

Correlates of Attachment -
New Perspectives on Infancy and Adulthood

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“Intimacy between people requires closeness as well as distance. It is like dancing.
Sometimes we are very close, touching each other or holding each other;
sometimes we move away from each other and let the space between us
become an area where we can freely move.

To keep the right balance between closeness and distance requires hard work,
especially since the needs of the partners may be quite different at a given moment.

One might desire closeness while the other wants distance.
One might want to be held while the other looks for independence.
A perfect balance seldom occurs,
but the honest and open search for that balance
can give birth to a beautiful dance,
worthy to behold.”

Henry J. M. Nouwen

Danksagung

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List of Abbreviations

AAI	Adult Attachment Interview
ACQ	Agoraphobic Cognitions Questionnaire
AKV	Fragebogen zu körperbezogenen Ängsten, Kognitionen und Vermeidung
APA	American Psychological Association
ASI	Attachment Style Interview
BSQ	Body Sensations Questionnaire
C	Caregiver
CBASP	Cognitive Behavioral Analysis System of Psychotherapy
CIB	Coding Interactive Behavior
CM	Contact Maintaining
CR	Resistant Behavior / Contact Resistance
DFG	German Research Foundation
DRD4	Dopamine D4 receptor
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4 th Edition
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5 th Edition
FFSF	Face-to-face Still Face paradigm
I	Infant
ICEP-R	Infant and Caregiver Engagement Phases-Revised
IWM	Internal Working Model
JDR	Job Demands-Resources Model
MBI	Maslach Burnout Inventory
MIA	Mobility Inventory Alone
MIB	Mobility Inventory Backend
PA	Avoidant Behavior / Proximity Avoidance

PAD	Postpartum Anxiety Disorders
PEM	Parental Embodied Mentalization
PS	Proximity Seeking
R	Researcher
S	Stranger
SCID-I	Clinical Interview for DSM-IV Disorders, Scale 1
SPSS	Statistical Package for the Social Science
SST	Strange Situation Test
STAI	State-Trait Anxiety Inventory
STAI-T	State-Trait Anxiety Inventory – Trait
STAI-S	State-Trait Anxiety Inventory – State
TCR	Teacher-Class Relationship Scale
TES	Teacher Emotions Scales
T0	Assessment at the Beginning of the School Year (Study B)
T1	Assessment Time 1 (Study A)
T2	Assessment Time 2 (Study A)
T3	Assessment at the End of the School Year (Study B)
U.S.	United States of America
VASQ	Vulnerable Attachment Style Questionnaire
WHO	World Health Organization

Abstract

This dissertation examines attachment and its correlates with a special regard to infancy and adulthood. In the first part of this work attachment in infancy is focused on. In the first chapter, attachment theory, measurements of attachment, patterns of attachment in infancy and correlates of these attachment patterns in infancy are presented. The investigated correlates are divided into external and internal correlates. The external correlates are the environmental factors which show an association with infant attachment, including the rearing environment, parental caregiving, and maternal psychopathology. The internal correlates include in-born traits of the infant, e.g. temperament, disability, gender, and genetic disposition. This summary of attachment research in infancy is complemented by Study A, described in the second chapter of this work. Study A focuses on the correlate maternal psychopathology and extends former research by showing that maternal postpartum anxiety disorders are related to the development of infant attachment in a sample of $N = 71$ mothers and their infants. In addition, the results show that maternal fear of anxiety related body sensations and maternal intrusive behavior in mother-infant interactions are particularly predictive for infant attachment.

The second part of this work focuses on attachment in adulthood. In the third chapter, measurements and patterns of attachment in adulthood are presented, supplemented by a summary of correlates of attachment in adulthood. These correlates are once again divided into internal/individual and external/interactional correlates. The internal/individual correlates in attachment summarized in this work are self-esteem, emotion regulation, and physical and mental health. The external correlates are interactional and include relationships in different areas of life: relationships to own parents, romantic relationships, parenting and caregiving, and the working life. This summary of correlates of attachment found in former research is complemented by Study B focusing on secondary-school teachers and how their burnout

levels are associated with their levels of attachment insecurity and emotions while teaching. In two studies, one with $N = 247$ teachers and another with $N = 91$ teachers, the relationships between these variables were analyzed. Results indicated that attachment insecurity is a factor of vulnerability increasing the likelihood for the development of job burnout in the course of a school year. Teacher emotions were shown to be related to burnout levels in a cross-sectional study, but these relationships were outruled by the association of attachment insecurity with job burnout in a longitudinal study. Study B serves as a good starting point for more research on teacher burnout.

The last part of this work summarizes critical voices on attachment and attachment research and concludes that the present work offers new perspectives on infancy and adulthood, but the correlative nature of the findings does not allow conclusions of causality and the need is stressed for replication in future studies. Ideas for advancing future research are given.

1. Introduction and Theoretical Background

Who do I belong to? - is one of life's big questions. The first orientation after birth is towards the mother in search of comfort. Humans are social beings, who need others (Baumeister & Leary, 1995). Among the four basic needs introduced by Epstein and Weiner (2003) and Grawe (2004) is attachment (besides self-esteem, control and orientation, and pleasure). From the beginning of our life on, we depend on others around us to different degrees. A newborn is not able to survive without a caregiver. Therefore, an inborn urge to attach to others is necessary to live. In which ways, these connections to others are built and maintained is different from individual to individual, but general tendencies can be observed from infancy to adulthood. Infants have the ability to make contact with their environment. Experiences infants make concerning their attempts for connection, and the way they are treated, shape their knowledge about how others react towards them. If they learn, who they belong to, and a net of more or less intimate, supporting relationships is built up over a lifetime, their identity becomes strong enough to face obstacles and rewards, the highs and lows in life. If, on the other hand, their attempts for contact are not rewarded, or relationships are not reliable and supportive, life can be more challenging, and even overwhelming and unstable. Everybody is attached to others in one way or another. Security seems to be beneficial, but circumstances often prevent it. Insecurity, on the other hand, can be the result of adverse experiences and can have far-reaching influences across the lifespan.

This work has five goals: (1) to summarize knowledge on attachment and especially attachment insecurity, (2) to practically advance research focusing on correlates of the development of attachment in infancy, (3) to summarize knowledge about correlates of attachment in adulthood, (4) to test correlates of attachment insecurity in the professional context, and (5) to critically discuss the role of attachment across the human lifespan and the contribution of this present work. In the first chapter, I summarize the knowledge on

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attachment development and attachment insecurity to date and correlates that have been found in previous studies. To advance current research, Study A (Chapter 2) focuses on correlates of attachment insecurity in infancy, namely maternal postpartum anxiety disorders and anxiety symptomatology. These findings are presented and discussed in light of current research. In Chapter 3 the state of research on possible correlates of attachment in adulthood is presented. Adding to this knowledge, Study B (Chapter 4) evaluates the role attachment insecurity can play in the professional context and examines the association between attachment insecurity and job burnout for secondary school teachers in a two-study work. Study B is discussed in light of recent research.

The aim of this combination of two different studies in two different fields of psychological research (clinical and school psychology) is to show the role of attachment in infancy and adulthood and open new perspectives on possible pathways to influence the development of attachment insecurity and/or buffer its effects. Moreover, this combination reflects my own career development from teaching young children during my Psychology studies, to scientific research, and now working as a child and youth psychotherapist. In Chapter 5, the state of research and the present work are critically discussed, with a special focus on how important attachment is across the lifespan. The last chapter (Chapter 6) serves as a starting point for further research and presents implications that need to be addressed in the future.

All data used for this work were collected in the context of two larger research projects funded by the German Research Foundation (DFG). Study A (RE 2249/3-1) was conducted from June 2006 to October 2010. In my Master's Thesis "Positive mother-infant interaction: The role of maternal speech" (Klauser, 2013) I already analyzed data from this study. The Master's thesis analyzed a language system developed for the coding of the content of maternal speech during interactions with infants. For the present work, I was trained in 2016, and coded the videotapes for the Strange Situation Test myself. Supervision

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and additional coding of the Strange Situation was done by Prof. Dr. Fabienne Becker-Stoll. Access to the longitudinal self-report data of the participating mothers was granted by Prof. Dr. Corinna Reck and prepared by Dr. Mitho Müller.

Study B (FR 2642/8-1 and RE 2249/4-1) was conducted from September 2016 to August 2019. In this present work, data from a teacher pilot study (Chapter 4.2 and 4.3) and the main study (Chapter 4.4 and 4.5) are analyzed. I managed data collection for the pilot study, but was only involved in the preparation of the main study and not the supervision of the data collection. Access to the main study data was granted by Prof. Dr. Anne Frenzel, Prof. Dr. Corinna Reck, and the two study managers Dr. Anton Marx and M.Sc. Katarina Kosovac. All statistical analyzes were run in SPSS (Version 25.0). Syntax is available for all analyses (see Appendices).

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1.1 Attachment Theory

The “father of attachment theory” (Stevenson-Hinde, 2007) is John Bowlby (1907-1990), psychoanalyst and child psychiatrist, who observed orphans and children suffering from trauma and separation after World War II in the Tavistock Clinic London. He first described the basic thoughts of his theory in the WHO report “Maternal care and mental health” (Bowlby, 1951). Contact to other researchers led to the description of the concept of attachment and the development of the whole attachment theory in his trilogy “Attachment and Loss” (Bowlby, 1969, 1973, 1980).

Attachment System and Exploration System

He describes attachment as an individual affectional bond (Bowlby, 1977) and the development of attachment as fundamentally innate: infants are motivated to seek and maintain proximity to their caregiver by their inborn behavioral system, the attachment system (Bowlby, 1988). The concept of attachment is comparable to Konrad Lorenz’s imprinting theory (Bretherton, 1992). The basis of Bowlby’s attachment theory is the assumption, that humans have two basic behavioral systems from birth on: the attachment system and the exploration system (Bowlby, 1951). Both systems cannot be activated at the same time. The attachment system is closely connected to the fear system (Kobak et al., 2005) and activated when the infant experiences unfamiliarity, discomfort, or even fear.

“When activated, the *attachment system* sets in motion *attachment behaviours* whose *set goal* is to recover physical or psychological proximity to one or other of the child’s caregivers where safety and protection lie” (Howe, 2011, p. 9, emphasis original). When the set goal of proximity and comfort is reached, the attachment system is “switched off” and the exploration system is started. Only if the attachment system is soothed, is exploration possible. The goal of the exploration system is learning about the environment and play (Bowlby, 1973; Elliot & Reis, 2003). If during exploration a state of discomfort is reached,

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the attachment system is “switched on” again. This change between attachment and exploration is a continual process (Ainsworth & Bell, 1970).

Bowlby (1969, 1973) describes two different behaviors, which are part of the attachment system and serve as interaction basis with the caregiver - attachment behavior (for example protest, clinging, pursuing) and signaling behavior (for example crying and smiling). The caregiver is identified as source of protection from threat. Three assumptions are fundamental for the attachment system: (1) The infant wants to be with the caregiver, especially when distressed, and proximity-seeking is, therefore, the infant’s affect-regulation mechanism. (2) The caregiver is a secure base, source of comfort and security. (3) The infant protests when separated from the caregiver.

Development of Attachment

Attachment, hence, develops as a response to the caregiver’s reaction to the infant’s distress across the course of the first three years of life in four distinct phases (Bowlby, 1973):

Phase 1 (pre-attachment): Within the first six weeks, there is no discrimination between other persons, the baby signals without clear direction. The baby, moreover, is completely focused on its’ own regulation processes.

Phase 2 (attachment in the making): From six weeks until the sixth month, babies start to recognize familiar faces and socially interact to a greater extent.

Phase 3 (clear cut attachment): From the sixth to the 18th month infants start to prefer one caregiver (primary caregiver). In Bowlby’s view the primary caregiver is usually the mother, which serves as a secure base and is sought for comfort. For other persons, soothing the infant is much harder.

Phase 4 (goal corrected partnership): In the phase from 12 months, up until three years, the child starts to understand other peoples’ inner states and motives and distinguishes them from their own goals. In goal-corrected behavior, the infant tries to change others’

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motives to fit her/his own motives. For example, an infant might cling to the mother to hinder her from leaving the room.

Internal Working Models

The caregiver's responses to the infant's emotional state, especially distress, lead to the formation of internal working models (IWMs) of self and others, which are formed at the age of three to four years of age, depending on the child's development of procedural memory (Bretherton, 1999). Positive IWMs derive from consistent care, and the infant gains attachment security. The world is safe, interesting, exploration is possible, and others are helpful in stress-evoking situations. In the opposite case, when infants are neglected or their need for comfort is not met consistently, other affect-regulation strategies become necessary and less positive IWMs develop. IWMs are at the heart of attachment theory, but hard to grasp and leave a lot of questions unanswered (Jones, 2015). What Bowlby named IWM is called representation or inner world by other psychoanalysts (Fonagy, 1999). IWMs are cognitive models of our environment, of the self, other people, and the relationship between the self and the others. IWMs therefore contain thoughts, emotions, experiences, values, and help the individual to understand the world, "anticipate it, manage it, and negotiate it" (Howe, 2011, p. 33). Sroufe et al. (1999) concluded that "children approach new situations with certain preconceptions, behavioural biases, and interpretive tendencies" (p. 5). At this point it must be said, that it seems that there are individual IWMs for individual attachment relationships, that seem to contribute to an overall typical IWM that influences behavior in social situations in general (Bretherton, 1999).

Secure Base and Safe Haven

"A central feature of my concept of parenting [is] the provision by both parents of a secure base from which a child or an adolescent can make sorties into the outside world and to which he can return knowing for sure that he will be welcomed when he gets there, nourished physically and emotionally, comforted if distressed, reassured if frightened. In essence this

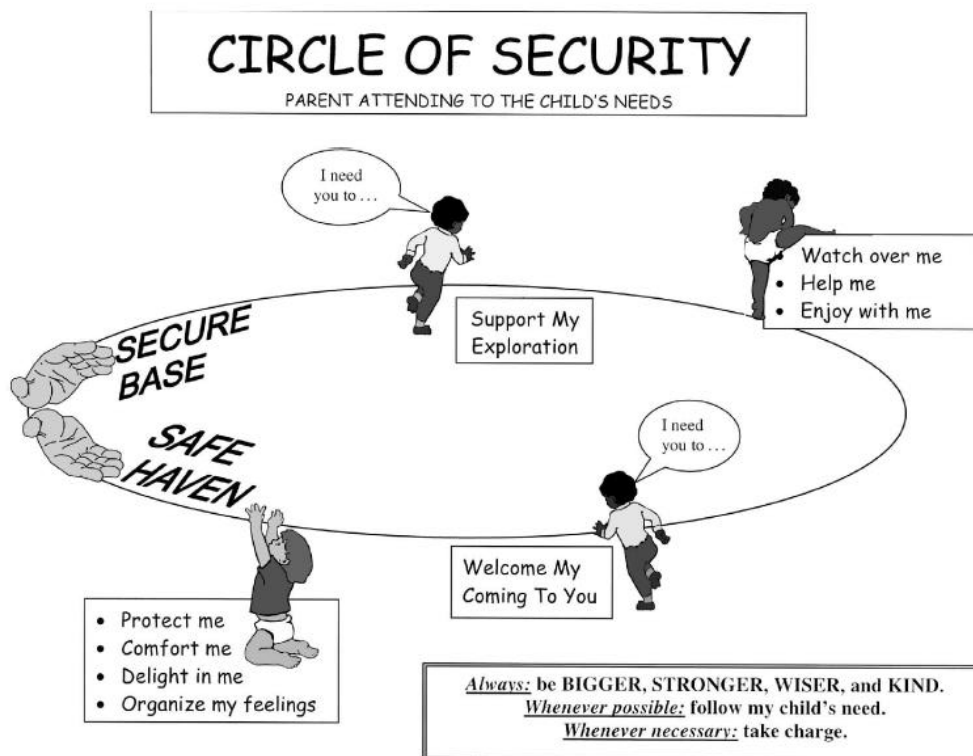
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role is one of being available, ready to respond when called upon to encourage and perhaps assist, but to intervene only when clearly necessary.” (Bowlby, 1988, p. 11)

Comparable to the complementary relationship between behavior systems of attachment and exploration, is the similarly complementary relationship between the caregiver’s caregiving system (Bowlby’s concept of parenting) and the infant’s attachment system. If the caregiving system is “switched on” and meets the infant’s needs, the infant’s attachment system can be “switched off” (Howe, 2011). The caregiver can, therefore, be seen as secure base and safe haven. If needed, infants can run to their safe haven for comfort and protection. At the same time, the caregiver serves as a secure base from which exploration of the surrounding world is possible (Ainsworth & Bell, 1970; Ainsworth et al., 1978). This continual process is best described in the “Circle of Security” (Marvin et al., 2002).

Figure 1

The Circle of Security (adopted from Marvin et al., 2002)



Note. © Cooper et al. (2000)

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In the upper half of the graphic (Figure 1) the child's exploratory system is described, which is "switched on", when the caregiver is perceived as secure base. On the far right, the child is in need of the caregiver and returns to the safe haven (lower half of the graphic).

Marvin and colleagues developed the graphic to summarize the two concepts of secure base and safe haven for parents in an attachment-based intervention. The essence of the graphic is described best in their own words:

"A key component of the protocol that the parent comes to understand and focus on is the idea that smooth interactions between children and their caregivers are often disrupted and need 'repair' (Bowlby, 1969; Tronick, 1989). It is this ability to repair a disruption that is the essence of a secure attachment, not the lack of disruptions. This repair requires clear cues from each other, and clear understanding of, and responsiveness to, each other's signals."

(Marvin et al., 2002, p. 109)

Sensitivity

For further understanding of the Circle of Security, the concept of sensitivity is necessary. The second person closely associated with the attachment theory is psychologist Mary Dinsmore Salter Ainsworth (1913-1999), who was a fellow researcher of John Bowlby in the 1950s and known as the mother of attachment research. After field studies in Uganda in 1953 to 1955, she closely described infant behavior in mother-infant interaction, and situations of separation and reunion, and introduced sensitivity as a new concept of maternal behavior. Sensitivity is defined as the ability to perceive and interpret an infant's signals correctly and consistently, and react appropriately and promptly (Ainsworth et al., 1974; Stayton et al., 1971). Sensitivity is closely associated with infant attachment and infant-mother attachment (Ainsworth et al., 1974). In the Circle of Security sensitive behavior becomes obvious: the caregiver always has to react to the child in the way needed at the current moment. In order to do this, the caregiver has to pay attention to the child and

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interpret the child's signals correctly, to help regulate discomfort (safe haven) and enable exploration (secure base).

