA	Confirmatory Factor Analysis
CPA	Childhood Physical Abuse
CSA	Childhood Sexual Abuse
CFI	Comparative Fit Index
CPT	Cognitive Processing Therapy
DSM – 5	Diagnostic and Statistical Manual of Mental Disorders 5
DSM – IV	Diagnostic and Statistical Manual of Mental Disorders 4
e.g.	exempli gratia (for example)
EFA	Exploratory Factor Analysis
HAQ-12	Helping Alliance Questionnaire
IBS-KJ	Interview zur Posttraumatischen Belastungsstörung bei Kindern und Jugendlichen
i.e.	id est (that is)
ITS	Interpersonal Trust Questionnaire
ITSQ	Interpersonal Trust Scenario Questionnaire
KUSIV-3	Kurzskala zur Messung des zwischenmenschlichen Vertrauens
MBT	Mentalization-based Therapy
MDD	Major Depressive Disorder
OGM	Overgeneralized memory
O-P-1	Optimism – Pessimism- Scale
OXT	Oxytocin

PANSS	Positive and Negative Symptoms Scale
PBRs	Personal Beliefs and Reactions Scale
PTSD	Posttraumatic Stress Disorder
QTF-14	Questionnaire of thoughts and feelings 14
R-1	Risk-taking Scale
SAD	Social Anxiety Disorder
SCL-K-9	Symptom Checklist
SES-17	Social Desirability Scale-17
TG	Trust Game
TLI	Tucker-Lewis Index
WAS	World Assumption Scale
WHO	World Health Organization
WHO-5	Well-being Index

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in situation 2

14 Appendix

14.1 Supplementary Materials related to Paper I

Interpersonal trust scenario questionnaire – ITSQ

1. A friend asks you if they can borrow your very valuable SLR camera for their holiday. You have had varied experiences trusting your friend in the past.

How strongly would you agree to the following statement?

You give your friend the camera.

1 2 3 4 5

1= would not agree at all; 5= would completely agree

2. You are planning a holiday with your partner. While you are booking the holiday, your partner does not have enough money to pay for the expensive flights and asks you to pay for them. Money is tight for you too and your partner promises to pay you back as soon as possible, as soon as they have the money. You have had varied experiences trusting your partner in the past.

You give your partner the money.

3. Your partner asks to borrow your external hard-drive for a presentation. You have very important, private data on the hard-drive. You have had varied experiences trusting your partner in the past.

You lend your external hard-drive to your partner.

4. You have to send a very important document in the mail. A friend, who is visiting you, offers to put the letter in the post-box for you on their way home. You have had varied experiences trusting this friend in the past.

You give the letter to your friend to post.

5. A friend asks to borrow your expensive stereo system for a party, and assures you that if it were to be damaged in anyway, they would have it repaired. You have had varied experiences trusting this friend in the past.

You lend the stereo to your friend.

6. You are standing at a bus stop, a long way from home, and you have missed the last bus. A car stops, and the driver offers to drive you home. The driver has rough facial features, but has a friendly expression.

You thank them, and get into the car.

7. You would like to make a surprise visit to your mother on her birthday. You do not have a lot of money, and you can only find one seat left for the trip on an internet ridesharing site. The driver has had no reviews from any passengers, so it is unsure if the driver is friendly and drives safely. You have no other information about the driver.

You book the trip anyway.

8. You are planning a city-trip, but have a limited budget. You have found two options; a relatively cheap hotel room, and a free room on the website Couchsurfing. Couchsurfing is a very well-known website, where people can offer places to sleep for free. The young man, who is offering the place, judging from his picture on the site, does not look particularly friendly or unfriendly.

How strongly would you agree to the following statement?

You take the free room on Couchsurfing.