The Strange Situation Test

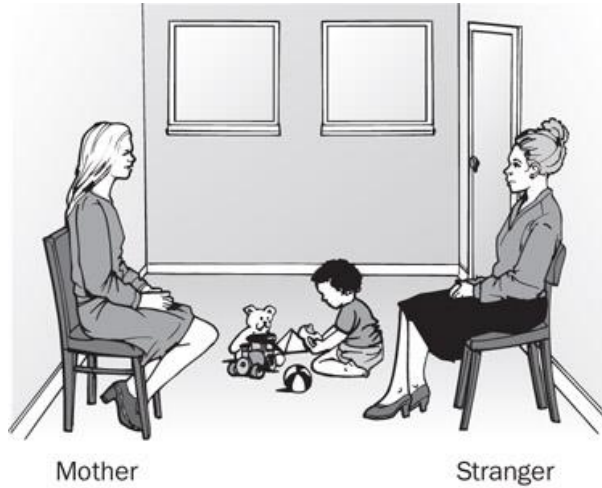
To enable the observance of attachment behavior in a laboratory setting, Mary Ainsworth developed the Strange Situation Test (SST) for 12-18-month-olds (Ainsworth et al., 1978). The SST is a standardized test to assess attachment behavior in a 20-minute-series of separations and reunions, and enables the classification of infants into three attachment qualities. Goals of the SST are the activation of the exploration system in the beginning and a stepwise activation of the attachment system through the evocation of mild to moderate stress. The setting aids these goals by presenting 1) an unknown room (attachment system) with interesting toys (exploration system), 2) a strange person (in most cases a young woman), 3) separation from the mother with the strange person present, and 4) separation from the mother with the infant left alone. The strange situation, thus, reinforces the change between the exploration and attachment systems. Infant behavior is coded according to proximity seeking, contact maintaining, resistant behavior and avoidant behavior. The different episodes of the SST are described in Table 1. For attachment research, the causes of the activation of behavior are as important as the reasons for its termination (Ainsworth et al., 1978). The SST, therefore, offers multiple possibilities to observe the activation and termination of exploration behavior, as well as attachment behavior. A typical room setting is depicted in Figure 2, and the setting at the Heidelberg University Hospital, General Psychiatry, mother-infant laboratory in Figure 3. Mother and Stranger each have an individual chair on which they sit on in the beginning. The mother lays jacket or purse on her chair. The mother is encouraged to return to her chair in later episodes, if the infant is calm enough to explore on herself/himself. For the observance of infant behavior, it is important that the infant is video-recorded in a way that the infant's face and body are visible. Several cameras and a coding

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with split-screen, if possible, have been useful in our studies at the Heidelberg University Hospital, General Psychiatry, mother-infant laboratory.

Figure 2

Typical Setting of the SST



Note. graphic retrieved (11.03.2022) from <http://www.lifechangehealthinstitute.ie/wp-content/uploads/2013/05/strange-situation-test.jpg>

Figure 3

Video-Recording at the Mother-Infant Laboratory in Heidelberg



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Table 1

Protocol of the SST based on Mary Ainsworth (Ainsworth et al., 1978)

Episode	Duration	Persons	Setting	Focus for coding ^a
1	3 min (max.)	C, I, R	Caregiver and infant enter the laboratory, researcher shows them the room and caregiver's chair	Is infant able to explore? Can infant be put down?
2	3 min	C, I	Caregiver sits on chair and infant is encouraged to explore	Infant exploration, curiosity, quality of play, communication
3	3 min	C, I, S	Stranger enters, sits on the opposite chair, interacts with the caregiver and with the infant	Reaction to S, gaze behavior, proximity seeking, exploration changed?
4	3 min (max.)	I, S	First separation: caregiver leaves room, infant is left with stranger	Pain of separation, play interaction/quality, search behavior
5	3 min	I, C	First reunion: caregiver reenters, greets the infant and soothes the infant, stranger leaves the room	Greeting, attachment behavior (interaction scales), C as secure base, return to exploration
6	3 min (max.)	I	Caregiver leaves the room, infant is left alone	Pain of separation, exploration, search behavior, quality of play
7	3 min (max.)	I, S	Stranger enters and tries to soothe the infant	Behavior towards S, ability to be soothed, quality of play, search behavior
8	3 min	I, C	Second reunion: caregiver reenters and soothes child	Greeting, attachment behavior, C as secure base, return to exploration

Note. C = Caregiver, I = Infant, S = Stranger, R = Researcher, ^a based on Becker-Stoll (2015)

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Patterns of Attachment

The organized attachment classifications “secure” (B), “insecure-avoidant” (A), and “insecure-ambivalent” (C) were described by Mary Ainsworth based on the observations in the SST in her studies (Ainsworth et al., 1978). The following descriptions of the three organized patterns of attachment are based on Ahnert (2008). Infants classified as insecure-avoidant (A) typically show more exploration behavior than attachment behavior, and there is no secure-base behavior towards the mother. Separation from the mother does not seem to bother the infant. At reunion there is avoidance of contact by averting gaze, avoidance of physical contact, turning away when picked up, and marked orientation towards exploration throughout the SST. Infants classified as secure (B) are able to use their mother as a secure base for exploration. They show emotional distress at separation and actively greet the mother at her return. When distressed, they seek physical contact, but can be soothed and are able to explore again in the course of the three-minute-time-interval of the reunion episodes. Infants classified as insecure-ambivalent (C) are already in distress when they enter the laboratory, they show a minimum of exploration behavior. When separated from their mothers, they are highly aroused, cry, and switch between proximity seeking and pouting or angry, aggressive behavior during the reunion. These infants can be actively-aggressive or passive towards their mother. The three patterns of attachment are divided into eight subgroups (A1, A2, B1, B2, B3, B4, C1, and C2), reflecting the different levels of avoidance, resistance, and security. Distributions of the different patterns of attachment are typically 50-70 % secure, 20-40 % insecure-avoidant, and 10-15 % insecure-ambivalent in Western societies (Verhage et al., 2016).

The interaction scales of the Scoring System for Interactive behavior (Appendix III of Ainsworth et al., 1978) are proximity- and contact-seeking behavior (PS), contact-maintaining behavior (CM), resistant behavior (CR), avoidant behavior (PA), search behavior during the separation episodes, and distance interaction. Originally, these interaction scales were coded

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throughout the whole SST and in regard to the infant's behavior towards the mother and the stranger. After several studies showing that not all of this information is relevant for correct classifications, only the codes for PS, CM, CR, and PA during the reunion episodes are used for the classification of infant attachment. Search behavior and distance interaction serve as additional indicators of mother-infant interaction throughout the SST and the infant's level of arousal. The interaction scales are coded on a scale ranging from 1 to 7, with detailed descriptions of each code in the manual (e.g. Ainsworth et al, 1978 cited in Becker-Stoll, 2015).

The interaction scale proximity- and contact seeking (PS) captures the intensity and persistence of the **infant's efforts** to gain contact or proximity and reaches from "very active effort and initiative in achieving physical contact" (7) to "no effort to achieve physical contact or proximity" (1). Contact maintaining (CM) describes the degree of activity and persistence to maintain contact from the infant's side, **no matter who initiated the contact** in the first place and spans from "very active and persistent effort to maintain physical contact" (7, for contact lasting over two minutes) to "either no physical contact or no effort to maintain it" (1). Resistant behavior (contact resistance, CR) is the intensity and frequency or duration of the **infant's resistant behavior** evoked by contact or proximity of the caregiver to the infant. The infant's mood can span from angry-pouting, fussing, angry distress, to full-blown temper tantrums. Codes range from "very intense and persistent resistance" (7) to "no resistance" (1). Avoidant behavior (proximity avoidance, PA) describes the intensity, persistence, duration, and promptness of the infant's avoidance of proximity and interaction even across a distance. Especially the first seconds of the reunion episodes (Episodes 5 and 8) are very important for scoring this interaction scale and, therefore, it is best when the infant's face is visible on the video-recording to see greeting or reaction to the caregiver's greeting. Codes range from "very marked and persistent avoidance" (7) to "no avoidance".

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Individual combinations of codes on the four different interaction scales lead to the classification of the organized attachment pattern. Table 2 presents the typical combinations for the different patterns of attachment.

Table 2

Classification of Attachment based on Interaction Scales in Reunion Episodes 5 and 8

	Contact maintaining (CM)	Proximity seeking (PS)	Resistant behavior (CR)	Avoidant behavior (PA)
Insecure- avoidant (A)	low	low	low	high
Secure (B)	high	high	low	low
Insecure- ambivalent (C)	moderate to high	moderate to high	high	low

Note. Adopted from Ahnert (2008), p. 88.

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1.2 Attachment Insecurity

Attachment insecurity, based on the SST, is categorized as either avoidant or anxious-ambivalent, (sometimes also called resistant) in early childhood. Based on the assumption that the infant seeks the caregiver when distressed (proximity seeking), but the infants need of comfort is not consistently met, this affect-regulation strategy does not work and the infant needs to adapt its affect-regulation strategy (Simonelli & Parolin, 2016). The infant has two possibilities to adapt its affect-regulation strategies: It can insist on establishing proximity, by clinging or restlessly pursuing the caregiver (hyperactivation strategies). Or it can reduce proximity, by distancing or avoiding contact (deactivation strategies). Attachment behavior in insecure attached infants is characterized by an interplay of these strategies: Insecure-avoidant infants show a minimum of proximity seeking and mild to high avoidant behavior (high in deactivation strategies). Insecure-ambivalent infants show a combination of high proximity seeking and high resistant behavior (high in hyperactivation strategies).

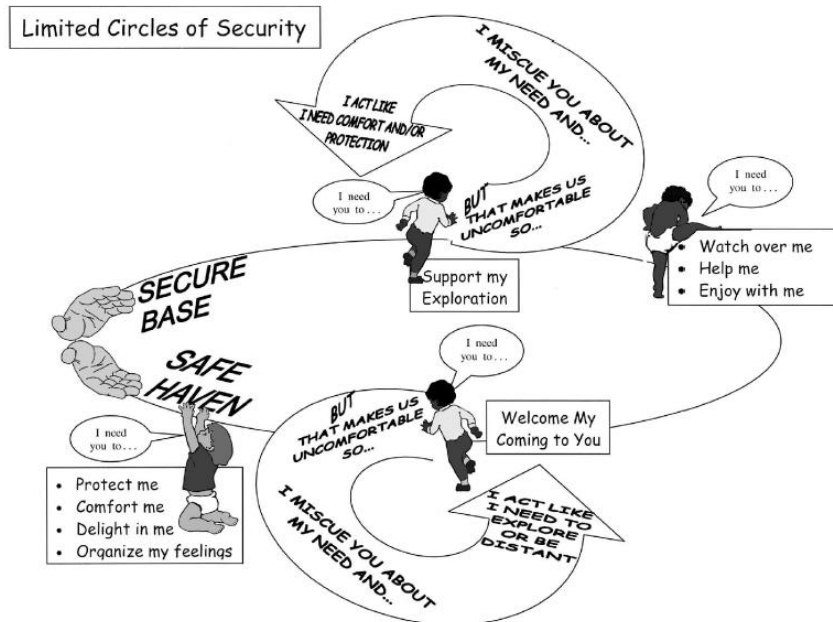
One theoretical explanation for the avoidance and ambivalence infants show towards their caregivers is given in the Limited Circles of Security (see Figure 4, Marvin et al., 2002). Based on own experiences, caregivers might feel danger or discomfort, when the infant shows certain needs and thus miscues the infant about their own needs. For example, caregivers encourage their infant to explore even though the infant seems to be distressed, because the caregiver feels uncomfortable dealing with the infant's distress. This miscuing behavior of the caregiver can lead to miscuing behavior on the infant's side. "A self-perpetuating feed-back loop is thus established in which both the child and the parent avoid the need by miscuing each other" (Marvin et al., 2002, p. 109). Infants can start to interpret needs as dangerous and act in the opposite manner. In avoidant/dismissing dyads (lower half of the graphic in Figure 4), the infant is avoidant and explores alone instead of showing the need to be protected, because it has experienced that the caregiver cannot deal with distress but feels uncomfortable. Another possibility is that instead of exploring, the infant signals that it needs

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protection and proximity, because it has experienced, that the caregiver is distressed by autonomy in ambivalent/preoccupied dyads (upper half of the graphic).

Figure 4

Limited Circles of Security (adopted from Marvin et al., 2002)



Note. © Cooper et al. (2000)

These circles of miscuing behavior have to be understood to be changed through attachment-based interventions. “Over the course of intervention, the caregiver learns that all parents (and dyads) experience especially strong danger signals when the child’s need requires the caregiver to step out of her defensive strategy in order to meet that need. She also learns that this defensive, insecure strategy is linked to the patterns she developed early on in response to her own caregiver(s), and begins to consider the possibility that she may be passing on an insecure pattern by misinterpreting some of her child’s signals. The protocol enhances this realization with a specific procedure: the group is shown a video clip of a coastline and rainforest, set to soft, serene music. The group members discuss the wonderful feelings this activates. The clip is then shown a second time, set to a modified version of the soundtrack from *Jaws*. Discussing how this time they experience agitation and anxiety, the

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parents come to understand how much their own subjective experiences can affect their feelings about their child's needs. It is as if the parents had learned from their own parents that certain needs are like shark-infested waters and must be avoided. They, in turn, 'protect' their children from what they currently perceive as dangerous needs." (Marvin et al., 2002, p. 112)

The interaction-patterns between infant and caregiver make individualized attachment-based interventions necessary, because interaction patterns and IWMs show a high level of synchrony between infant and caregiver (Ainsworth et al., 1978; Tronick, 1989). In addition to the secure (child)-autonomous (parents) pattern, the insecure, avoidant-dismissing pattern, the insecure, ambivalent-preoccupied pattern, and the insecure "disordered" (disorganized or insecure-other) patterns have been observed, which are also proven to be high-risk interaction patterns (Marvin et al., 2002).

Disorganized Attachment Classification

About 15% of infants in normative samples are difficult to classify based on the organized attachment styles defined by Ainsworth. On these grounds, Main and Solomon (1986) added the disorganized/disoriented attachment classification to capture the variety of behaviors found in these unclassifiable infants. "Behavior appears to lack observable goal, intention, or explanation – for example, contradictory sequences or simultaneous behavioral displays; incomplete, interrupted movement; stereotypies; freezing/stilling; direct indications of fear/apprehension of parent; confusion, disorientation. Most characteristic is lack of coherent attachment strategy, despite the fact that the baby may reveal the underlying patterns of organized attachment (A, B, C)" (Solomon & George, 2008, p. 387). To classify disorganized attachment, signs of disorganized attachment behavior are coded on seven subscales during the episodes of the SST when the caregiver is present. For a closer description of the subscales see Main and Solomon (1990). These scales are coded in addition to the four Ainsworth interaction scales (PS, CM, CR, PA). If the disorganized attachment

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behaviors predominate (scores equal or higher than 5), the main attachment classification is D (disorganized). An organized classification (A, B, or C) is given nonetheless. As a result, infants can be secure-disorganized, ambivalent-disorganized, or avoidant-disorganized (Main & Solomon, 1990; Simonelli & Parolin, 2016; Solomon & George, 1999). The overall model demonstrating all four attachment patterns is referred to as the ABC+D model. Figure 5 depicts the ABC+D model and the characteristic IWMs of each attachment classification.

Figure 5

ABC+D model in Terms of Representation of Self and Others

Insecure Avoidant (A)	Secure (B)	Insecure-Ambivalent (C)
Self: unloved but self-reliant	Self: loved, effective, autonomous and competent	Self: low value, ineffective and dependent
Other people: rejecting and intrusive	Other people: available, co- operative and dependable	Other people: insensitive, inconsistent, unpredictable and unreliable

Disorganized (D)
Self: unloved, alone and frightened
Other people: frightening, rejecting and unavailable

Note. Adopted from Howe (2011), p. 49.

It is important to differentiate between disorganized attachment classification and attachment disorders in childhood (Granqvist et al., 2017). Disorganized attachment is the description for a group of infants displaying attachment behaviors that are not directed towards the caregiver or the environment. Attachment disorders, on the other hand, are a group of clinical diagnoses of which the symptoms overlap with disorganized attachment in

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many ways, but the degree of disturbance of the exploration-attachment balance is more intense (Zeanah et al., 2000). Besides a consistent pattern of inhibited behavior towards adult caregivers (Reactive Attachment Disorder) or disinhibited behavior towards unfamiliar adults (Disinhibited Social Engagement Disorder), infants need to have experienced “a pattern of extremes of insufficient care” (APA, 2013, p. 265), for example social neglect or deprivation, repeated changes of primary caregivers, or “rearing in unusual settings that severely limit opportunities to form selective attachments” (APA, 2013, p. 266&268). Reactive Attachment Disorder and Disinhibited Social Engagement Disorder are psychiatric diagnoses for extreme patterns of attachment behavior and emphasize the importance of the rearing environment. They are part of the Trauma- and Stressor-Related Disorders in the DSM-5 (APA, 2013).

After a short over-view of attachment theory, attachment assessment in infancy via the Ainsworth SST, and attachment classifications in infancy, the next chapter will summarize knowledge about factors that influence the development of attachment to this date.

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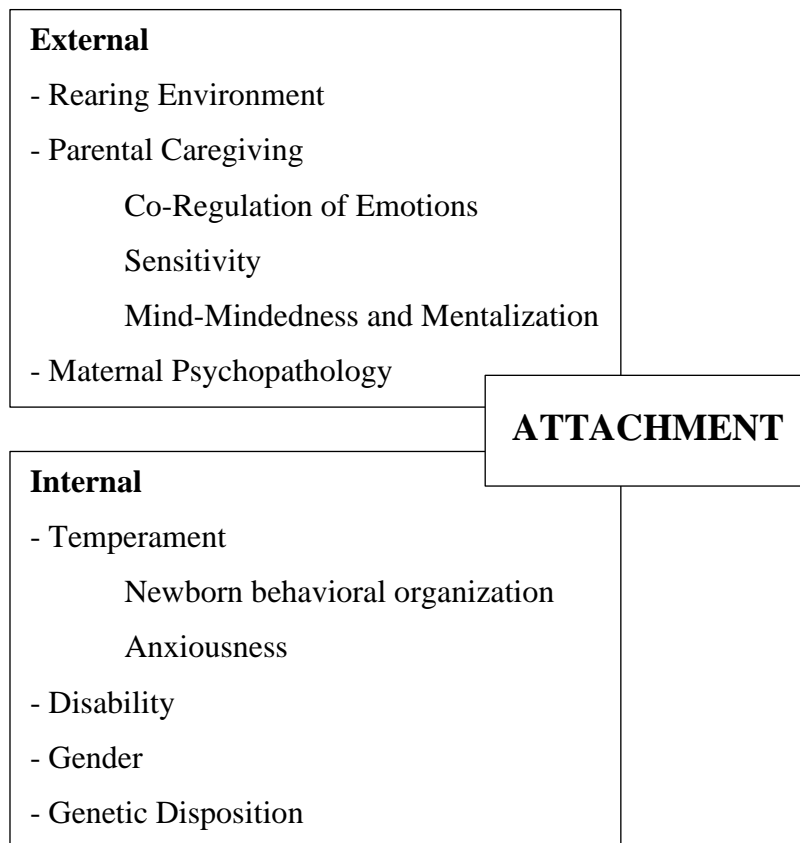
1.3 Correlates of Attachment in Infancy

Research to date has found different environmental and personal factors that promote attachment security or heighten the likelihood of attachment insecurity and disorganization.