Table 7

Factor Loadings of exploratory and confirmatory factor analyses

	Factor Loadings			
	Factor 1		Factor 2	
	EFA	CFA	EFA	CFA
Item 1: Lending a camera to someone	.605*	.583*		

Item 2: Lending money to someone	.674*	.662*		
Item 3: Lending a hard-drive to someone	.627*	.566*		
Item 4: Letting someone bring an important letter to the post box	.546*	.435*		
Item 5: Lending a sound-system to someone	.725*	.688*		
Item 6: Going with a stranger			.864*	.787*
Item 7: Driving with a stranger			.651*	.856*
Item 8: Sleeping in a strangers place			.667**	.681*

Note: EFA= Exploratory factor analysis, CFA=Confirmatory factor analysis

Table 8*Correlations between ITSQ and other trust measures in non-clinical samples and patients with BPD*

	ITSQ			ITSQ subscale 1			ITSQ subscale 2		
	CG – 1	CG – 2	BPD	CG – 1	CG – 2	BPD	CG – 1	CG – 2	BPD
HEXACO Honesty-Humility	-0.09	-0.10	-0.13	0.01	0.10	0.19	-0.17	-0.06	-0.47
HEXACO Agreeableness	0.28**	0.13*	0.14	0.28**	0.12*	0.38	0.17*	0.10	-0.26
HEXACO Emotionality	-0.24**	-0.21**	-0.06	-0.13	-0.02	-0.01	-0.28**	-0.36**	-0.10
HEXACO Extraversion	0.22**	0.15**	-0.12	0.14	0.12	-0.29	0.23**	0.12*	0.19
Interpersonal trust (KUSIV-3)	0.35**	0.25**		0.32**	0.16**		0.26**	0.22**	
Risk-Taking	0.51**	0.29**		0.38**	0.14**		0.48**	0.30**	
Optimism	0.30**			0.24**			0.26**		
Pessimism	-0.23**			-0.17			-0.22**		
Social Desirability	0.01			-0.08			0.12		
Trust Game total score		0.21**	0.27		0.10	0.14		0.24**	0.24
Trust Game – unknown interaction partner		0.20**	0.30		0.07	0.10		0.24**	0.40

Trust Game – known interaction	0.15**	0.18	0.07	0.16	0.17**	0.10
partner						

Note: CG - 1= Non-clinical group study 1 sample 1, CG - 2= Non-clinical group study 1 sample 2, BPD = inpatients with borderline personality disorder from study 2, ITSQ_{total} = total score from ITSQ, ITSQ subscale 1 = entrusting known people with material items, ITSQ subscale 2 = entrusting unknown people with ones well-being

14.2 Supplementary Materials related to Paper II

Table 9

*Übersicht der Hauptkategorien, einiger Unterkategorien und entsprechender Beispiele der Teilnehmer*innen aus Situation 1*

Kategorie	Beschreibung	Beispiel
Generelles Vertrauen	Die Textstellen beschreiben eine grundsätzliche Fähigkeit zu vertrauen. Das Vertrauen bezieht sich auf unbestimmte Interaktionspartner*innen und es werden keine Details bezüglich der vertraulichen Inhalte gemacht.	„Tatsächlich ist Vertrauen ein Grundkompass in meinem Leben und bestimmt mein Handeln weitreichend.“
Vertrauen in das Wohlwollen	Die Textstellen beschreiben Situationen, in denen die körperliche und emotionale Unversehrtheit als Vertrauensinhalte betrachtet werden. Das Vertrauen bezieht sich zumeist (in Situationsbeschreibungen unserer Stichprobe immer) auf unbekannte Interaktionspartner*innen.	„Ich habe am Hauptbahnhof eine Frau mit ihrem 16-jährigen Sohn kennengelernt, die aus Russland angereist kamen und so spät abends ohne Deutsch/Englisch-Kenntnisse kein Hotel mehr finden konnten für eine Übernachtung. Ich habe den beiden angeboten bei mir zu übernachten.“
Von Fremden		„Als ich eine fremde Person nach dem Weg gefragt habe.“
Im Verkehr		„Ich war letztes Jahr auf dem Weg zum Feel Festival und musste letztendlich drei bis vier Stunden laufen weil ich meine Station verpasst habe. Auf dem Weg als es dann schon

dunkel war, habe ich
versucht per
Anhalter zu fahren
tatsächlich hat der
dritte angehalten.
Letzten endes hat
mich dieser Mensch
bis ans Festival
gefahren. Aus meiner
Sicht ist es ein
beidseitiges
Vertrauen, von mir
einzusteigen und von
ihm anzuhalten.“