Figure 6 gives an overview of the correlates discussed in the following paragraphs.

Figure 6

Correlates of Attachment in Infancy



Note. Self-developed graphic for overview.

External Correlates of Attachment in Infancy

Before summarizing the current research on individual internal correlates of infant attachment, environmental factors are described which were found to be associated with the development of attachment. The order, hereby, is the general rearing environment, followed by the relationship-specific caregiving system including concepts such as sensitivity, to maternal psychopathology, the external factor found to be strongly related to attachment insecurity.

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Rearing Environment

Several studies over the last decades have focused on the association between the rearing environment and the development of attachment. Starting with Bowlby (1951) who focused on children raised under difficult circumstances until the inclusion of the experience of adverse circumstances as diagnostic criterium for attachment disorders in the DSM-5 (APA, 2013), environmental factors have been shown to play an important role for the development of attachment. Based on the attachment theory, a stable relationship is needed to develop an affectional bond to the caregiver. If this stable relationship is not possible because of repeated changes of caregivers, few caregivers for many infants, or longer separations from the caregiver, the formation of an organized attachment is made difficult (Zeanah et al., 2000). If the relationship is stable but contradictory, because of maltreatment, neglect, deprivation, or abuse, the infant has no stable environmental experience on which to organize attachment behavior. For disorganized attachment, for example, maltreatment has been found to be a precursor often observed (Granqvist et al., 2017).

In other studies, social neglect led to a higher proportion of insecure-avoidant attachment in a sample of $N = 74$ preschool children (neglect reported to social services for $n = 39$ children) and more disorganized markers in the neglected group compared to the control group (Venet et al., 2007). Current research even supports the existence of a link between emotional neglect in childhood and insecure attachment in adulthood (Müller et al., 2019). In high-risk samples insecure infants of mothers with a history of childhood abuse, displayed more disorganized and avoidant behavior than insecure infants of mothers without a history of abuse (Lyons-Ruth & Block, 1996). One theory explaining the relationship between maltreatment and insecure attachment is the concept of frightened or frightening behavior introduced by Main and Hesse (1990) which states that infants experiencing maltreatment see their caregiver as secure base and source of fear at the same time. This confusion of signals leads to controversial reactions and experiences on the infant's side, which often promote

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insecure and disorganized attachment. A recent study found that the effect of maternal history of childhood maltreatment on mother-infant attachment was moderated by the mother's genetic disposition and cortisol level during the SST (Ludmer et al., 2018). These findings stress the importance of a multiple-influences perspective on the development of infant attachment.

Parental Caregiving

If the rearing environment allows for stable relationships, the quality of these relationships is crucial for the development of attachment. Several characteristics of caregivers have been found to be related to attachment.

Co-Regulation of Emotions

It is often stated that attachment theory is “a theory of affect regulation in the context of close relationships” (Howe, 2011, p. 24). This takes into account the fact that the way caregivers regulate their infants' physical and emotional arousal is fundamental for their development. Babies have to learn how to self-regulate and are dependent on co-regulation to deal with their arousal (Ibid.). As Sable (2007) put it: “In optimal conditions, caregivers are emotionally available and appropriately responsive to the child's needs of the moment. For instance, if the child is frightened, the parent attempts to be protective and comforting. If the child wants company, the parent attempts to engage in playful interaction. By regulating both positive and negative feelings, the mother promotes the child's eventual ability to regulate his own emotions. An emotionally responsive mother helps the child recover from distress, thereby dampening negative affect; she is also capable of maximizing and expanding opportunities for positive affect.” (p.364)

The main focus in studies on parent-infant emotion co-regulation is on mother-infant or father-infant synchrony, for example, matching affective states, interactional rhythm, and repair of mismatches (Feldman, 2003, 2007a). Greater emotional synchrony between parents and infants was found to predict attachment security (Beebe et al., 2010). Conversely, a recent

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study found that caregiver-infant emotion co-regulation after the SST was predictive of internal and external symptoms of preschoolers (Guo et al., 2020) and was associated with infant attachment a year earlier: “The results revealed that 24-month infant attachment security predicted higher 36-month positive and lower negative emotion co-regulation following the separation. Further, children in dyads with higher post-separation positive co-regulation and lower negative emotion co-regulation at 36 months had lower internalizing symptoms at 54 months. Lastly, 36-month post-separation positive/negative emotion co-regulation mediated the relationship between 24-month infant attachment security and internalizing symptoms at 54 months.” (Guo et al., 2020, p. 699)

A recent study from our research group found that prolonged latencies of interactive repair were associated with infant insecure attachment and that infant insecure attachment predicted higher child cortisol reactivity at 5 to 6 years of age (Müller et al., 2022).

Sensitivity

Closely connected to emotion co-regulation is the concept of sensitivity (Ainsworth et al., 1978). Without sensitive parenting, there is no effective co-regulation. Maternal sensitivity is one of the most important predictors for the development of secure attachment (Braungart-Rieker et al., 2001; De Wolff & van IJzendoorn, 1997; Fuertes et al., 2009; Stevenson-Hinde et al., 2013). Sprangler et al. (1996), for example, found that maternal sensitive behavior during the first year promoted infant attachment security at the age of 12 months. Maternal sensitivity was even found to mediate the link between adult attachment security, measured in the Adult Attachment Interview (AAI; George et al., 1996), and infant attachment security (measured in the SST) in an intergenerational analysis of $N = 66$ mothers and 12-month-old infants (Behrens et al., 2016). The intergenerational transmission of attachment security (AAI to SST) is widely recognized and has been found to be relatively stable (van IJzendoorn, 1995; Verhage et al., 2016), even though sensitivity does not fully explain the transmission gap in more recent studies (Behrens et al., 2016).

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Since sensitivity was found to be a stable predictor of infant attachment, recent research expanded to include additional factors and suggests an interplay of several correlates. Sensitivity and parental mentalization, for example, have been analyzed, which both contribute to the development of attachment relationships (Planalp et al., 2019; Zeegers et al., 2017). Planalp et al. (2019) found that parents who were less sensitive, were also less mind-minded towards their insecure-avoidant infants. In a recent meta-analysis by Zeegers et al. (2017), the predictors sensitivity and parental mentalization together explained 12% of the variance in attachment security.

Mind-Mindedness and Mentalization

Mentalization is the ability to perceive mental states of oneself or others, e.g., intentions, needs, emotional states, and wishes, that underly behavior (Zeegers et al., 2017). Based on the measurement of sensitivity Meins et al. (2001) developed a novel way to measure maternal attunement to the infant by focusing on mind-related comments. Mind-mindedness was originally built on the assumption that the infant is an individual with own thoughts and mental states (Meins et al., 2003). Expanding the observance of attunement to the verbal level, Meins et al. (2001) found that maternal comments on the infant's assumed internal states (maternal mind-mindedness) predicted infant attachment at the age of 12 months. Appropriate mind-related comments were associated with attachment security.

A further expansion to include non-verbal signs of parental attunement to the infant's mental states led to the definition of parental embodied mentalization (Shai & Belsky, 2011). Parental embodied mentalization has been found to be associated with sensitivity and mind-mindedness and even infant attachment security (Shai & Meins, 2018). Expanded to non-verbal parental mentalizations (parental embodied mentalizing), sensitivity mediated the relationship between non-verbal parental mentalizations and infant attachment in a sample of $N = 110$ mother-infant dyads in such that a higher parental ability of mentalization was associated with increased infant attachment security (Gagné et al., 2021).

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Until now, parental caregiving measured by sensitivity, emotion co-regulation and mentalization has been of great interest in attachment research. A more clinically-focused body of research focuses on maternal psychopathology and its role in the development of attachment.

Maternal Psychopathology

As pointed out, infant-caregiver interactions are of highest importance for the further development of the infant. Parents ability to be sensitive, co-regulate, and mentalize is influenced by impairments. Most research focuses on the mother as the primary caregiver, given that Bowlby introduced a hierarchy of caregivers with the mother at the top (Bowlby, 1951) and even nowadays the mother is the primary caregiver in most cases (Harmon & Perry, 2011). Maternal psychopathology, therefore, plays a crucial role for the infant's development and the development of attachment (Wan & Green, 2009). The amount of research focusing on maternal psychopathology, especially depression and trauma is immense and underpins the impairment of parenting skills due to maternal symptomatology (Erickson et al., 2019). Maternal affective disorders have found to be associated with lower synchrony in the mother-infant interaction (Feldman, 2007b), lower levels of sensitivity (Reck et al., 2011; Stein et al., 2012), and limited ability to co-regulate (Reck et al., 2004; Reck et al., 2011). Concerning infant attachment, maternal depression was found to increase the risk of infant insecure attachment by 20% in a recent meta-analysis (Barnes & Theule, 2019).

Unresolved trauma and loss are another possible precursor for insecure attachment. In a study of $N = 45$ mother-infant dyads, infants of mothers who had experienced loss, displayed disorganized attachment in all cases if the mother's loss was still unresolved (10 of 10 infants). If the mother's loss was resolved infants were not disorganized in 90% of cases (18 of 20 infants) (Ainsworth & Eichberg, 1991). In the context of unresolved loss, maternal frightening behavior was found to be predictive of infant disorganized attachment (Schuengel et al., 1999). Interventions focusing on mother-infant interaction and the improvement of

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parenting skills, as well as supporting bonding seem to be most relevant (Erickson et al., 2019)

Knowledge on maternal anxiety and its relationship to infant attachment is not as advanced as research on affective disorders and trauma (Grigoriadis et al., 2019). For a more detailed view on this correlate of attachment, see Study A in Chapter 2.

Internal Correlates of Attachment in Infancy

Besides environmental settings and the caregiving environment, which can be affected by maternal psychopathology, individual dispositions of the infant have been found to be related to the development of attachment.

Temperament

The first of these individual infant dispositions is the infant's temperament. After conducting a longitudinal study in New York, Thomas and Chess (1977) concluded that most of the infants can be assigned to one of three temperament styles: *Easy* temperament is characterized by general moderate positive mood and emotions, good adaptation to new experiences, and normal regular eating and sleeping patterns. *Difficult* temperament is found in infants that are very emotional, irritable, fussy, cry a lot, are irregular in eating and sleeping patterns, and slowly adapt, while displaying an intense, mostly negative mood. The third style, *slow-to-warm-up*, is characterized by a tendency to withdraw and slowly adapt, while displaying only few intense reactions. Critics of attachment theory state that attachment patterns are just differences seen based on individual temperament and parental reactions to it (Howe, 2011). However, as Bowlby (Bowlby, 1969) postulated, attachment patterns are the result of reciprocal reactions in parent-child relationships. Even though the maternal external correlates have been shown to be of greater importance for the development of attachment than infant characteristics (van IJzendoorn & Bakermans-Kranenburg, 2004), several studies support the important role played by internal correlates. Some findings will be presented in the following.

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Newborn Behavioral Organization

Newborn behavioral organization is the ability newborns demonstrate regarding orientation (to external visual or audio signals), emotional regulation (ability to be comforted, and self-comforting), and individual arousal (activity and irritability). In a large re-analysis of two longitudinal studies of overall $N = 88$ mother-infant dyads, Sprangler et al. (1996) found that the classification of disorganized attachment in the SST was associated with individual lower newborn behavioral organization.

Anxiousness

An infant's individual level of anxiousness influences the development of attachment according to Bowlby (1973), since the attachment and the fear system are closely connected. Fear and anxiety-related traits seem to be highly heritable (Stevenson-Hinde, 2005). As a result, there are individual differences in how often the attachment system is activated. These different levels of needs in infants impact the caregiving system, since different levels of sensitivity, co-regulation and protection are needed. Several studies (see Stevenson-Hinde, 2005 for a summary) reported higher cortisol levels for children naturally more fearful and insecurely attached.

Disability

Disability is seen as a stressor for parents that might impair their parenting skills. Supporting this idea, van IJzendoorn et al. (1992) found higher rates of attachment disorganization and lower rates of attachment security in disabled children. The differences were especially strong when the mothers of the disabled children had problems, such as depression or parenting deficiencies. Studies on totally blind children (MacRae, 2003) and deaf children (Hadadian, 1995) whose parents were not disabled showed higher rates of attachment insecurity. Communication problems might be one reason for these results and the increased parental stress-levels another. Hearing mothers of deaf children, for instance, were less sensitive, flexible, and consistent when interacting with their 18-month-olds. This effect,

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however, was not found in mothers who received high social support (Meadow-Orlans & Steinberg, 1993).

High risk for developing attachment insecurity, however, was not found in disabled children when their parents shared the same disability, for example in deaf children of deaf parents (Meadow et al., 1984). This supports the idea, that if parents can see the world from their infant's point of view, they can better communicate and react responsively.

Gender

Most studies have found no gender differences concerning the distribution of attachment patterns (Bakermans-Kranenburg & van IJzendoorn, 2009). However, infant gender is found to be important when it comes to the result of parental behavior. In a family study of $N = 87$ one-year-olds and both of their parents, parental sensitivity led to different results in infant attachment: Fathers and mothers were equally sensitive to sons, but fathers were less sensitive to daughters than were mothers, and mothers were significantly more sensitive to daughters than to sons. When maternal and paternal sensitivity were equally high in families, the daughter's attachment to mother and father was similar, but the son's attachment was not. In addition, fathers were especially sensitive towards their sons if they were insecurely attached to their mothers (Schoppe-Sullivan et al., 2006). When taking several correlates of attachment into account, gender should not be dismissed, because it can have interactional effects with other predictors.

Genetic Disposition

Several genes have been analyzed to find associations between genetic dispositions and attachment. Lakatos et al. (2000) found the dopamine D4 receptor (DRD4) gene to be associated with disorganized attachment. In another study from this research group a combination of the seven repeat allele and the -521 C/T polymorphism led to a ten times higher risk for disorganized attachment (Lakatos et al., 2002). Other research groups could however not replicate these findings (Bakermans- Kranenburg & van IJzendoorn, 2004). A

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more recent exploratory genetic analysis led to new genes and pathways associated with attachment security and disorganization, although this work still needs to be replicated (Pappa et al., 2015).

Several findings, however, suggest that the associations found most often are based on interactions between infant disposition and caregiving environment. Gervai et al. (2007) found that the infant's sensitivity to maternal affective communication was moderated by the infant's genotype. Since a classification of disorganized attachment with one caregiver does not necessarily lead to a classification of disorganized attachment with another caregiver (van IJzendoorn et al., 1999), relationship-specific factors, or interactions between infant disposition and the caregiving environment seem to be decisive. An example comes from the work of Bakermans-Kranenburg and van IJzendoorn (2007), who supported the gene-environment interaction and found that the earlier mentioned DRD4 7-repeat polymorphism only increased the risk of disorganized attachment when combined with environmental risks. In addition, Spangler et al. (2009) found that individual infant dispositions were only associated with infant disorganized attachment when maternal sensitivity was low, but not when mothers were highly responsive.

The study described in Chapter 2 is meant to extend this knowledge on correlates of attachment in infancy by focusing on postpartum anxiety disorders and their effects on the development of infant attachment.

2. Study A: Maternal Postpartum Anxiety and the Development of Infant Attachment: The Effect of Body Sensations on Infant Attachment

Abstract

Background: The postpartum period is crucial for infant development. Knowledge about the influences of maternal postpartum anxiety disorders (PAD) is limited. The aim of this present study is to advance current research and evaluate the influence of PAD on infant attachment.

Methods: In a longitudinal study, self-reported anxiety symptoms of $N = 71$ mothers ($N = 29$ with PAD diagnosed according to the DSM-IV, $N = 42$ controls) were examined in the postpartum period and one year later. Infants' attachment was observed in the Strange Situation Test (SST) at the age of 12-24 months.

Results: Results indicate a strong relationship between maternal anxiety disorder and infant attachment: infants of mothers with PAD were significantly more likely to be classified as insecure or disorganized than infants of control mothers. A logistic regression analysis of the specific aspects of maternal anxiety symptomatology led to a significant model with 77.2% correct classification of infant attachment dependent on the maternal fear of anxiety associated body sensations ($OR = 4.646$) in the postpartum period. The analysis was extended to include maternal sensitivity and interaction behavior, of which only maternal intrusiveness was additionally associated with infant attachment ($\rho = .281, p < .05; OR = 55.781, p = .133$).

Limitations: The participants were highly educated and privileged in their socio-economic status. Different anxiety disorders are included leading to a heterogenous sample.

Generalization is diminished. Maternal sensitivity was measured on a global scale, not including detailed observations, and body tension was not measured during interactions.

Conclusions: PAD plays a crucial role in the development of infant attachment. Based on these results, interaction-focused interventions, helping mothers to decrease intrusiveness, and body-focused interventions, helping mothers to deal with their fear of anxiety symptoms,

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might be promising pathways to buffer the influence of maternal anxiety on the development of infant attachment.

Keywords: infant attachment, postpartum anxiety disorders, strange situation test, body sensations

This paper was designed as a full-length research paper for the “Journal of Affective Disorders”. Publication guidelines can be retrieved via <https://www.elsevier.com/journals/journal-of-affective-disorders/0165-0327/guide-for-authors>

2.1 Introduction and Theoretical Background

Maternal mental health in the postpartum period is crucial for both the mother and the newborn's further development. The postpartum period lasts for about six months after childbirth (Romano et al., 2010). With a prevalence of up to 20% for anxiety symptoms (Furtado et al., 2019) and 10-15% for maternal postpartum anxiety disorders (Dennis et al., 2017; Liu et al., 2020; Reck et al., 2008), many mothers suffer from anxiety in the postpartum period. Knowledge about the influences of postpartum anxiety on the further development of mother-infant relationships or infant development in general is not as advanced as the research on postpartum depression (Glasheen et al., 2010; Grigoriadis et al., 2019). However, recent research has shown associations with maternal bonding (Dubber et al., 2015; Nolvi et al., 2016), mother-infant interaction (Nath et al., 2019; Reck, Tietz, et al., 2018), breastfeeding (Paul et al., 2013), and social-emotional development of the infant (Field, 2018; Polte et al., 2019). Research on postpartum depression revealed an association with infant attachment non-security (Barnes & Theule, 2019). To our knowledge, there are only a few studies suggesting that maternal anxiety may be associated with infant attachment: Stevenson-Hinde et al. (2011) observed the 4.5-year-olds of 98 mothers with low, medium, or high anxiety levels and rated the children's attachment and behavioral inhibition. Maternal anxiety turned out to be the only significant predictor of insecure attachment. Kraft et al. (2017) examined the association of maternal social phobia with maternal bonding and infant attachment in a sample of 46 mothers and their infants. The rate of insecure attachment was higher for infants of mothers with a lifetime diagnosis of social phobia compared to the control group.

However, it is not known how postpartum anxiety disorders (PAD) are related to early infant attachment. Our study, thus, tries to close this gap and focuses on mothers and their infants during their first two years of life.

Postpartum Anxiety Disorders

Postpartum anxiety disorders (PAD) are characterized by severe and recurrent feelings of anxiety and/or panic that do not appear to be connected to any outside threat (Britton, 2005). Anxiety disorders lead to strong (1) emotional (fear of stimuli), (2) cognitive (fearful thoughts, insecurity), (3) physical (body symptoms like sweat, or muscle tension) and (4) behavioral (especially avoidance) reactions to anxiety relevant stimuli (Craske et al., 2011), which influence interactions with others.

Research has shown that mothers with PAD suffer from impairments in mother-infant interaction. The findings so far are diverse, but several studies have shown that anxious mothers show reduced sensitivity (Feldman, 2007a; Kaitz et al., 2010; Mertesacker et al., 2004; Nicol-Harper et al., 2007), more control and intrusive behavior (Bögels & Brechman-Toussaint, 2006), or vigilant, and withdrawn behavior (Beebe et al., 2011) when interacting with their infants. Other studies did not find associations between anxiety and sensitivity (Murray et al., 2007; Weinberg et al., 2008). In an earlier publication from our research group, examining the same longitudinal data, maternal anxiety was found to influence mother-infant interaction in the Face-to-Face Still Face paradigm (FFSF; Tronick et al., 1978) in such that infants of mothers with PAD showed less positive engagement than infants of control mothers. Infant gender, hereby, was the main factor: male infants of anxious mothers demonstrated significantly less positive interaction than male controls **welche?**

Another earlier publication based on this data set supports the idea that maternal anxiety adversely influences maternal bonding (Dubber et al., 2015; Tietz et al., 2014). Maternal bonding is the unique tie between mother and infant (Klaus et al., 1995) characterized by positive feelings, emotional warmth, and affection towards the infant (Tietz et al., 2014). Maternal bonding is associated with infant attachment because it influences maternal behavior towards the infant. In addition, maternal attachment style is related to the development of maternal bonding (Mikulincer & Florian, 1999). Tietz et al. (2014), using data

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from the same longitudinal study presented here, found that mothers with PAD reported significantly lower bonding than their healthy controls. In a further regression analysis, subclinical depressive symptoms and avoidance behavior in situations where they are accompanied by others were found to be the main factors explaining maternal bonding. This earlier study emphasizes the importance of analyzing maternal anxiety symptomatology in addition to group comparisons of mothers with PAD and healthy controls. Moreover, maternal bonding strongly influences infant attachment. Therefore, these findings are precursors for the evaluation of PAD and infant attachment in this present study. Another publication from our research group supports the importance of examining PAD and postpartum anxiety symptomatology: Reck, Van Den Bergh, et al. (2018) observed that language development of infants of anxious mothers was impaired compared to healthy controls. Maternal avoidance behavior accompanied was especially associated with infant language and cognitive development. In addition, maternal neutral engagement during the FFSF was the strongest predictor of cognitive development.

Another infant behavior linked to mother-infant-interaction is infant self-comforting behavior, which represents infant self-regulation and develops based on interactions experienced with the caregivers. It is a complimentary expanded view shared by other theoretical frameworks (see Cole et al., 2004) that suggest a developmental sequence of increasing self-regulatory capacities. In this sequence, young infants have basic regulatory skills of limited effectiveness (compare to Diener & Mangelsdorf, 1999), then interactively engage with their caregivers who represent external resources of regulation (Spangler et al., 1994), and finally develop more competent self-regulatory strategies throughout their development. (cited according to Müller et al., 2015)

Müller et al. (2016) found that lower maternal bonding partially mediated between maternal anxiety disorders and increased self-comforting behaviors in older female infants. Without the consideration of maternal bonding, younger male infants showed higher rates of

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self-comforting behavior associated with maternal anxiety disorders. Following the findings of an earlier study by Müller et al. (2015), “self-comforting behavior can be seen as an indicator of increased stress” (Müller et al., 2016, p. 296). As a result, infants of mothers with PAD seem to be more stressed (especially boys). The experience of stress and ability to self-regulate is crucial for infant attachment.

Infant Attachment

John Bowlby (Bowlby, 1969, 1973, 1980) was the first to conceptualize attachment based on observations of foster children. His attachment theory was a completely new developmental paradigm which led to an exhaustive amount of research over the last five decades (Holmes, 2013). Following Bowlby’s attachment theory, Mary Ainsworth (Ainsworth & Bell, 1970; Ainsworth et al., 1978) analyzed the individual differences in attachment organization and developed three organized attachment styles, which can be observed in the Strange Situation Test (SST). The classification of attachment is based on the observation of how an infant is able to use the caregiver as a secure base for exploration in general, and comfort when distressed (see self-regulation above). Firstly, secure attachment is defined by caregiver directed attachment behavior and the ability to be soothed within three minutes after distress through separation (high proximity seeking, low rejection of the caregiver). Insecure-avoidant attachment is characterized by an extensive exploration behavior even under distress and an avoidance of the caregiver (low proximity seeking). Insecure-anxious or ambivalent attachment describes a mixture of exploration and attachment behavior which does not lead to comfort (high proximity seeking, high rejection). Main and Solomon (1986) suggested a complimenting attachment quality named disorganized/disoriented attachment for infants, who were not able to show organized, caregiver-directed attachment behavior (neither clear proximity seeking nor clear rejection), but were lacking goal or purpose in their attachment behavior. Disorganized attachment behavior, therefore, indicates the lack or breakdown of caregiver-directed attachment organization and can include

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stereotypes, confusion, self-harm and fear of the caregiver (Main & Solomon, 1986; Simonelli & Parolin, 2016).

Maternal Psychopathology and Infant Attachment

Studies so far have mainly focused on postpartum depression and its effects on the infant (Grigoriadis et al., 2019). For depressed mothers, lower sensitivity, interactive responsiveness and contingency have been found (Cohn et al., 1986; Murray et al., 1996; Reck et al., 2011). The ability to perceive and interpret an infant's signals correctly, consistently, and react appropriately and promptly, has been defined as sensitivity by Mary Ainsworth (Ainsworth et al., 1974). Maternal sensitivity is one of the most important predictors for the development of secure attachment, as well as physical, psychological and cognitive development in the first year (Ainsworth et al., 1974; Drake et al., 2007; Fuertes et al., 2009; Meins et al., 2001). Considering PAD, the findings on sensitivity are not completely uniform. It has been theorized, that if a caregiver's interaction behavior lacks sensitivity, responsiveness and contingency, infants develop attachment behavior that fits or complements their caregiver's behavior (Simonelli & Parolin, 2016).

Influences of anxiety symptoms on interaction behavior suggest, that infants of mothers with PAD are more likely to develop insecure attachment. This might be mainly influenced by the experiences on the body-level, since the body is the primary place of communication for newborns, and the relationship to their mother is especially body-focused through pregnancy, birth, and (possibly) nursing (Geuter, 2015). Maternal bonding, in addition, is associated with mother-to-infant bonding during pregnancy (Tichelman et al., 2019), emphasizing the importance of the early beginning of the bodily mother-infant relationship.

Kraft et al. (2017) recently investigated a sample of 46 mothers with and without social phobia and their 16-month-olds. They found that children of mothers with a lifetime diagnosis of social phobia had higher rates of insecure attachment and needed significantly

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more time to reconnect with their mothers in the reunion episodes at the age of 16 months.

There were no group differences regarding maternal bonding. The authors concluded that mothers might transmit their inhibition to their infants, regardless of maternal bonding.

Reduced sensitivity, impaired maternal bonding, or strong anxiety symptoms (apparent in cognitions, tense body sensations, avoidance behavior), can all be related to infant attachment. Based on the findings of Kraft et al. (2017), we explore more closely whether maternal postpartum anxiety symptoms influence the development of infant attachment and which aspects of PAD symptomatology show the strongest associations.

The Present Study

To advance former research findings, we focused on mothers with PAD and their infants. We hypothesized that children of mothers with anxiety disorders are more likely to be classified as insecure and disorganized in the strange situation test than children of control mothers (Hypothesis 1). Since anxiety disorders lead to altered cognitions, bodily reactions, and avoidance behavior (Craske et al., 2011), we further analyzed these specific aspects of anxiety in mothers and their relationship to infant attachment. We hypothesized that the more anxiety symptoms mothers report in the postpartum period, the more likely infants are to display insecure and disorganized attachment behavior at the age of 12-24 months (Hypothesis 2). To compare the different aspects of anxiety, we included all three specific aspects (cognition, body sensations, and avoidance behavior) in our analyses simultaneously. Without a clear direction from previous studies, we refrained from hypothesizing which aspect is more closely related to infant attachment than the others. Our research question, hence, was: Is one aspect of maternal anxiety symptomatology more important than the other specific symptoms?

Since sensitivity was formerly reported as an important factor in mother-infant interaction, we further evaluated our findings by adding maternal sensitivity (measured on a

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global scale and observed during mother-infant interaction) as a predictor to our analyses and exploratively analyzed the association of maternal interaction behavior and infant attachment.

2.2 Methods

Sample and Procedure

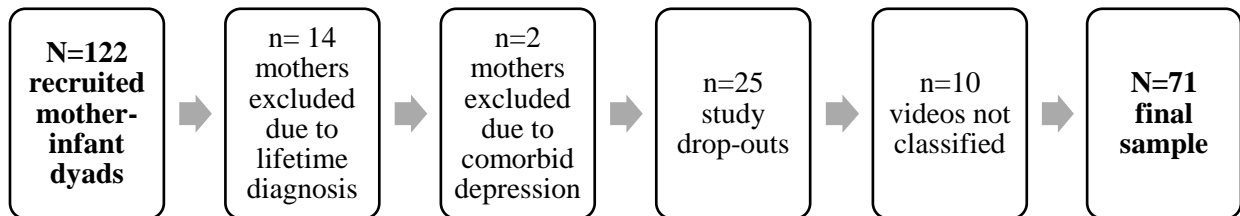
This study is part of the long-term study “Anxiety disorders in the postpartum period: Cognitive development, interaction behavior and infant neurophysiology” at the Heidelberg University Hospital, General Psychiatry. The study protocol was accepted by the hospital’s ethics committee and is described in detail in earlier publications from our research group (Müller et al., 2016; Müller et al., 2015; Reck et al., 2013; Reck, Tietz, et al., 2018; Reck, Van Den Bergh, et al., 2018; Richter & Reck, 2013; Tietz et al., 2014; Zietlow et al., 2019).

Recruitment

All participants were recruited between June 2006 and October 2010. Participants were recruited by means of newspaper announcements, leaflets, public birth announcements and pregnancy screenings at the gynecological department of the Heidelberg University Hospital between June 2006 and October 2010. Additional participants were recruited at the mother-infant unit of the General Psychiatry, Heidelberg University Hospital. Mothers from the clinical group had to have experienced a clinically significant anxiety disorder postpartum; mere specific phobia was not sufficient to be included. Dyads were excluded if these participants reported acute or former psychoses or bipolar disorders ($n = 14$ women met this exclusion criterion) or acute substance abuse, suicidal tendencies and depression ($n = 2$ women were excluded because of comorbid major depressive episodes). Previous psychotherapy and current or lifetime mental health problems were exclusion criteria for healthy controls. Infants’ gestational age in both groups had to be no less than 37 weeks, all APGAR scores had to be higher than six and infants had to be without any congenital abnormalities. The strange situation test of $n = 25$ infants was missing due to study-drop out. Another $n = 10$ infants were not classified, because the videos did not clearly depict their behavior or their mothers stopped the strange situation due to high arousal of their infants. The study drop-outs and case-exclusions are demonstrated in Figure 7.

Figure 7

Study drop-outs and case-exclusions



Procedure

The recruited participants were interviewed six weeks postpartum to assess general suitability for the study. During this telephone interview women were asked about pregnancy, birth, and history of psychopathology especially in regard to anxiety disorders using the anxiety screening questions from the German version of the Structured Clinical Interview for DSM-IV Disorders (Wittchen et al., 1997). Mothers deemed suitable for the study then filled out several questionnaires focusing on their mental health and demographic situation (time of measurement: T1).

Three to nine months postpartum mother-infant interaction was assessed at the laboratory of the Heidelberg University Hospital using the Face-to-Face-Still Face paradigm (FFSF; Tronick et al., 1978). In addition, the SCID-I according to DSM-IV (Wittchen et al., 1997) was conducted. Mothers diagnosed with specific phobias were only included in the clinical group if they displayed another anxiety disorder at the same time. 12-24 months postpartum infant attachment was measured using the strange situation test (time of measurement: T2).

Assessment and Classification of Infant Attachment

Infant attachment was classified in accordance to the strange situation test for 12-24 months old infants (Ainsworth et al., 1978). The aim of the strange situation test (SST) is to

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activate the infant's behavioral attachment system through mild to moderate stress evocation. The procedure is divided into eight episodes of about three minutes each. Firstly, the caregiver and the infant enter the laboratory. Secondly, the infant explores with the caregiver present. Thirdly, the stranger (in this case a young women) enters and interacts with the caregiver and then the infant. The first separation is in episode four, the caregiver leaves the room and the stranger tries to soothe the infant if needed. Especially informative for coding the attachment quality is episode five, the first reunion, in which the caregiver reenters and the stranger leaves the room. After three minutes the second separation takes place (sixth episode) and the caregiver leaves the room, resulting in a situation in which the infant is left alone in the laboratory. In the seventh episode the stranger returns and tries to soothe the infant or interact with him or her. The final and eighth episode is the second reunion, the caregiver returns and soothes or interacts with the child. Infant attachment is coded according to the behavior throughout the whole procedure, and especially in the two reunion episodes (episodes five and eight). Infants are classified as secure, insecure-avoidant, insecure-ambivalent, or disorganized, if their attachment behavior is no longer organized or directed towards the caregiver (Simonelli & Parolin, 2016). The videos of the SST were coded by two independent coders. The coders were blind to the study hypotheses and the maternal psychiatric status. 27% of the videotapes (19 SST of 71 overall) were randomly selected and double-coded. We used Cohen's κ (Cohen, 1960) to compute interrater reliability, which was very high ($\kappa = 0.818$).

Assessment of Maternal Postpartum Anxiety

Maternal postpartum anxiety was assessed using the German version of the Structured Clinical Interview for DSM-IV Disorders (SCID-I, Wittchen et al., 1997). Included anxiety disorders according to DSM-IV were generalized anxiety syndrome, panic disorder with and without agoraphobia, agoraphobia without history of panic disorder, specific phobia, social phobia, obsessive-compulsive disorder, posttraumatic stress disorder and anxiety disorder

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NOS. Following the diagnostic interview, mothers were classified as belonging to the control group or anxiety group.

Maternal psychopathology was further measured by several self-report questionnaires evaluating anxiety symptoms at the beginning of the study (T1) and at the time of the SST (T2). The core symptoms of anxiety were assessed using the German revised editions of the Agoraphobic Cognitions Questionnaire (ACQ), the Body Sensations Questionnaire (BSQ) and the Mobility Inventory (MI) (AKV; Ehlers et al., 2001). The 14 items of the ACQ assess the frequency of typical anxiety cognitions on a scale ranging from 1 (“thought never occurs”) to 5 (“thought always occurs when I am nervous”). The 17-itemed BSQ measures the extent of fear of anxiety associated physical symptoms on a 5-point Likert scale ranging from 1 (“not frightened or worried by this sensation”) to 5 (“extremely frightened by this sensation”). The MI is subdivided into the Mobility Inventory Alone (MIA) and the Mobility Inventory Backend (MIB). It consists of 27 items describing the predominant agoraphobic situations and their avoidance on a five-point scale ranging from 1 (“never avoid”) to 5 (“always avoid”). The internal consistency ranged from Cronbach’s $\alpha = .882$ (ACQ) to $\alpha = .919$ (BSQ), and $\alpha = .951/.953$ (MIA/MIB), which can be evaluated as good to excellent and was comparable to that of Ehlers et al. (2001). Moreover, maternal anxiety was further assessed using the German version of the state-trait-anxiety inventory (STAI; Laux et al., 1981) to differentiate between actual “state anxiety” (STAI-S) and overall “trait anxiety” (STAI-T). The two subscales consist of 20 items each and were rated on a 4-point Likert scale ranging from 1 = “not at all” to 4 = “very much” concerning subjective tension, worry, and arousal (“I am worried”), and calmness, confidence, and security (“I feel secure”). Internal consistency was high for state (Cronbach’s $\alpha = .934$) and trait (Cronbach’s $\alpha = .962$).

Exploratory Analyses: Maternal Interaction Behavior

Maternal interaction behavior was observed in the Face-to-Face Still Face paradigm (FFSF) at T1 and coded according to the German revision of the Infant and Caregiver

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Engagement Phases (ICEP-R; Reck, Noe, Cenciotti, et al., 2009). A detailed procedure of the FFSF and coding process is described in earlier publications, e.g. Müller et al. (2015). In this present study, we exploratorily evaluated the relationship between maternal behavior (neutral, positive, and negative) and infant attachment. Moreover, maternal sensitivity was included in our exploratory analyses. Maternal sensitivity was measured by the Maternal Sensitivity and Responsivity Scales-Revision (Cenciotti et al., 2004). The sensitivity scale of this measure assesses maternal sensitive behavior towards the infant.