Im Nachtleben

„Ich war letztes
Wochenende
(20.7.2018) in einem
Techno Club in
Berlin,
mit 2 guten
Freunden. Wir hatten
sehr viel Spaß auf der
Party, haben sehr
viele neue Leute
kennengelernt. Nach
einigen Stunden des
wilden Tanzens
mussten wir uns mal
hinsetzen. Der Club
hat einen tollen
Außenbereich mit
Chill-Out-Area direkt
an der Spree! Dort
chillten wir mit
unseren neuen
Freunden. Nach
einiger Zeit bot uns
der eine Drogen an,
die wir nie zuvor
probiert hatten. Ich
habe sehr viel
Respekt vor Drogen
und bin immer sehr
skeptisch. Aufgrund
meiner hohem
Grundstimmung und
meiner
empfundenen
Sympathie zu dem
Mann, habe ich ihm

		allerdings vertraut und gekostet.“
Im Rahmen eines Dates		„Abendliches Treffen mit einer Onlinebekanntschaft in dem Bezirk, in dem ich auch wohne.“
Gemeinsam in einer Reiseunterkunft		„Ich war allein in Schottland unterwegs und habe nur ein Zimmer über Airbnb bei einer fremden Person gebucht.“
Von beruflichen Gruppen		„Ich bin einmal nachts alleine ... nach einem Streit mit jemandem durch Tempelhof gelaufen und wusste nicht, wie ich nachhause kommen sollte, weil es weit weg von zuhause & spät war und es mir nicht gut ging. Ein Taxifahrer ist angehalten und hat gefragt, ob er mich ein Stückmitnehmen soll. Weil ich nicht weiterwusste & angetrunken war, bin ich mitgefahren. Er war sehr nett & hat mich abgesetzt, wo ich wollte. Auch wenn ich unsicher war, habe ich ihm blindlings vertraut.“
Emotionale Zuverlässigkeit	Die Textstellen beschreiben Situationen, in denen z.B. vertrauliche Informationen weitererzählt werden und man auf die Annahme, empathische Spiegelung und Verständnis,	„Ich vertraue einer Freundin, weil ich das Gefühl habe, dass sie mich versteht, da wir ähnliche Situationen mit unseren Partnern haben und auch

	Verschwiegenheit und das Ausbleiben einer Kränkung oder emotionalen Verletzung vertraut. Die Interaktionspartner*innen sind eng vertraut, bekannt oder fremd.	ähnliche berufliche Situationen haben, uns beschäftigen also dieselben Themen.“ „Anvertrauen eines Geheimnisses an eine Freundin im Teenageralter.“
Der Familie		„Meiner Mutter ein Vorfall erzählt wo ich ihr auch Vertrauen entgegengebracht habe.“
Bezüglich Beziehungsangelegenheiten		„in Krisenzeiten (überwiegend wg. Partner/Beziehungen) konnte ich meiner kleinen Schwester all meine Probleme anvertrauen & erfuhr durch ihre Unterstützung Trost und Sicherheit (ab dem Alter von 19 Jahren).“
Verlässlichkeit	Die Textstellen beschreiben Situationen, in denen es um eine praktische Komponente von Vertrauen geht wie das Einhalten organisatorischer Absprachen. Die Interaktionspartner*innen sind eng vertraut, bekannt oder fremd.	„Mein Mann versprach, mich eine Stunde später abzuholen, um gemeinsam zu unserer Hütte zurückzugehen. Es dämmerte bereits, bis er zurückgekommen war. Ich vertraute ihm und wartete geduldig auf seine Rückkehr.“
Des Partners		„Urlaub in abgeschiedener Region mit meinem Mann. [...] Er versprach mich Std. später abzuholen um gemeinsam zu unserer Hütte zurückzugehen.“