Data Analyses

We used the Statistical Package for Social Sciences (IBM SPSS v. 25.0) for all the analyses conducted in this study. Before carrying out the main analyses, differences concerning demographic group variables were explored (t-Test, Mann-Whitney-U-test, χ^2 -test) to ensure comparability between the two groups. First, the distribution of infant attachment in control and anxiety group was tested by Fisher's exact test and a χ^2 -test to test Hypothesis 1. Secondly, Pearson correlations were conducted to test whether there is any association between infant attachment and maternal psychopathology. Afterwards, we calculated a logistical regression analysis by regressing infant attachment on all independent variables. The logistical regression analysis was conducted stepwise backwards to minimize the risk of exclusion of small but significant effects and test Hypothesis 2.

2.3 Results

Sample Characteristics

The sample ($N = 71$) for this study is comprised of $n = 42$ (59.2%) mothers without the history of mental disorders and $n = 29$ (40.8%) mothers with an anxiety disorder postpartum according to DSM-IV and their infants. Of the mothers with anxiety disorder $n = 6$ (8.5%) were inpatients at the mother-infant unit of the Heidelberg University Hospital. There were $n = 45$ female (63.4%) and $n = 26$ male infants (36.6%) overall. Maternal education was generally high with $n = 1$ (1.4 %) mother having low and $n = 13$ (18.3%) mothers having high secondary qualification, whereas more than half of the sample either had a university qualification ($n = 17$, 23.9%) or a university degree ($n = 40$, 56.3%). Maternal age ranged from 22 to 42 years ($M = 32.96$, $SD = 5.1$). Infants were between two and four months old at the beginning of the study ($M = 3.34$, $SD = .345$). At the follow-up time of measurement at which infant attachment was assessed, infants were between 13 and 22 months old ($M = 19.38$, $SD = 1.40$). Mean number of infants was $M = 1.49$ ($SD = .69$). Anxiety disorders in the clinical sample included panic disorder with ($n = 7$) and without agoraphobia ($n = 7$), social phobia ($n = 8$), specific phobia ($n = 8$), obsessive compulsive disorder ($n = 11$), posttraumatic stress disorder ($n = 1$), generalized anxiety disorder ($n = 16$) and anxiety disorder NOS ($n = 1$). See Table 3 for a detailed summary of participant characteristics and comparison of the two groups.

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Table 3

Participant Characteristics

	Group							<i>p</i>
	Control (<i>n</i> = 42)			Anxious (<i>n</i> = 29)				
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range		
Maternal age (years)	33.26	5.33	24 – 42	32.52	4.78	22 – 42	.548 ^a	
Number of children	1.62	0.76	1 – 4	1.31	0.54	1 - 3	.073 ^b	
Infant age beginning (months)	3.24	0.29	2.9 – 4.3	3.51	0.37	2.8 – 4.1	.088 ^a	
Infant age follow-up (months)	19.1	1.59	13.2 – 21.5	19.72	1.09	18.6 – 22.7	.268 ^a	
Infant sex male (%)	18 (42.9%)			8 (27.6%)			.189 ^c	
Maternal education							.836 ^c	
low secondary qualification	1 (2.4%)			0 (0%)				
high secondary qualification	7 (16.7%)			6 (20.7%)				
University entrance qualification	10 (23.8%)			7 (24.1%)				
University degree	24 (57.1%)			16 (55.2%)				

Note. ^a t-test; ^b Mann-Whitney-U-test; ^c χ^2 -test; *M* = mean; *SD* = standard deviation.

Descriptive Statistics of Infant Attachment

In the overall sample 66.2% of the infants displayed secure attachment, 21.1% insecure-avoidant attachment, 1.4% insecure-ambivalent attachment, and 11.3% were classified as disorganized. Compared to a recent meta-analysis (Verhage et al., 2016), more infants in our study were classified as securely attached to their mother. Divided into control and anxiety group, the percentage distribution was different, as can be seen in Table 4.

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Table 4

Infant Attachment in Control and Anxiety Group

	Group		Verhage et al.
	Control (<i>n</i> = 42)	Anxious (<i>n</i> = 29)	(2016)
Attachment style			
secure	33 (78.6%)	14 (48.3%)	52.2%
insecure-avoidant	6 (14.2%)	9 (31.0%)	14.6%
insecure-ambivalent	1 (2.4%)	0 (0%)	10%
disorganized	2 (4.8%)	6 (20.7%)	23.2%

Fisher's exact test demonstrated a significant difference in the attachment style distributions between anxiety and control group ($F(8) = 8.908, p = .015$, Cramer's $V = 0.36$) as reported in Table 2. We used Fisher's exact test instead of a χ^2 -test, because 4 cells (50%) had an expected value under 5. For further analyses we reduced infant attachment to a dummy variable distinguishing between secure attachment and insecure/disorganized attachment. A χ^2 -test stated that there were significantly more insecure/disorganized infants in the anxiety group ($\chi^2(1) = 7.036, p = .011$) than in the control group. Cramer's $V = 0.315$ indicates a medium-sized effect. Figure 8 and 9 depict the attachment distributions in both subgroups.

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Figure 8

Infant Attachment Classifications for Control and Anxiety Group

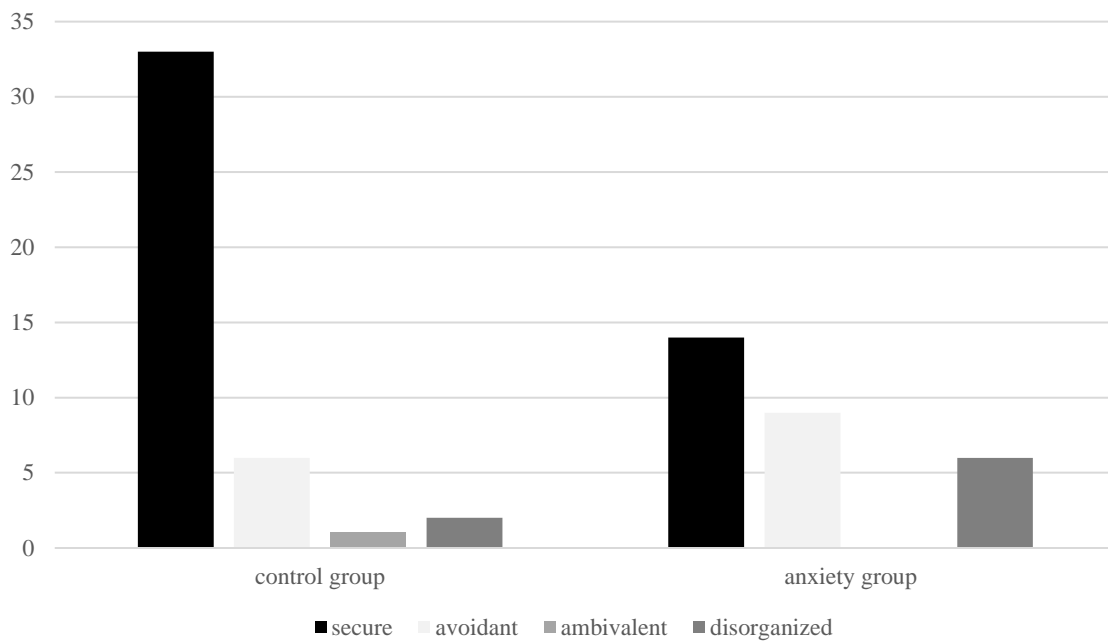
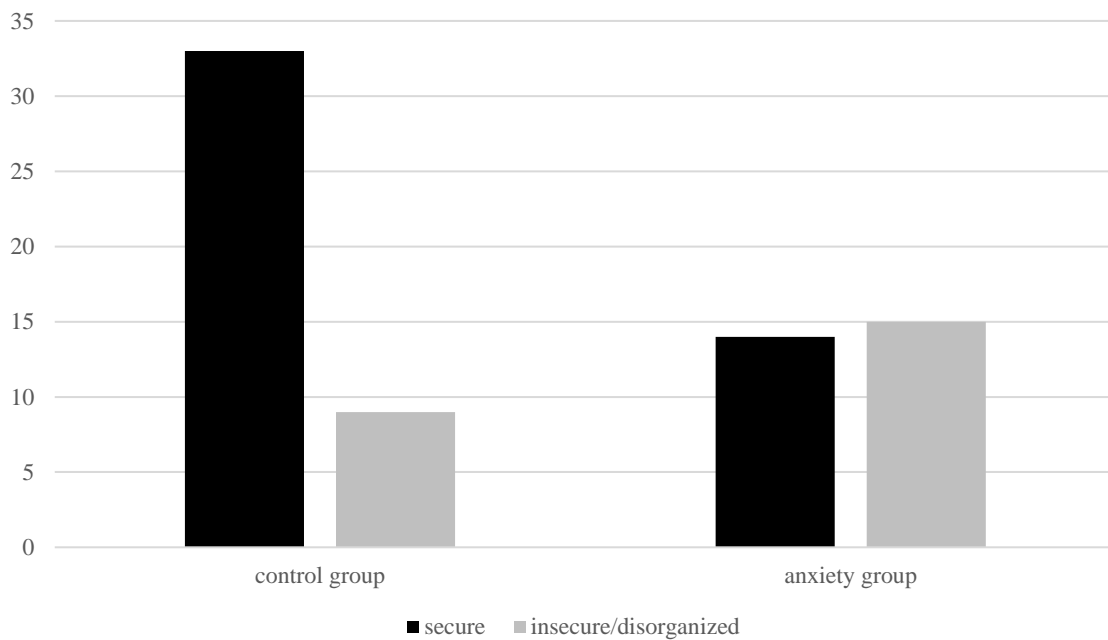


Figure 9

Secure vs. Insecure/Disorganized Attachment in Control and Anxiety Group



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Table 5

Pearson Correlations of the Assessed Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Infant attachment ¹	1	.315**	.296*	.212	.330**	.481**	.078	.186	.152	.214	.227	.213	.027	.108
2. Diagnosis		1	.753**	.634**	.696**	.702**	.550**	.518**	.754**	.645**	.764**	.749**	.489**	.415**
3. STAI-T T1			1	.898**	.689**	.548**	.695**	.543**	.683**	.526**	.731**	.636**	.456**	.303
4. STAI-S T1				1	.583**	.488**	.578**	.462**	.559**	.385*	.622**	.466**	.385*	.278
5. ACQ T1					1	.715**	.799**	.835**	.326*	.353*	.757**	.572**	.416**	.338*
6. BSQ T1						1	.501**	.606**	.474**	.448**	.652**	.751**	.312*	.335*
7. MIA T1							1	.889**	.288	.242	.779**	.503**	.748**	.601**
8. MIB T1								1	.246	.273	.691**	.375*	.558**	.568**
10. STAI-T T2									1	.856**	.495**	.620**	.342*	.372*
11. STAI-S T2										1	.463**	.573**	.274	.322*
12. ACQ T2											1	.675**	.611**	.470**
13. BSQ T2												1	.436**	.348*
14. MIA T2													1	.777**
15. MIB T2														1

Notes: ¹Infant attachment was dummy coded 0 = secure, 1 = insecure/disorganized. ** $p < .01$, * $p < .05$.

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Correlation Analyses

Bivariate correlations among the study variables are presented in table 5. Our results show that infant attachment was related to anxiety symptoms at the first time of measurement, 1-3 months postpartum (T1): infant attachment was positively correlated with the mother's diagnosis ($r = .315, p < .01$), the STAI-T ($r = .296, p < .05$), the ACQ ($r = .330, p < .01$), and the BSQ ($r = .481, p < .01$). However, the associations between concurrent maternal anxiety symptoms at the follow-up T2 and infant attachment are no longer existent at the infants' age of 12-24 months (T2), at which infant attachment was assessed in the SST.

Multivariate Analysis

Based on the empirical findings concerning associations between maternal psychopathology and infant attachment, a logistical regression analysis with significant self-report measures as independent variables was run. We regressed stepwise backwards to find the model only consisting of significant predictors, to test which aspect of maternal psychopathology is most closely related to infant attachment. $N = 57$ mothers and their infants (80.3%) were included in the logistic regression. The constant β (Wald(1) = 4.913, $p = .027$) led to a correct classification of 64.9% of all cases included. In Step 1, STAI-T at T1, ACQ at T1, and BSQ at T1 were entered. The model was significant ($\chi^2(4) = 13.476, p < .01, 73.7\%$ correct classification). In Step 2 the STAI-T was excluded ($\chi^2(3) = 13.476, p < .01, 73.7\%$ correct classification). In Step 3 the ACQ was excluded, leading to a model of only diagnosis (OR 1.831, 95% CI [0.353; 9.501]) and BSQ (OR 3.392, 95% CI [0.955; 12.045]) as independent variables ($\chi^2(2) = 13.374, p < .01, 71.9\%$ correct classification). In Step 4, only the BSQ ($\beta = 1.536, \text{Wald}(1) = 9.332, p < .01, \text{OR} = 4.646, 95\% \text{ CI} [1.734; 12.447]$) remained in the model, which was significant ($\chi^2(1) = 12.866, p < .001$) and led to a correct classification of 77.2% of all cases. The model coefficients for all four models can be seen in Table 6. These results show that there is a 4.6 times higher probability for insecure/disorganized attachment, if the mean of the BSQ is 1 point higher. The rate of correct classification for

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insecure/disorganized attachment is only 45% in the best fit model, but Nagelkerke's $R^2=.278$ and Cox and Snells' $R^2=.202$ indicate an explanation of pseudo-variance of more than 20% ($f^2=.25$), which is considered a medium-sized effect (Cohen, 1992) and, therefore, confirms a valid effect of maternal psychopathology, especially the fear of body sensations, on infant attachment.

Table 6

Regression Coefficients of Predictors of Infant Attachment (Main Analysis)

Variables ¹	B	SE	Wald	p	OR	95% CI OR
Step 1 diagnosis	0.737	1.070	0.475	0.491	2.090	[0.257;17.008]
STAIT	0.000	0.037	0.000	0.993	1.000	[0.930; 1.076]
ACQ	-0.326	1.119	0.085	0.771	0.722	[0.080; 6.476]
BSQ	1.300	0.695	3.496	0.062	3.668	[0.939; 14.327]
constant	-2.840	1.377	4.253	0.039	0.058	
Step 2 diagnosis	0.741	0.937	0.626	0.429	2.099	[0.335; 13.166]
ACQ	-0.322	1.009	0.102	0.750	0.725	[0.100; 5.233]
BSQ	1.299	0.691	3.535	0.060	3.666	[0.946; 14.203]
constant	-2.835	1.244	5.199	0.023	0.059	
Step 3 diagnosis	0.605	0.840	0.518	0.472	1.831	[0.353; 9.501]
BSQ	1.222	0.647	3.570	0.059	3.392	[0.955; 12.045]
constant	-3.084	1.010	9.326	0.002	0.046	
Step 4 BSQ	1.536	0.503	9.332	0.002	4.646	[1.734; 12.447]
constant	-3.384	0.950	12.684	0.000	0.034	

Note. ¹df = 1 for all variables.

Exploratory Analyses

To evaluate our findings, we exploratively analyzed maternal sensitivity and maternal interaction behavior. There was no significant correlation between maternal sensitivity measured with the global sensitivity scale (Cenciotti et al., 2004) and infant attachment ($r = -.035, p = .793$). Maternal positive ($\rho = -.134, p = .316$) or neutral behavior ($\rho = .076, p = .570$) observed in the Face-to-Face Still Face paradigm (FFSF) with the German revision of the Infant and Caregiver Engagement Phases (ICEP-R; Reck et al., 2009) were also not significantly related to infant attachment. However, a positive correlation between maternal intrusive behavior in the Play Episode of the FFSF at 3-8 months and infant insecure attachment at 12-24 months could be found ($\rho = .281, p < .05$). The logistic regression analysis was rerun with maternal intrusive behavior added as predictor, in addition to STAI-T at T1, ACQ at T1 and BSQ at T1. The prediction of infant attachment in the final overall model was slightly improved to 79.6%, with a 55% correct prediction of insecure/disorganized attachment. In the final model only the BSQ ($\beta = 1.406, \text{Wald}(1) = 7.392, p < .01$) and maternal intrusive behavior ($\beta = 4.021, \text{Wald}(1) = 2.262, p = .133$) remained in the model, which was significant ($\chi^2(2) = 14.99, p < .01$). The model coefficients for all four models can be seen in Table 7.

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Table 7

Regression Coefficients of Predictors of Infant Attachment (Exploratory Analysis)

Variables ¹		B	SE	Wald	p	OR	95% CI OR
Step 1	Diagnosis	0.926	1.160	0.637	0.425	2.524	[0.260;24.512]
	STAIT	-0.011	0.038	0.085	0.771	0.989	[0.818; 1.066]
	ACQ	-0.211	1.128	0.035	0.852	0.810	[0.089; 7.383]
	BSQ	1.141	0.710	2.586	0.108	3.131	[0.779; 12.586]
	Intrusiveness	3.838	2.636	2.121	0.145	46.429	[0.265; 8131.676]
	constant	-2.597	1.487	3.051	0.081	0.075	
Step 2	Diagnosis	0.888	1.142	0.604	0.437	2.429	[0.259; 22.774]
	STAIT	-0.014	0.034	0.167	0.683	0.986	[0.922; 1.055]
	BSQ	1.096	0.669	2.685	0.101	2.991	[0.807; 11.090]
	Intrusiveness	3.904	2.614	2.231	0.135	49.611	[0.296; 8325.260]
	constant	-2.688	1.413	3.619	0.057	0.068	
Step 3	Diagnosis	0.594	0.881	0.454	0.500	1.811	[0.322; 10.192]
	BSQ	1.104	0.664	2.770	0.096	3.017	[0.822; 11.077]
	Intrusiveness	3.783	2.590	2.134	0.144	43.935	[0.274; 7033.280]
	constant	-3.082	1.051	8.603	0.003	.046	
Step 4	BSQ	1.406	0.517	7.392	0.007	4.081	[1.481; 11.246]
	Intrusiveness	4.021	2.674	2.262	0.133	55.781	[0.295; 10533.304]
	constant	-3.379	0.990	11.659	0.001	0.034	

Note. ¹df = 1 for all variables.

2.4 Discussion

Focusing on the relationship between PAD and the development of infant attachment, our study indicates an association between maternal PAD and infant attachment. This association is strongly influenced by maternal body sensations.

Our results show that infants of mothers suffering from PAD are more likely to develop disorganized and insecure attachment (Hypothesis 1). The postpartum period has been, once again, proven to be crucial for infant development. Comparable influences on infant attachment have so far been shown for mothers suffering anxiety in general, not only in the postpartum period (Bögels & Brechman-Toussaint, 2006; Kraft et al., 2017), or in older children aged 4-5 years (Stevenson-Hinde et al., 2013).