		Es dämmerte bereits bis er zurückgekommen war. Ich vertraute ihm und wartete geduldig auf seine Rückkehr.“
Von Freunde		„Dass sich meine Freunde an Absprachen halten.“
Bezüglich Wertgegenständen		„Wenn ich meiner Freundin Geld leihe, dass sie es mir zeitnah wieder zurückgibt.“
Ehrlichkeit	Die Textstellen beschreiben Situationen, in denen auf ehrliche und aufrichtige Aussagen des Gegenübers vertraut wird. Interaktionspartner*innen sind eng vertraut, bekannt oder fremd.	„Einmal hat meine Cousine sich verletzt und sie hat mich gebeten, dass ich es niemandem erzähle, da sie es allein bewältigen würde. Ich habe ihr vertraut und sie hat ihr Versprechen erfüllt.“
Des Partners		„Mein damaliger Freund "T" hat mir gesagt, dass er sich geändert hat & das er möchte, dass die Beziehung funktioniert. Das war der dritte Beziehungsversuch nach 2 vorherigen Trennungen von ihm. Ich hab ihm vertraut & diesmal stimmt, was er sagt.“
Bezüglich Treue		„Mein jetziger Lebensgefährte hat mich ganz zu Beginn unserer Beziehung betrogen. Das war nach knapp 10 Wochen - er hat es mir weitere vier Wochen später gesagt. Die

		Entscheidung mich trotz dessen auf ihn einzulassen, hat mir eine Menge Vertrauen abverlangt. Ich habe ihm vertraut, dass das einmalig war und dass das in Zukunft nicht wieder "passieren" wird. Es hat sich gelohnt - ich bin (3Jahre später) sehr glücklich und vertraue ihm völlig.“
Kompetenz	Die Textstellen beschreiben Situationen, in denen auf Fähigkeiten und Fertigkeiten des Gegenübers vertraut wird. Zudem wird darauf vertraut, dass Arbeitsaufträge gewissenhaft ausgeführt werden. Interaktionspartner*innen sind eng vertraut, bekannt oder fremd.	„Ich bin schwerhörig und hatte große Angst vor der notwendigen OP, habe aber dann volles Vertrauen zu dem Arzt gehabt [...]. Wichtig war, dass ein Freund die Empfehlung ausgesprochen hat [...].“
Beruflicher Gruppen		„Geburt des ersten Kindes im Krankenhaus 2010: Ich habe meiner Hebamme, die ich zuvor in Vorbereitungskursen kennenlernen durfte, vertraut. Vertraut in ihr fachliches Können und das sie mich gut anleiten kann. Das hat mir die Geburt maßgeblich erleichtert, da ich die Führung abgeben konnte.“
Unklare Aussagen	Die Textstellen sind thematisch unpassend (es geht nicht um Vertrauen) oder soweit unvollständig, dass nicht interpretierbar.	„Mein Partner - allerdings seit Jahren getrennt.“

Note. Participants quotations match the wording, spelling and interior punctuation of the original source.

Kodierregeln von Rohm (2019)

- Die kodierten Textstellen müssen verständlich sein. Das heißt, es muss ausreichend Kontext enthalten sein. So ist immer die gesamte Situationsbeschreibung eines Teilnehmers zu einer Kodierung zusammengefasst.
- Jede Situationsbeschreibung wird mindestens einer Hauptkategorie des theoriegeleiteten Kategoriensystems zugeordnet. Zur Entscheidungshilfe werden die Definitionen der Hauptkategorien herangezogen.
- Situationsbeschreibungen können mehreren Kategorien zugeordnet werden, wenn sie unterschiedliche Inhalte beschreiben:

„Vertrauen zuhause mit der Familie. Man kann sich auf einander verlassen, man kann sich Sachen anvertrauen, ohne dafür verurteilt zu werden.“

- Vertrauen in die Verlässlichkeit / der Familie
- Vertrauen in die emotionale Zuverlässigkeit / Verständnis / der Familie

- Jede Situationsbeschreibung wird entsprechend des Interaktionspartners innerhalb der Hauptkategorie kodiert. Dabei können innerhalb einer Situationsbeschreibung mehrere Interaktionspartner genannt sein. Diese werden demnach einzeln kodiert:

„Wenn ich meiner Freundin Geld leihe, dass sie es mir zeitnah wieder zurückgibt. Ich vertraue meinem Chef, wenn dieser mir eine Gehaltserhöhung verspricht.“

- Vertrauen in die Verlässlichkeit / der Freunde / bzgl. Wertgegenständen
- Vertrauen in die Kompetenz / des Vorgesetzten / beim Einhalten von Absprachen

- Ist kein Interaktionspartner genannt, werden die Textstellen entsprechend der inhaltlichen Hauptkategorie kodiert:

„Als es mir sehr schlecht ging und ich emotionale Unterstützung brauchte. Ohne Vertrauen hätte ich mich niemandem öffnen können, was jedoch nötig war, um weiter zu kommen.“

- Vertrauen in die emotionale Zuverlässigkeit

- Grundsätzlich werden die Textstellen inhaltlich so differenziert wie möglich kodiert. Aussagekräftige Vertrauensinhalte eröffnen demnach neue inhaltliche Kodierungen:

„Ich habe meinem damaligen Partner von meinem Interesse an einer anderen Person erzählt. Ich habe ihm vertraut und er mir, und es war mir wichtig, dass wir offen miteinander gerade über sowas reden.“

- Vertrauen in die emotionale Zuverlässigkeit / Verständnis / des Partners / bzgl. sexuellem Interesse an einer anderen Person

- Aussagen, die inhaltlich unpassend oder unverständlich sind, werden als Unklare Aussagen kodiert:

Inhaltlich unpassend: „Im April dieses Jahres hat meine Freundin mich angerufen und gefragt, ob ich was besorgen kann und das auch auslegen könnte. Ich hatte dies schon gedacht und erledigt.“

Unverständlich: „Zu Beginn beruflicher Selbstständigkeit“

14.3 Supplementary Materials related to Paper III

Table 10

*Übersicht der Hauptkategorien und einiger Unterkategorien der Stuckpoints nach Sellhaus (2016) und illustrative Beispiele aus den Impact Statements der Teilnehmer*innen*

Kategorie	Beschreibung	Beispiele
Schuld	Alle Textstellen, die sich mit der Schuldigkeit verschiedener beteiligter Personen und Umstände befassen (und nicht näher zuzuordnen sind).	„Ich glaube, das Ereignis ist eingetreten, weil ich zu naiv und zu dumm war, zu erkennen und zu glauben, was er vorhat. Ich dachte, dass er ein guter Mensch ist, und auch wenn er manchmal Dinge wollte, die ich nicht wollte.“
Ambivalente Aussagen und Widersprüche	Verwirrung, Person weiß nicht, wer schuld ist oder nennt viele widersprüchliche Dinge.	„bin selbst schuld irgendwie... Mir schwirrt echt viel im Kopf rum aber weiß gar nicht wie ich manches schreiben soll auf jeden Fall wen ich so darüber nachdenke wird mir kalt. Verantwortlich ist für mich die Dreiste aktion und dieser Typ mit seinem häftigen blick ich hatte nur Angst und wusste nicht was noch kommt...“
Wertvoll sein		„es gibt auch gute Menschen aber die können mir nicht helfen. ich bin defekt&nicht so gut wie andere“
Ehre verletzt/ Selbst-Ekel/ beschmutzt sein	Gefühle, beschmutzt zu sein (Selbstekel) oder eine	„Von mir selber halte ich nicht viel, weil ich