Moreover, the specific aspects of postpartum anxiety contributed to the correct prediction of infant attachment. The more anxiety symptoms mothers reported in the STAI-T at the beginning of their parenthood, the more likely their infants were to display insecure or disorganized attachment behavior in the SST at the age of 12-24 months. The same was true for anxiety cognitions and body sensations, but not for avoidance behavior. Hypothesis 2 was, thus, also supported.

In other studies, maternal sensitivity was shown to promote mother-infant attachment (Braungart-Rieker et al., 2001; Shin et al., 2008), and even mediated the effect of maternal anxiety on child attachment in pre-school children (Stevenson-Hinde et al., 2013). It could also buffer some effects of maternal anxiety on infant attachment (Kertz et al., 2008). Since anxiety leads to a heightened self-focus (Clark & Wells, 1995), severely anxious mothers' ability to be sensitive and co-regulate their infant can be reduced, which can have effects on the development of infant attachment. In our study, maternal positive and neutral behavior during the FFSF was not associated with attachment insecurity, whereas maternal intrusiveness improved our model. Maternal intrusiveness is the counterplay to sensitive behavior, since it is defined as overruling of infant signals. Therefore, our findings support

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earlier research and stress the importance of maternal behavior for the development of infant attachment. Including observations of mother-infant interaction, thus, is necessary in future research to evaluate our findings.

Our research question was, whether one aspect of anxiety (cognitions, body sensations, or avoidance behavior) was more strongly related to infant attachment than the others. The results of the logistic regression analysis show that body sensations play the most important role for the development of infant attachment compared to cognition and avoidance behavior. If mothers were more afraid of anxiety related body sensations at the beginning of their parenthood, their infants were four times more likely to display disorganized or insecure attachment later on. Body sensations and their impact, thus, need to be more closely investigated. One possible way of doing this would be the analysis of parental embodied mentalization (PEM), a concept introduced by Shai and Belsky (2011). PEM focuses on the nonverbal, bodily based interaction behavior of the caregiver, which is used to interpret the infant's mental states (Shai & Belsky, 2017). High PEM was found to be related to infant attachment security (Gagné et al., 2021; Shai & Meins, 2018). In addition, one of our experienced coders observed, that the infants of anxious mothers were more tense during the SST when their mothers were present. This observation is not measurable in the SST codes. In addition to coding PEM (Shai & Belsky, 2011), a possible improvement of the SST could be, tracking the infants' somatology during the observation (for instance heart rate and blood pressure).

Clinical Implications

Several clinical implications arise from these findings. Considering possible interventions to buffer this effect of maternal anxiety on infant attachment, programs focusing on the body need to be supported. A recent review of intervention programs for children under 5 years old, for example, showed that touch-based interventions have a positive effect on attachment and reduce maternal anxiety and depression (Kingsley et al., 2020). A body-

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focused approach for psychotherapy is described in Geuter (2015). For mother-infant interaction, Downing (1996) described the affective tuning between mother and infant as an “interactive dance” or “body-language dialog”. This description is a good explanation for the effect maternal behavior has on the infant on a body-level: experiences and strategies to regulate distance and closeness are “embodied” (Downing, 2006). In clinical mother-infant units, therapeutic interventions focusing on the body, for example relaxation programs and baby massage, help mothers to improve their relationship to their own body and their infants (Kersten-Alvarez et al., 2011). In psychotherapy, video intervention can help mothers to gain new perspectives on their interaction behavior and alter negative beliefs (Downing et al., 2014). This body-focused work and its importance is emphasized by our study. One great advantage of body-focused interventions is the fact that even severely affected mothers can take part and learn to connect to their baby in a very practical way without high cognitive load. Parents need to be aware that it is important how they hold their child from the beginning on (Winnicott, 1969, 2021).

Moreover, the earlier these programs start, and help mothers to overcome their negative body sensations attributes and reduce their tension, the better the results might be for infant attachment. An additional focus on intrusive behavior in video intervention seems to be important as well to help parents understand how their nonverbal behavior impacts the infant. In our study, the crucial time period for the prediction of infant attachment was the postpartum period, which underlines the fact that early experiences of the caregiver are of highest importance for the following development. Helping impacted mothers as early as possible to release tension and improve their mother-infant interaction behavior is crucial and possibly most effective.

2.5 Conclusion and Limitations

Limitations

Nonetheless, a couple of limitations need to be mentioned. First, this was a volunteer-based study. We tried to minimize the effect of self-selection by using different ways of recruitment and offering support for anxious mothers. They were, for example, accompanied to the laboratory and back home, if they wanted to be. Nevertheless, generalizability is diminished by the fact that all participants were volunteers. Secondly, the overall sample was in general highly-educated and privileged. The sample characteristics, however, are comparable to other samples in this region of southern Germany (Reck et al., 2008). In addition, high education was found to be a risk factor for maternal anxiety (van der Zee-van den Berg et al., 2021), which makes our sample very valid in which to examine this trait. Thirdly, the clinical sample was heterogenous with various diagnosed anxiety disorders. For a more precise evaluation of maternal anxiety disorders, studies focusing on single anxiety disorders (for example, only social phobia) are needed. Fourth, as the study design was mainly observational, causality assumptions are not appropriate. Hypotheses 1 and 2 were not preregistered.

Fifth, the measure used to capture maternal sensitivity in our study was a global rating scale, which does not capture maternal behavior in detail. Another option to measure sensitivity would be the well-established Coding Interactive Behavior (CIB; Feldman, 1998) system, in which sensitivity is composed of ten separate macro-analytical codes of maternal behavior, and therefore captures a more detailed perspective on sensitivity. The BSQ, which was closely associated with infant attachment, measures the fear of anxiety related body sensations and not the body tension during interaction itself. Anxiety influences body sensations and the mentioned body sensations have to be known to confirm them in the questionnaire. However, the BSQ is an index for assumed tension and not observed tension during the interaction. High rates in the BSQ can indicate problems in maternal trust in their

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own body, which can be ameliorated through psychotherapy and body-focused interventions.

However, other ways to examine body sensations should be used in future research, to advance our findings.

Conclusion

To buffer negative effects of maternal postpartum anxiety on infant attachment, helping mothers to evaluate their body sensations and prevent body tension is a promising approach. The more severely a mother is bodily experiencing postpartum anxiety, the stronger the negative effects on her infant seem to be. Low-level, basic, body-focused interventions can help to improve the mother-infant relationship and possibly prevent the development of insecure or disorganized infant attachment. Our study serves as a starting point for more body- and intervention-focused research in this area.

3. Attachment in Adulthood

After a closer analysis and summary of attachment and its correlates in infancy, we skip childhood and adolescence to focus on adulthood in the second part of this work. In this chapter, different correlates of attachment in adulthood that have been found and reported so far are described to give an overview of the current research in this area. Before current research is presented, some basic background on measurements and patterns of attachment in adulthood is given.

3.1 Measurement of Attachment in Adulthood

Bowlby proposed that attachment is important from cradle to grave (Bowlby, 1977), indicating that attachment research is also important in adulthood. Attachment research in adulthood is a younger research field than attachment research in infancy. The instruments used are thus more diverse and no measurement is as established as the SST in infancy. However, to measure attachment in adulthood the semi-structured Adult Attachment Interview (AAI, George et al., 1996) is most widely used. In contrast to the SST, which observes attachment behavior, the AAI records states of mind regarding attachment, the IWMs, in the context of close relationships. For a detailed description see Hesse (2008). In the approximately one-hour long interview, participants are questioned about their attachment relationships in childhood with special focus on (1) loss, separation and rejection, (2) emotional upsets, hurts, abuses, and sickness, (3) love and acceptance with each caregiver. After a general question to open the interview, participants are asked to name five adjectives for each caregiver, followed by the request to give examples of memories associated with these adjectives. After the recollection of memories participants are asked whether and how they are affected by these experiences in their adult personality. The coding of the AAI does not merely focus on the content, but more on how the memories are told and how coherent the participant's reflections are (Main et al., 2008).

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Another approach, mainly used in clinical settings, is the Attachment Style Interview (ASI, Bifulco et al., 2002), which is less specialized than the AAI and therefore more time-efficient for use in the everyday working life of practitioners. The ASI is designed to measure the underlying attachment insecurity of different attachment styles in close relationships in a 30-minutes-interview. The ability to build close relationships (with partner and/or 1-2 close supporters, whom the interviewed person confides in) is focused on during the interview. “The authors postulate that insecure styles are in fact best seen as strategies for dealing with interpersonal problems at the more extreme insecure level.” (Bifulco et al., 2002, p. 51)

Based on eight scales, risk factors for attachment insecurity are coded on a rating scale from marked (1), over moderate (2), and some (3), to no/little (4) presence of the risk characteristic. Patterns of these risk characteristics are associated with five attachment styles, as presented in Table 8. The attachment styles Clearly Standard/ Secure, Enmeshed and Fearful are consistent with other measures (Bartholomew & Horowitz, 1991), but the Dismissive style is subdivided into Angry-dismissive and Withdrawn-avoidant on the basis of the degree of conflict and anger reported in close relationships.

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Table 8

Attachment Styles and Associated Typical Subscale Levels of the ASI

	Enmeshed	Fearful	Angry- dismissive	Withdrawn	Clearly Standard/ Secure
Desire for engagement	High	Moderate	Low	Low	Moderate
Self-reliance	Low		High	High	Moderate
Intolerance of separation	High			Low	Low
Attitudinal constraints on closeness	Low	High		High	Low
Ability to make and contain relationships	Poor/ low	Poor/ low	Poor/ low	Poor/ low	Good/ high
Fear of intimacy		High		Low	Low
Mistrust	Low	High	High	High	Low
Anger			High	Low	Low

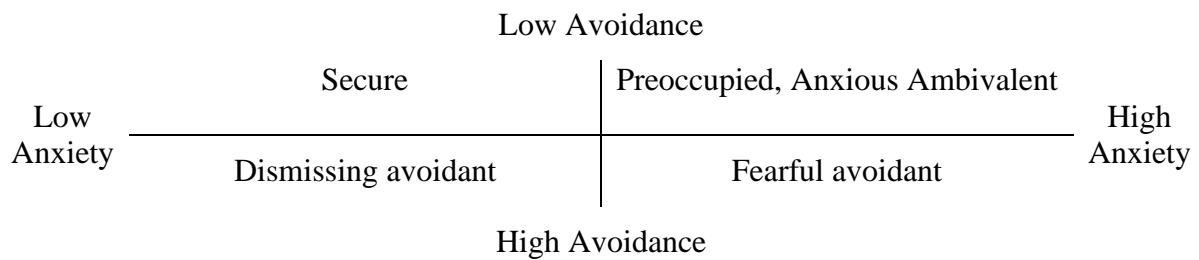
Note. Based on the descriptions of the ASI attachment styles in Bifulco et al. (2002, pp. 58-59).

Several self-report measurements are available as well, ranging from four item questionnaires mainly describing the four measured attachment styles (Asendorpf et al., 1997; Bartholomew & Horowitz, 1991), to self-reports on the basis of an interview type design, for example the Vulnerable Attachment Style Questionnaire (VASQ, Bifulco et al., 2003), which measures attachment on two scales, proximity seeking and insecurity of attachment and is based on the ASI. The VASQ, in contrast to other self-report measures, does not measure attachment style (avoidance or anxiety), but the underlying severity of overall attachment

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insecurity. The VASQ scores, however, are related to the ASI attachment styles (see Bifulco et al., 2003, p. 1104). For the VASQ total score, highest mean scores were associated with the Fearful, followed by the Enmeshed attachment style, and the lowest means were associated with Withdrawn and Clearly Standard/Secure. For the VASQ proximity seeking subscale, highest mean scores were associated with the ASI Enmeshed attachment style, followed by Fearful. Clearly Standard/Secure was associated with moderate scores on the proximity seeking subscale. For the VASQ insecurity subscale, highest scores were associated with the Angry-dismissive style, followed by Fearful, and lowest scores were associated with Withdrawn and Clearly Standard/ Secure (comparable to the overall scale). The VASQ total score and the VASQ insecurity subscale were significantly associated with the insecurity measured in the ASI. For a time-efficient, and still reliable assessment of attachment insecurity, the VASQ insecurity subscale is used in recent research.

Two dimensions underlie attachment insecurity in other self-report measures, attachment avoidance and attachment anxiety (Mikulincer & Shaver, 2019). The interplay of these two dimensions leads to four patterns of attachment as shown in Figure 10. Adults high on the dimension of attachment avoidance value autonomy and independence and are uncomfortable with intimacy. When aroused they deactivate their attachment system and rely on themselves, rather than seeking support from others. Adults high on the dimension of attachment anxiety, in contrast, are preoccupied with relationships and the fear of separation. Their need to feel loved and strong desire for closeness is combined with uncertainty and worries about whether they are loved by others. Arousal leads to a hyperactivation of their attachment system. “Dangers are exaggerated, anxiety emphasized, and over-dependence increased. Emotions get intensified and heightened.” (Howe, 2011, p. 63). A combination of high attachment anxiety and high attachment avoidance is often classified as disorganized and associated with the greatest maladjustment, since self-soothing and effective coping strategies in situations of arousal are hard to find or not sufficient (Zimmer-Gembeck et al., 2017).

Figure 10*Adult Attachment Styles Defined by Anxiety and Avoidance*

Note. Adopted from Howe (2011), p. 62, based on Bartholomew (1990).

3.2 Patterns of Attachment in Adulthood

Consistent with the four patterns of attachment presented in Figure 10, the AAI also recognizes four attachment styles that are comparable to the classifications in early childhood (Hesse, 2008; Main et al., 2008): Secure-autonomous or Free to Evaluate (F, comparable to infant secure attachment B), Dismissing (D, comparable to infant avoidant attachment A), Preoccupied-entangled (E, comparable to infant ambivalent attachment C), and Unresolved-disorganized (U, comparable to infant disorganized attachment D). After several interviewees were not classifiable based on the four adult classifications mentioned beforehand, two additional adult classifications were added. The added classifications are cannot classify (CC, including cooccurring dismissing and preoccupied states of mind) and Helpless-hostile (HH), the latter of which is mostly found in adults who have experienced abuse and neglect in their childhood (Hesse, 2008; Milot et al., 2014). Descriptions of the different attachment classifications are given in Table 9. These descriptions overlap with attachment styles classified based on the ASI. Since the AAI is widely used in research, a detailed description of the AAI attachment classifications is necessary for further understanding. Bartholomew (1990) developed an overview of the underlying models for adult IWMs of self and others for the four main adult attachment styles (see Figure 11), which can be compared to the IWMs in infancy (see ABC-D model in Figure 5, Chapter 1.2).

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Figure 11

Styles of Adult Attachment (adapted from Bartholomew, 1990, p. 163)

		Model of Self (Dependence)	
		Positive (Low)	Negative (High)
Model of Other (Avoidance)	Positive (Low)	Secure Comfortable with intimacy and autonomy	Preoccupied Overly dependent
	Negative (High)	Dismissing Denial of attachment Counter-dependent	Fearful Fear of attachment Socially avoidant

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Table 9

Descriptions of AAI Adult Attachment Classifications

Attachment Classification	Behavior in the Interview	Prevalence
Secure-autonomous Free to Evaluate (F)	Responses are internally consistent, clear and relevant answers, reflection and realistic evaluation of emotional experiences is possible, value attachment relationships, but are objective about quality and care	55-60 % in non-clinical populations ¹
Dismissing (D)	Attachment-related and emotional experiences are glossed over, positive, even idealized statements about parents and care, no specific examples, dismissal of influence on adult personality, self is presented as strong, unaffected by negative experiences	15-23 % ¹
Preoccupied-entangled (E)	Confused, enmeshed, even angry manner of talking about attachment-related experiences and parents, focus on relationships (who was loved and who not, who was available and who wasn't, ...), inconsistent and confusing stories, interviews tend to be long	10-15% ¹
Unresolved-disorganized (U)	Adults might become absorbed by past memories, loss, and trauma, fails to understand the past and influence on adult life, not able to regulate strong arousal when painful, unresolved memories are triggered by current events. Secondary classification of autonomous, dismissing, or preoccupied.	10-15% ¹
Cannot classify (CC)	Mixture of dismissing and preoccupied	
Helpless-hostile (HH)	Clear signs of abuse or neglect of caregiver and identification with the same	Up to 64% in risk samples ²

Note. Based on Howe (2011, pp. 58-60); 1: Bakermans-Kranenburg and van IJzendoorn (2009); 2: Milot et al. (2014).

3.3 Stability of Attachment from Infancy to Adulthood

The stability of attachment from cradle to grave was one of the core assumptions of attachment theory, but Bowlby (1988) hypothesized that IWMs are open for revision based on real experiences in close relationships. Research to date has revealed that there is moderate stability regarding attachment from infancy to adulthood (Meins et al., 2018; Mikulincer & Shaver, 2007; Pinquart et al., 2013). Two periods of change have been observed, early childhood and adolescence. Opie et al. (2020) found that security was the most stable attachment classification in early childhood, whereas attachment insecurity often changed in severity or display. Pinquart et al. (2013) found that in high-risk samples children were more likely to change from secure to insecure than in the other direction. In adolescence, attachment seemed to be less stable than in adulthood (Jones et al., 2018). In addition, adolescents tend to be more frequently classified as dismissing compared to normative adult samples and display the highest instability (van IJzendoorn & Bakermans-Kranenburg, 2010).

For adult attachment two models have been proposed by Fraley (2002): the prototype and the revisionist model. The prototype model states that early attachment experiences are preserved over time and have strong predictive value on later attachment behavior. In contrast, the revisionist model is based on the assumption that IWMs are adaptive and do not reflect earlier attachment patterns. Research has mainly supported the prototype model of attachment, showing moderate stability of attachment security over the first 19 years of life (Fraley, 2002). There seems to be a stable factor underlying temporal variations in attachment (Fraley et al., 2011). However, particularly life-changing events, like the birth of a child (Stern et al., 2018), divorce of parents (D'Rozario & Pilkington, 2021), separation from a partner (Guzmán-González et al., 2019), or traumatic experiences in relationships (Yuspendi et al., 2018), can lead to the reorganization of IWMs. Nevertheless, even first-time mothers showed stability in their attachment during the first two years after birth (Stern et al., 2018), and women who experienced violence in their relationships only showed slight shifts in their

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attachment organizations supporting the prototype model of attachment stability (Yuspendi et al., 2018). In a recent longitudinal multi-wave study, Fraley et al. (2021) found that in response to certain life-events (e.g., change of job, new relationships) immediate changes in IWMs could be observed, but most individuals returned to their pre-event level of security/insecurity after some time. For some participants enduring changes could be observed if several life-events occurred that were all positively (or all negatively) construed. For intergenerational stability of attachment, Fonagy et al. (1991) found a 75 % accordance between maternal AAI ratings and infant attachment at the age of one year, predicting secure vs. insecure attachment.