	beschmutzte/verletzte Ehre zu haben.	mich eklig fühle, da ich von einem alten Sack begripscht wurde.“
Sicherheit	Allgemeine Aussagen über Sicherheit.	„Ich glaube, dass es Sicherheit nicht gibt. Man kann sich zu schnell in Personen irren und wenn man gerade glaubt alles ist sicher kommt der nächste Gegenbeweis.“
Angst vor Wiederholung des Traumas	Angst, erneut eine ähnliche traumatische Situation zu erleben.	„Die Auswirkungen des Traumas sind bei mir so weit das ich mich seit dem ich von [Name des Täters] vergewaltigt wurde überhaupt nicht mehr sicher fühle, da ich in einem Art Zentrum wohne wo es nur so an Jugendlichen wimmelt [...] und ich immer die Angst habe, ihn wieder zu sehen.“
Nähe / Intimität	Allgemeine Aussagen zu Nähe/ Intimität.	„Ich habe Angst vor Nähe. Und ich hasse es allein zu sein. Ich sehne mich nach dem Gefühl nichts zu fühlen. Denn umso mehr ich fühle desto mehr falle ich anschließend wieder in den Schmerz.“
Sich selbst entfremdet/ nicht nahe sein	Überzeugung, sich selbst nicht Nahe/ entfremdet zu sein, sich selbst nicht wiederzuerkennen, sich selbst überhaupt nicht zu verstehen; Gefühl der Unwirklichkeit.	„Nein ich weiß nicht mal was es bedeuten soll sich selbst nah zu sein.“
Kontrolle	Allgemeine Aussagen zu Kontrolle/ Kontrollüberzeugung.	„Ich habe kaum Möglichkeiten, etwas zu kontrollieren.“

		Bilder, Alpträume, Angst... erscheint und bricht aus, ohne dass ich dem entgegenwirken kann.“
Kontrolle ist notwendig/ erstrebenswert/ gut	Überzeugung, dass Kontrolle grundsätzlich etwas Gutes ist und jeder sich selbst und seine Gefühle immer kontrollieren können muss/ sollte; Angst, dass man selbst oder andere sich zu wenig Kontrolle hat.	„Ich finde man muss sich mit Gefühlen auskennen und sie beherrschen können“
Vertrauen	Allgemeine Aussagen zu Vertrauen	„Ich bin anderen Menschen misstrauisch gegenüber, ich habe Angst zu vertrauen, weil die Enttäuschung dann immer viel größer ist, als wenn man von Anfang an skeptisch/misstrauisch war.“
Ambivalenz: würde gerne mehr Vertrauen können	Person hält Vertrauen eigentlich für etwas Gutes/ Wichtiges und würde gern mehr Vertrauen können; fühlt sich aber nicht dazu in der Lage (z.B. aufgrund von Angst).	„Mein Papa hat oft gesagt, dass man niemandem außer sich selbst vertrauen kann. Das hat nichts mit der Situation zu tun und ich glaube, dass ich das ziemlich doof finde, weil ich denke, dass es ein Risiko ist, dass man immer eingeht wenn man das Leben schätzen und nutzen möchte. Aber ich weiß, dass es tatsächlich so ist, dass ich ein besseres Gefühl habe, wenn ich etwas allein erledige.“
Versuch, mit Vertrauen Nähe zu schaffen: regelmäßig enttäuscht	Person beschreibt, dass sie gezielt versucht, anderen Menschen zu vertrauen um Nähe aufzubauen,	„Ich schenke sehr vielen Menschen vertrauen, da ich immer

	dass dieses Vertrauen aber immer wieder enttäuscht wird. (Teufelskreis).	hoffe das es alle als Anerkennung sehen, doch wenn es jemand kaputt macht und heimlich hinter meinem Rücken etwas falschen erzählt oder tut, dann bin ich so sehr enttäuscht das jedesmal für mich die ganze Welt zusammenbricht und ich stundenlang nur weinen könnte und ich anfang zu denken, wie alle Menschen nur so falsch sein können und das es zu vielen so leicht fallen kann vertrauen einfach zu brechen.“
Nur noch zu wenigen, ausgewählten Personen	Person vertraut z.B. nur noch Partner, bestimmten Familienmitgliedern, bestimmte guten Freunden.	„Es gibt einen Menschen den ich zu 90% vertraue. Meinem Freund. Bei mir ist das das größte Vertrauen was es gibt die 90%.“
Keinen Männern mehr	Person kann insbesondere Männern nicht mehr vertrauen ("in jedem Mann steckt ein Vergewaltiger").	„teilweise fühle ich mich nicht sicher wenn „fremde Männer in der Nähe sind & ich mit denen alleine sein muss“
Je nach Situation/ nach Bauchgefühl	Person hört bei der Entscheidung, wem sie vertraut, auf ihr Gefühl.	„Ich weiß nicht, warum ich anderen Menschen vertrauen oder nicht vertrauen sollte. Ich vertraue ihnen soweit ich es für richtig halte. Man kann das spüren wie vertrauenswürdig ein Mensch ist. Und im Zweifel muss ich niemandem etwas anvertrauen.“