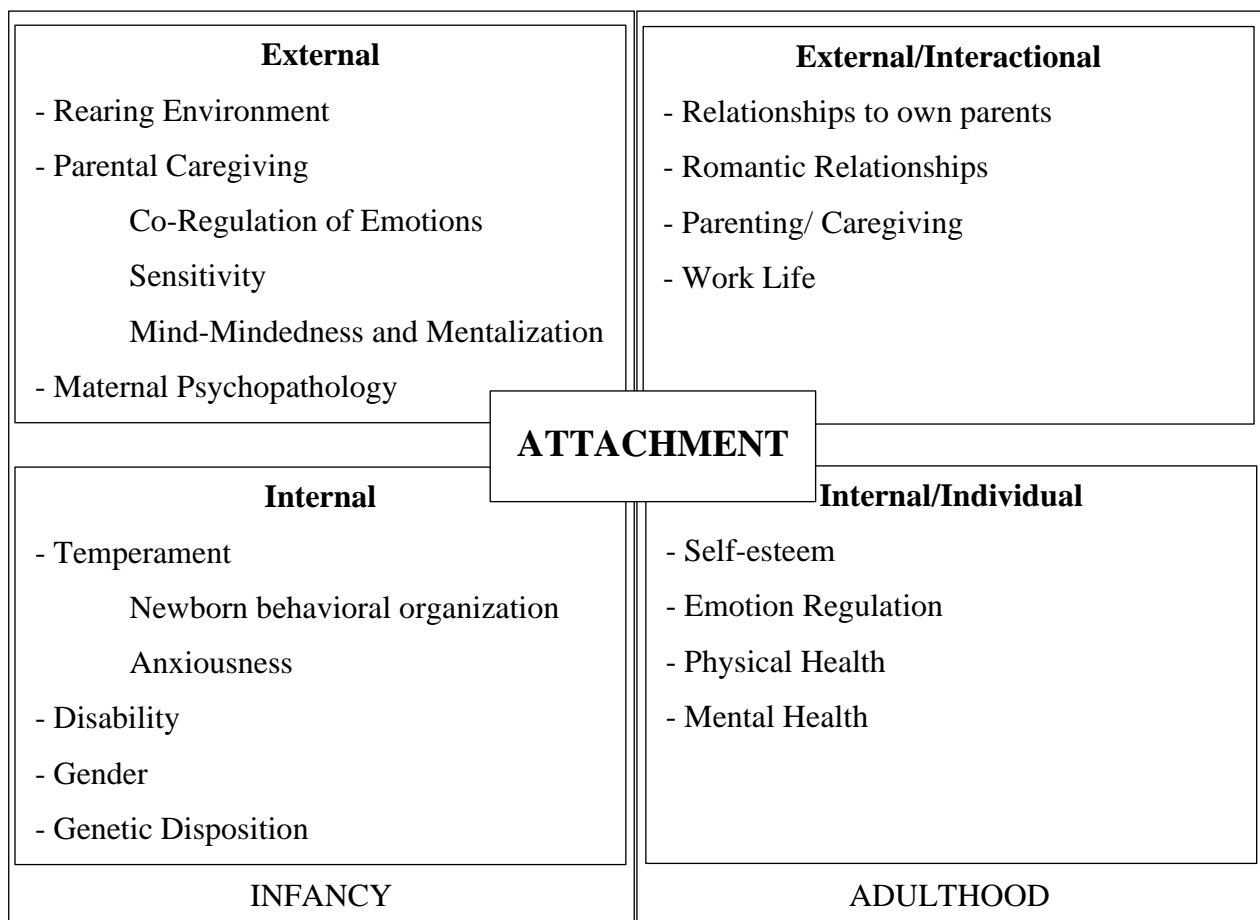
3.4 Correlates of Attachment in Adulthood

Assuming a relatively stable attachment in adulthood, adults have their own typical way of building relationships and dealing with distress in various situations. The following paragraphs give a short overview of correlates of attachment that have been found so far.

Figure 12 summarizes these findings and is an extension of Figure 6 (chapter 1.3).

Figure 12

Correlates of Attachment in Infancy and Adulthood



Note. Self-developed graphic for overview.

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Internal/Individual Correlates of Attachment in Adulthood

Before looking at the role attachment plays in different relationships, individual differences based on attachment styles are evaluated in the next paragraphs.

Self-esteem

Self-esteem stems from relationships with others and is the result of self-evaluations (Sroufe, 2002). In attachment theory, experiences with close others are organized in IWMs. IWMs are the core of attachment in adulthood since they influence the perception, evaluation and reaction to social situations. As shown in Figure 5 (Chapter 1.2) and Figure 11 (Chapter 3.2), different attachment styles are characterized by typical IWMs. It becomes obvious that positive Models of the Self are associated with higher self-esteem than negative Models of the Self. Attachment security is associated with feelings of self-worth and importance (Sroufe, 2002). For adolescents, Keizer et al. (2019) found that positive changes in parent-adolescent attachment relationships led to improved self-esteem. In an analysis of 571 students, Bylsma et al. (1997) showed data supporting the hypothesis that secure and dismissing attachment is associated with higher self-esteem than fearful and preoccupied attachment styles (compare Figure 5, Bartholomew, 1990).

Emotion Regulation

IWMs that are developed based on the experiences of caregiver responses to emotional needs (see Figure 1, The Circle of Security) during childhood are the basis for later emotion-regulation in stress-evoking situations (Bowlby, 1969, 1980; Mikulincer & Shaver, 2019). Secure attachment is associated with a more positive sense of self and the perception of others as reliable and available during times of need, whereas insecure attachment is related to a more negative view of the self and the perception of others as unreliable, unresponsive and unavailable when support is needed (Mikulincer & Shaver, 2019). Attachment theory is closely linked to emotion regulation, because the experiences in early childhood form the perception of emotions (How do I feel?) and social responses (What do I do with these

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feelings?), i.e. later coping mechanisms (Zimmer-Gembeck et al., 2017). Based on their degree of attachment anxiety and attachment avoidance (compare Figure 10), adults tend to use different coping mechanisms. For those adults who display high attachment anxiety, worrying about the availability and responsiveness of others is characteristic. In comparison, those with a high level of attachment avoidance are more likely to rely on themselves, remain independent and even create distance during stressful times (Mikulincer & Shaver, 2019). Securely attached adults, with low levels of attachment anxiety and attachment avoidance, on the other hand, seek support from others or “have more comforting internalized attachment figures available to them” (Gardner et al., 2020, p. 126). In conclusion, the IWMs become closely related to emotion regulation in adolescence (Allen & Miga, 2010) and adulthood (Zimmermann, 1999). In a recent analysis of $N = 658$ young adults, Gardner et al. (2020) found five clusters of attachment-specific emotion regulation: secure regulated (19%), disorganized unregulated (21%), anxious unregulated (16%), emotive (21%), and avoidant suppressor (22%). Each group was characterized by a unique pattern of emotion regulation strategies, whereby the secure regulated group were reported to have significantly fewer maladaptive strategies (withdrawal, retribution, rumination, and emotional maladjustment), and the disorganized unregulated group were reported to have the poorest function concerning all strategies.

Physical Health

Problems in emotion regulation become especially obvious in regard to coping with stress, for example as seen in cardiovascular reactions (Griffin & Howard, 2021). Attachment insecurity has often been hypothesized to be a risk factor for diseases and chronic illnesses based on the pathoplasty model (Clark et al., 1994), which states that a personality variable (in this case attachment insecurity) influences the expression and course of diseases. In an analysis of the U.S. National Comorbidity Survey Replication ($N = 5645$), McWilliams and Bailey (2010) supported this idea. They found that secure attachment was not related to health

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issues. Avoidant attachment was however related to diseases associated with pain (e.g., headaches) and anxious attachment was associated with numerous health conditions, including cardiovascular diseases (e.g., stroke, heart attack). To further evaluate their findings, McWilliams and Bailey (2010) investigated whether attachment accounted for unique variance in the health conditions beyond affective disorders and alcohol- or substance-abuse. Anxious attachment was shown to be associated with chronic pain, stroke, heart attack, high blood pressure, and ulcers.

For older adults, associations of preoccupied attachment with altered sleeping patterns (more daytime-napping and more use of sleep-inducing medicine) were found (Verdecias et al., 2009). In contrast, attachment security was found to be associated with better sleep, better emotion regulation, and health (Arsiwalla, 2017). A recent review supported the hypothesis that attachment insecurity is a risk factor for physical health and demonstrated that attachment insecurity was associated with dysregulated physiological responses to stress (e.g., hypothalamic–pituitary–adrenal axis responses, cardiovascular responses, immune responses), risky health behavior (e.g., substance use, diet), susceptibility to physical diseases, poorer treatment compliance, and poorer outcomes (Pietromonaco & Beck, 2019). Puig et al. (2013) could even predict higher rates of physical diseases based on insecure SST ratings in infancy in a longitudinal study with $N = 163$ participants who were observed for 32 years after birth. Recent research, however, has demonstrated that insecure attachment was positively related with physical and mental diseases. In a mediation model with emotion regulation as the mediator, only attachment anxiety was found to be related to vegetative, agoraphobic, social phobia symptoms and the global symptom severity index (including several symptoms associated with poor health). Emotion regulation difficulties mediated these relationships (Lewczuk et al., 2021).

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Mental Health

Comparable to physical health, the effect of stress-evoking situations can also lead to mental health problems. A huge body of research supports the hypothesis that attachment insecurity is a risk factor for mental health (summary in Mullen, 2019). In recent years positive associations between attachment insecurity and medically unexplained chronic pain (McWilliams, 2017), depressive symptoms (Kadir et al., 2017), anxiety (Falgares et al., 2019), and eating disorders (Tasca, 2019) have been found and support earlier findings (Bakermans-Kranenburg & van IJzendoorn, 2009; Bifulco et al., 2003; Bifulco et al., 2002; van IJzendoorn et al., 1999). Disorganized attachment, in particular, is a risk factor for mental health problems (Naveed et al., 2020; Vasileva & Petermann, 2018). Attachment insecurity was also found to be related to a wider use of mental health care services in the U.S. (Meng et al., 2015). In a study of $N = 274$ survivors of institutional abuse, Carr et al. (2009) classified 44% as displaying fearful attachment. This group of survivors had the most psychiatric diagnoses, marital problems, traumatic symptoms, and the worst global functioning.

Regarding possible mediators of these associations between attachment and mental health, a recent study by Dobson et al. (2022) found that if the recollected caregiver sensitivity was high, mental health outcomes were less severe than when the recollected caregiver sensitivity was low and attachment insecurity was present. The adverse effect of attachment insecurity on mental health is often associated with mentalization deficits (see Chapter 1 on mentalization), because insecurely attached adults display problems in mentalization, as for example assessed in the reflective functioning in the AAI (Main et al., 2008). Current research supports the idea that mentalization capacity is reduced in patients with insecure attachment (Fischer-Kern et al., 2013) and that better mentalization leads to better therapeutic outcomes (Kuipers et al., 2017), pointing the way to a possible effective treatment based on the improvement of mentalization capacity.

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External/Interactional Correlates of Attachment

The aforementioned internal/ individual correlates of attachment all influence interactional behavior of adults. Bowlby (1977) argued that IWMs not only influence physical and mental well-being over the life span, but also the way relationships are formed and adults live in them. Four main areas of adult life are, therefore, more closely examined in the following regarding the effect of relationships on adult attachment and vice versa.

Relationships to Own Parents

The relationship mostly affecting the attachment system and the formation of affectional bonds in infancy is the parent-infant relationship (Bowlby, 1988). Early studies found that significant continuity in parental relationships from infancy to adulthood (Pearson et al., 1993), influenced caregiving towards the elderly parents (Cicirelli, 1983). If adults felt close to their elderly parents, they supported them to a greater extent and were willing to offer more help in the future. The higher age expectancy and resulting longer periods of time children and parents have together pose new challenges for the child-parent relationship (e.g., divorce of parents, death, moving, necessary caregiving) which challenge IWMs and the perception of parents as a secure base well into adulthood (Krause & Haverkamp, 1996). The relationship of adults and their older parents is based on earlier experiences, but also faces change (Bowlby, 1988). The growing autonomy of adult children paired with the need for support or care for older parents is likely to challenge the relationship (Krause & Haverkamp, 1996), especially when the asymmetric roles are reversed and children become the caregivers.

Typical patterns of interaction between adult children and their parents can be found in the literature. A recent meta-analysis (Kim et al., 2021) of $N = 56$ studies showed that attachment insecurity in adulthood was related to codependent relationships with older parents (especially strong relationships between these factors were examined in South Korea), which highly influenced the adult life through overprotecting and -expecting behaviors of the parents

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(e.g., control of decisions, parenting behavior, choosing of spouse). Independent parent-child relationships, however, were negatively correlated with attachment insecurity.

Another recent study (Santona et al., 2019) of $N = 411$ students found a significant relationship between attachment towards parents and romantic attachments: For male students, insecure father-son attachment was associated with higher levels of both anxiety and avoidance in romantic relationships. This was not found for females with insecure mother-daughter attachment. Earlier findings support the idea of an intergenerational circle of attachment insecurity in relationships shaped by parent-child experiences and influencing romantic relationships (Einav, 2014; Erzar & Erzar, 2008; Owens et al., 1995).

Romantic Relationships

The main difference between parent-child relationships and romantic relationships is that the parent-child asymmetry of caregiving and care-receiving is more balanced. Romantic partners are equal partners both being the caregiver and the receiver at times (Howe, 2011). Clearly, if both partners serve as a secure base and a secure haven for each other, and are responsive to their partner's signals, a secure, stable, and satisfying relationship is most likely (Collins & Ford, 2010). Hazan and Shaver (1987) were the first to conceptualize romantic relationships as an attachment process. They found that adults switched their main attachment figure from the parents to the romantic partner in adulthood, even though older parents remained important as additional attachment figures. It may take up to two years until the partner is perceived as a secure base and a secure haven (Hazan & Zeifman, 1994). Attachment security can even be enhanced in stable and self-assuring relationships (Mikulincer & Shaver, 2007). Attachment insecurity, on the other hand, can have adverse effects on romantic relationships. Feeney and Collins (2003) studied motivations for caregiving in $N = 194$ romantic couples. For avoidant adults they found that they "tended to endorse aversive (avoidance) motives. Specifically, they often failed to provide care to their partners, because they were uncomfortable with their partners' distress, perceived that helping

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would lead to negative consequences (e.g., that their partners would be difficult to interact with or would lack appreciation), and because their partners were too dependent on them” (Feeney & Collins, 2003, p. 205; cited according to Howe, 2011). A recent study introduced touch as a helpful resource in order to overcome attachment avoidance in relationships: Debrot et al. (2021) found that attachment avoidance was associated with less touch and relational well-being, but touch was associated with greater well-being regardless of the level of attachment avoidance.

In contrast to avoidant partners, who might keep a bigger distance, anxious or preoccupied partners strongly rely on relationships to boost their feeling of security while being unsure whether they are sufficiently loved or can love to the right extent (Mikulincer & Shaver, 2007). Their ambivalence leads to instable relationships of high intimacy, where they try to control their partners, and have feelings of rejection and insufficiency. Their anxiety of being left alone keeps them in relationships even though they are unhappy. Spouses in stable, unhappy marriages were found to report the highest levels of attachment insecurity compared to happily married spouses and divorced spouses (Davila & Bradbury, 2001).

An even more adverse pattern can be observed in relationships with disorganized partners. Their relationship behavior is characterized by hyperactivation (ambivalent) and deactivation (avoidant) strategies in turns, which leads to a circle of forced intimacy and fearful avoidance. Fearful-avoidant partners are additionally characterized by negative views of their romantic partners and their relationships are often burdensome, instable, and include violence (Mikulincer & Shaver, 2007). Disorganized attachment in adulthood is linked to internalizing symptoms and externalizing behavior, comparable to childhood (Paetzold et al., 2015), and is perceived as a risk factor for partner abuse (Obsuth et al., 2014). The closeness of attachment anxiety and of attachment disorganization to Borderline Personality Disorder underlines the limitation in romantic functioning in people with these types of attachment styles (Smith & South, 2020).

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Parenthood/Caregiving

Since parenting has huge effects on the development of attachment, the association between adult attachment and parenthood is of particular interest in attachment research. The transition to parenthood is often perceived as stressful and attachment styles can influence the level of parenting stress (Nygren et al., 2012). Supportive co-parenting relationships can reduce parenting stress and attachment anxiety (Schoppe-Sullivan et al., 2016). Attachment security is associated with sensitivity (Behrens et al., 2016) and a high-degree of mentalization in caregiving (Fonagy et al., 2011), whereas attachment insecurity is associated with deficits in these parenting skills (e.g., Dejko-Wańczyk et al., 2020) and reduced parenting self-esteem (Calvo & Bianco, 2015). The underlying representations of parents (their IWMs) influence their parenting (George et al., 1996). In a recent meta-analysis focusing on the comparison of adult with attachment security and insecurity, Kim et al. (2021) found positive correlations between both attachment avoidance and attachment anxiety with authoritarian parenting style, and negative correlations between the two measures of attachment insecurity and authoritative parenting style.

The role attachment plays in parenting is apparent in parent-child interactions. Olsavsky et al. (2020), for example, observed parents (182 mothers and 182 fathers) interacting with their infants at three and nine months postpartum:

Path analyses revealed that fathers had the lowest observed negative parenting behavior at 3 months postpartum when they were low in anxiety and mothers were also low in anxiety or avoidance. At 9 months postpartum, greater attachment avoidance was associated with lower observed positive parenting behavior and higher observed negative parenting behavior regardless of parent gender. Moreover, when mothers were more anxious and fathers more avoidant, mothers exhibited greater negative parenting behavior; when mothers were more avoidant and fathers more

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anxious, mothers exhibited less positive parenting behavior. (Olsavsky et al., 2020, p. 821)

Comparable findings led to attachment-based interventions like the Circle of Security Project (Marvin et al., 2002), to help parents overcome their attachment style typical reactions to their children by reflecting on them and improving parent-child relationships. A closer description of parent behavior illustrated in the Circle of Security and the Circle of Limited Security can be found in the descriptions of Figure 1 and 4 in Chapter 1. Individual interventions based on the parent-child typical interaction patterns proved to be very effective in changing parent behavior and as a result child behavior.