Nur mir selbst	Person vertraut niemandem als sich selbst.	„ich vertraue nur mir selbst -- nichtmal meiner Mum vertraue ich richtig...“
Vertraue mir selbst nicht (mehr)	Person vertraut sich selbst nicht (kaum). (z.B. weil sie in der Vergangenheit den falschen Menschen vertraut hat).	„Ich vertraue mir selbst nicht, weil ich weiß, dass ich mir zu oft selbst etwas vormache.“
Grundsätzliche Paranoia; Angst vor Vertrauensmissbrauch	Person ist anderen Menschen gegenüber vorsichtig und misstrauisch, Vertrauen aufbauen dauert lange und ist dann zerbrechlich, weil immer mit einem Angriff gerechnet wird; Angst, verletzt zu werden.	„Vertrauen ist ein flüchtiges Gut, das eigentlich nicht mehr als eine leere Hülle ist, die verschleiert, dass wir uns vor manchen mehr fürchten all als vor anderen. ich vertraue niemandem und am allerwenigsten mir selbst.“
Sonstige Gedanken und Gefühle	Textstellen mit Aussagen zu sonstigen Gedanken und Gefühlen, die sich nicht anders zuordnen lassen.	„Ich versuche trotzdem das beste aus meiner Vergangenheit zu machen. Versuch aber Gespräche aus meiner Vergangenheit zu vermeiden.“
Rest	Alle relevanten Textstellen, die absolut unverständlich sind oder mit dem Thema nichts zu tun haben.	„Der Anstieg der Preise – Seit der Invasion von Flöhen, ist die Heimat nicht ein Paradies für mich. Der Aufwand in einer Gesellschaft durch die Notwendigkeit überschattet. Überschüssiges Material entmutigen mich. Die feuchte Hände stinken auf der Straße. Draußen weitaus gefährlicher. Aber was ist die Gefahr? Ich habe die

wichtigsten Punkte des
Ressentiments
aufgeführt. Ein böser
Geist auf mich. “

Note. Participants quotations match the wording, spelling and interior punctuation of the original source.

15 List of publications

Botsford, J & Renneberg, B. (submitted). Autobiographical memories of interpersonal trust in Borderline Personality Disorder.

Botsford, J., Steinbrink, M., Rimane, E., Rosner, R., Steil, R., & Renneberg, B. (2018). Maladaptive post-traumatic cognitions in interpersonally traumatized adolescents with post-traumatic stress disorder: An analysis of “stuck-points”. *Cognitive Therapy and Research*, 43 (1), 284-294. <https://doi.org/10.1007/s10608-018-9928-3>

Botsford, J., Schulze, L., Bohländer, J., & Renneberg, B. (2019). Interpersonal Trust: Development and Validation of a Self-Report Inventory and Clinical Application in Patients With Borderline Personality Disorder. *Journal of Personality Disorders*, 33 (1), 1-22. https://doi.org/10.1521/pedi_2019_33_462

Botsford, J., Steinbrink, M., Steil, R., Rosner, R., & Renneberg, B. (2019). Der Wolf im Schafspelz. *Psychotherapeut*, 64 (1), 65-70. <https://doi.org/10.1007/s00278-018-0317-x>

16 Curriculum Vitae

Der Lebenslauf ist in der Online-Version aus Gründen des Datenschutzes nicht enthalten.

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Selbstständigkeitserklärung

Hiermit versichere ich, dass ich die vorgelegte Arbeit selbstständig verfasst und keine anderen als die angegebenen Hilfsmittel verwendet habe. Die Arbeit ist in keinem früheren Promotionsverfahren angenommen oder abgelehnt worden.

Berlin, Februar 2020

Janina Botsford