Work Life

Attachment does not only play an important role in close relationships in private life, but impacts work life as well. Attachment insecurity, especially a reduced ability for mentalization, has been shown to be connected to unemployment and mental disorders which are related to problems in job acquisition and obtaining a job (Bly et al., 2012). Research in the last decade has started to focus on the relationships between adult attachment styles and work behavior. For organizational commitment, attachment style related behaviors have been found: Workers classified as secure based on the AAI displayed higher affective commitment than avoidant and preoccupied workers. Avoidant workers had higher normative organizational commitment scores, and continuance commitment was higher in preoccupied workers (Scrima et al., 2015). The latter finding is similar to behavior of preoccupied spouses, who tend to stay in relationships despite their unhappiness (Davila & Bradbury, 2001). Career choices of young adults have also been found to be related to attachment, most importantly the attachment to the romantic partner, leading to different levels in self-concept clarity which influences career related decision-making (Kvitkovičová et al., 2017). Moreover, attachment security was shown to be associated with career adaptability and well-being when faced with career transitions (Ramos & Lopez, 2018). In addition, Jiang (2017) analyzed the reaction of

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employees in the U.S. when faced with job insecurity. Secure attachment buffered the effect of the state-level unemployment rate on job insecurity and mitigated the negative effect of job insecurity on job satisfaction. Secure attachment, thus, was found to be a resilient factor and helped to cope with job insecurity in a constructive way.

In stressful jobs, attachment seems to be very relevant. Landen and Wang (2010) found that firefighters' attachment insecurity (avoidance and anxiety) was negatively related to psychological well-being. Rahimnia and Sharifirad (2015) analyzed $N = 212$ health care providers with patient contact in regard to the relationships between authentic leadership and employee well-being (job satisfaction, perceived work stress, and stress symptoms) and the mediating role of attachment insecurity. They found that attachment insecurity did indeed mediate the role between authentic leadership and employee well-being. They also found attachment insecurity to be positively related to work stress and stress symptoms, and negatively related to job satisfaction. Attachment insecurity was also shown to mediate the effect of authentic leadership on stress parameters.

Study B in Chapter 4 focuses on teacher burnout and its relationship with attachment insecurity. See the following chapter for an overview on current studies on attachment and burnout and underlying models (e.g., job demands-resources model).

4. Study B: How Teacher Burnout is Associated with Teachers' Attachment Insecurity and Emotions – A Vulnerability-Stress

Approach

Abstract

Given the high numbers of teachers suffering from stress and burnout symptoms, the detection of possible predictors of teacher burnout is necessary for burnout prevention. In this context, we applied the vulnerability-stress model to explain the development of burnout. To complement previous burnout research, we conducted two studies focusing on the association of vulnerability factors (gender, job experience, and attachment insecurity) with job burnout, as well as the relationships between current stressors (observed by the degree of teacher emotions) and job burnout: In Study 1, a cross-sectional study of $N = 247$ teachers (70.3 % female), we found a positive relationship between attachment insecurity and job burnout, even when controlling for gender, job experience, and positive and negative teacher emotions. In Study 2, we conducted a longitudinal study in a separate sample of $N = 91$ teachers (58.2% female) to confirm these findings over the course of a whole school year. Beyond rather strong autocorrelative effects for burnout from the beginning to the end of the school year and higher burnout ratings for female teachers, attachment insecurity significantly predicted end-of-year burnout ratings. Based on our findings, focusing on the improvement of vulnerability by enhancing stress regulation seems to be a possible new perspective on burnout prevention in teachers.

Keywords: attachment insecurity, burnout, teaching, teacher emotions, burnout prevention

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For better readability in this work, identifying information of authors and affiliates are not anonymized.

4.1 Introduction and Theoretical Background

Teaching is among the occupations with the highest strains and reported levels of stress (Hagermoser Sanetti et al., 2020; Junker et al., 2021; Pyhältö et al., 2011). While a recent meta-analysis (García-Carmona et al., 2019) showed that secondary school teachers are at high risk of burnout, only few studies focus specifically on this group of teachers. The aim of this study is to advance knowledge on teacher burnout and its development in secondary school teachers based on a vulnerability-stress approach (Ingram & Luxton, 2005) to find new pathways for stress reduction and burnout prevention.

Teacher Burnout

Burnout was first described by Freudenberger (1974) and later defined by Maslach (1981) as a syndrome of high emotional exhaustion, depersonalization, and reduced personal accomplishment or lack of achievement. Burnout is a stable, negative emotional state related to chronic work stress (Maslach, 1993; Schaufeli & Enzmann, 1998) and often leads to health problems (Honkonen et al., 2006). Especially people working in contact with other individuals are prone to suffer from burnout symptoms (Maslach et al., 2001). For German teachers, it is assumed that 3-5 % suffer from burnout, but valid data are missing and prevalence rates are greatly varying (Scheuch et al., 2015). Blossfeld et al. (2014), for example, reported prevalence rates for job burnout between 11 and 57%, depending on different school types and cut-off criteria based on different measurements. According to a recent review and meta-analysis by García-Carmona et al. (2019), more than a third of the secondary school teachers, in the 45 studies included in their analysis, reported high levels of burnout. In line with findings from other countries, German teachers report more mental and psychosomatic illnesses than the general population (Scheuch et al., 2015). Consequently, teachers show higher drop-out and early retirement rates due to psychosomatic health issues (Weber et al., 2004). In 2017, 12% of the retirements of German teachers were caused by disability for service (Statistisches Bundesamt, 2017).

Explanation Models for Teacher Burnout

Concerning job burnout in general, the job demands-resources model (JDR model) was theoretically developed as an explanatory model based on previous burnout research (Bakker et al., 2003; Demerouti et al., 2001). The JDR model states that burnout evolves from a combination of external demands and resources that are accessible for an individual, and research based on this model mainly focused on job, institutional, and organizational characteristics (Guthier et al., 2020; Hillert et al., 2013; Scheuch et al., 2015). The JDR model was later extended to include personal resources as well (Bakker & Demerouti, 2007), which mediated the influence of job demands on burnout in several studies (Guidetti et al., 2019; Huang et al., 2016). For example, female and less experienced workers reported higher burnout rates than their male and more experienced colleagues (Marchand et al., 2018; West et al., 2018), and younger and female university teachers suffered from higher emotional exhaustion (Watts & Robertson, 2011).

Regarding teacher burnout, Maslach and Leiter (1999) developed a specific model that integrates possible influencing factors of teacher burnout (political and economic context of the school, organizational characteristics, task qualities, social support, and personal qualities) and its effects (teacher behavior, student perception and evaluation, student behavior and outcomes), which, then again, influence teacher burnout in reverse. Recent research supports the influence of individual characteristics on burnout, such as teachers' self-efficacy, self-concept, and cognitive and behavioral coping resources (Bermejo-Toro et al., 2016; Yu et al., 2015; Zhu et al., 2018), as well as the effect of teacher burnout on teacher behavior, such as teacher engagement (Abós et al., 2019) and classroom management competencies (Bottiani et al., 2019). A recent study of our research group found a negative correlation between teacher-class relationship and teacher burnout (Roza et al., 2021). In line with the findings of a meta-analysis by Alarcon et al. (2009) emphasizing the importance of personality traits for the

development of burnout, we aimed to investigate the interplay of personal vulnerability and stressors on burnout.

The Vulnerability-Stress Model

The vulnerability-stress model explains the development of mental disorders based on the interplay of a person's vulnerability, their diathesis, and current stressors (Ingram & Luxton, 2005). A person's level of vulnerability is made up of different predisposing factors, among which can be genetics, biology, experiences, or personality traits. Stressors are life events that are perceived as stress-evoking. The perceived stress interacts with the personal vulnerability in such that if a threshold is surpassed, symptoms and disorders develop. The interaction of a person's predisposition and current stressors is individual and leads to the development of symptoms if the overall stress-level is too high. Consequently, if a person's vulnerability is high, few stressors are needed to cause impaired well-being, compared to a person that has a low level of vulnerability. This is an explanation for the fact that under comparable circumstances, some individuals develop disorders, whereas others do not (Ingram & Luxton, 2005). The vulnerability-stress model is often used to explain depression, anxiety, schizophrenia, or other psychopathologies (for an overview see Hankin & Abela, 2005), and can also be applied to burnout. Geuens et al. (2021), for example, analyzed data from 219 nurses to develop a vulnerability-stress model for nurse burnout.

In the interaction of vulnerability and the perception of stressors, vulnerability can influence the degree of stressors by shaping the way individuals perceive their environment and life events (Ingram & Luxton, 2005). Alarcon et al. (2009) found that workers with a neurotic personality perceived their working environment as being more negative than workers without a neurotic personality. For a person with the vulnerability of a neurotic personality, for instance, working situations are perceived to be more stressful and as a result more stressors are present in this person's life. In the context of vulnerability and stressors, we

concentrated on two factors that will be described more closely in their relationships with burnout.

Adult Attachment as Factor of Vulnerability for Burnout

One factor that is hypothesized to be predisposing for burnout is adult attachment insecurity. Adult attachment is conceptualized on the dimensions of attachment anxiety and attachment avoidance (Bartholomew, 1990; Mikulincer & Shaver, 2019). The interplay of these two dimensions leads to four patterns of attachment. (1) Adults low on the dimension of attachment avoidance and attachment anxiety are classified as secure. When they are aroused, they seek support from others and regulate their stress in contact with other people by talking about it or finding solutions. (2) Adults high on the dimension of attachment avoidance value autonomy and independence and are uncomfortable with intimacy. When aroused they deactivate their attachment system and rely on themselves, rather than seeking support from others. Stress is not regulated in contact with others. (3) Adults high on the dimension of attachment anxiety, in contrast, are preoccupied with relationships and the fear of separation. Their need to feel loved and their strong desire for closeness is combined with uncertainty and worries about whether they are loved by others. Arousal leads to a hyperactivation of their attachment system. They reach out to others when they are aroused, but are preoccupied with worries about the stability of the relationship so that stress is not effectively regulated in contact with others (Mikulincer & Shaver, 2007). A combination of high attachment anxiety and high attachment avoidance is often classified as disorganized and associated with the greatest maladjustment and insufficient stress-regulation (Zimmer-Gembeck et al., 2017). Thus, the presence of attachment insecurity (patterns 2, 3, and 4) might predispose an individual to burnout and influence the perception of stressors.

Following this line of thought, Pines (2004) hypothesized that secure attachment is an internal resource that helps to positively appraise and cope with burnout-causing situations. On the contrary, insecure attachment leads to negative appraisal, maladaptive coping

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strategies, and, thus, burnout. To test her theoretical assumptions, Pines conducted a series of five studies examining (1) Israeli MBA students, (2) Israeli human service professionals, (3) Hungarian social studies students, and two representative samples (each $N > 500$) of (4) the Jewish population and (5) the Arab population in Israel. In her studies, burnout was measured using the Burnout Measure (Pines & Aronson, 1988) and attachment using the Adult Attachment Style Measure (Hazan & Shaver, 1987), respectively. Pines found negative correlations between secure attachment and burnout, and positive correlations between both insecure attachment styles and burnout. According to a meta-analysis of ten papers on attachment and burnout in health and human service workers, these findings could be confirmed in cross-sectional designs (West, 2015). In a recent analysis of 50 burnout patients compared to a community sample, burnout patients were significantly more often classified as insecure in the AAI than controls (Söllner et al., 2016).

In the educational sciences, only one recent study on teachers' attachment and burnout can be found. Milatz et al. (2015) surveyed $N = 83$ female elementary school teachers. Burnout was reported using the German version of the Maslach Burnout Inventory (Enzmann & Kleiber, 1989). Attachment was measured assessing the attachment security towards an individual's mother with a scale based on the descriptions of secure and fearful attachment (Asendorpf et al., 1997). While they could not show a direct connection between attachment and burnout for primary school teachers, they found that secure attachment enhanced the teachers' capability to form close relationship with their students. Such close relationships, in turn, were negatively associated with depersonalization and emotional exhaustion. To broaden the perspective on typical adult attachment behavior, and going beyond the attachment towards an individual's mother, as Milatz et al. (2015) did, we assessed a person's general attachment insecurity in our study, with a special regard to attachment avoidance.

Since our study tries to combine vulnerability and stressors in the explanation of burnout, we focused on another personal factor influencing burnout in previous research.

Lazarus (1993, p. 10) states that

“Knowing, for example, that in a given encounter (or as a consistent pattern across encounters) this individual feels angry, anxious, guilty, sad, happy, or hopeful tells us much more than knowing merely that he/she is harmed, threatened, or challenged. Use of stress as a source of information about and individual’s adaptation to environmental pressures is extremely limited compared with the use of the full array of emotions.”

Emotions as Indicator of Current Stressors

Following Lazarus’ hypothesis that observed emotions are a valuable source of information on the person’s experienced adaptation to pressure, we observed teachers’ emotional experiences as indicators of the personal level of current stressors. Emotional experiences, hereby, are “an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism” (Scherer, 2005, p. 697). Frenzel et al. (2021) supported this definition of teacher emotions as evaluative reactions to the teaching-specific context, which are subjective and involve reactions on behavioral, physiological, and expressive level. To measure teacher emotions, we concentrated on the three discrete emotions, enjoyment, anxiety, and anger, most relevant for teachers (Frenzel et al., 2016).

Connecting emotional experiences and job burnout, Falkenberg (2014) proposed a theoretical model based on the burnout model by Maslach and Jackson (1984), which states that emotionally demanding contacts lead to withdrawal, avoidance, and distanced participation, which make interactions even more emotionally demanding. These negative emotional experiences can lead to emotional exhaustion, followed by depersonalization, and consequently lack of achievement. In Lazarus’ transactional theory of stress and coping,

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situations are interpreted as neutral, positive, or stress-evoking, and emotions are part of the secondary appraisal (Lazarus, 1991). Coping in stress-evoking situations is associated with anger and anxiety on the emotional level (Burisch, 2011).

As a result, burnout and emotions are closely related in the teaching context (Schutz & Zembylas, 2009; Zysberg et al., 2017). Teachers constantly evaluate the classroom-situation and these appraisals are antecedents of teacher emotions (Chang, 2013; Frenzel, 2014; Frenzel & Stephens, 2017). Chang (2009) introduced the theoretical hypothesis that unpleasant emotions are positively correlated with burnout. She argued that teachers' continual judgments of student behavior and their own teaching tasks lead to repeated experiences of unpleasant emotions, which consequently might lead to burnout. To prevent burnout, Chang (2009) proposed more studies on the antecedent appraisals of emotions, so teachers could understand their emotional reactions and learn to regulate their emotional experiences. This constantly necessary emotion regulation and emotional labor is linked to experienced discrete emotions (Lee et al., 2016).

One limitation of the aforementioned study by Milatz et al. (2015) was that they did not assess discrete emotions and therefore could not evaluate the impact of teacher emotions on burnout beside the relationship representations. To fill this gap, we assessed teacher emotions and tried to replicate relationships between burnout and positive and negative teacher emotions in the classroom (Keller et al., 2014).

The Present Study

The present study aims at examining the relationships between vulnerability and stressors for the development of job burnout. Attachment insecurity is hereby examined as predisposing factor for job burnout, in line with recent burnout research focusing on managers and subordinates (Ronen & Mikulincer, 2012), employees (Virgă et al., 2019), caregivers (Lenzo et al., 2021), and health workers (Copeland et al., 2020; West, 2015).

Hypothesis 1: Attachment insecurity is positively related to job burnout.

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To control for other vulnerabilities in the context of teacher burnout, we decided to include gender and job experience in all analyses. Gender has been shown to be related to job burnout (Alessandri et al., 2018; Hui et al., 2022), predisposing female teachers to burnout (González-Morales et al., 2010; Noor & Zainuddin, 2011). In addition, low job experience was found to predispose teachers to job burnout in several former studies (Ito, 2000; McCarthy et al., 2009).

Teaching can be seen as stress-evoking on many levels and leads to a variety of stress-evoking situations (Junker et al., 2021). The level of stress experienced by the observed teachers is seen in their emotional experiences (Lazarus, 1993). Based on the assumption of the vulnerability-stress model that stressors increase the overall stress-level and increase the likelihood of symptoms, we hypothesized that

Hypothesis 2: Positive emotions (joy during teaching) are negatively related to job burnout and negative emotions (anger and anxiety during teaching) are positively related to job burnout.

Since vulnerability can influence the perception of stressors (Ingram & Luxton, 2005) and attachment insecurity predisposes individuals to have negative views on the availability and support of others (Mikulincer & Shaver, 2019), we hypothesized that there is a relationship between attachment insecurity and experienced teacher emotions.

Hypothesis 3: Attachment insecurity is positively related to negative emotions (anger and anxiety during teaching) and negatively related to positive emotions (joy during teaching).

We hypothesized that attachment insecurity has additional value and leads to a stronger prediction of job burnout, even when controlling for discrete emotions and their influence on job burnout. By doing this, we advance the research by Milatz et al. (2015), who were not able to evaluate the impact of both attachment and teacher emotions.

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Hypothesis 4 (main hypothesis): A person's vulnerability of attachment insecurity is more important for the development of job burnout than the person's perceived class-specific stressors displayed in teacher emotions.

Our study is the first to include attachment insecurity and teacher emotions at the same time. Moreover, we focused on secondary school teachers, for which research is scarce (García-Carmona et al., 2019). Longitudinal studies are missing in the literature so far. Thus, to test our hypotheses, we conducted two studies: Study 1 is a cross-sectional study, in which we assessed job burnout, attachment insecurity, and class-specific emotions to evaluate their associations and compare the association of job burnout with the vulnerability of attachment insecurity, and the association of job burnout with the perceived level of stressors. To advance these findings, we conducted Study 2. Study 2 is a larger longitudinal study, in which we assessed burnout at the beginning and the end of the school year, and discrete emotions during teaching and attachment insecurity at the end of the school year. See Figure 12 for a detailed overview of the longitudinal analyses. There is no study, to our knowledge, which analyzed teacher emotions, attachment insecurity, and teacher burnout in a cross-sectional and longitudinal perspective. For all regression analyses conducted to test Hypothesis 4 (in Study 1 cross-sectional, in Study 2 longitudinal) we entered variables stepwise based on the vulnerability-stress model – starting with vulnerability variables (first sociodemographic variables, then attachment insecurity) and adding the current level of stressors captured in current teacher emotions afterwards.

4.2 Study 1 Methods

Sample and Procedure

In Study 1, our sample consisted of $N = 247$ teachers (70.3% female) from more than 40 different secondary schools in southern Germany (predominately Bavaria, 81.1%; Baden-Wurttemberg, 11.9%; other, 7%). On average, the teachers were $M = 43.83$ years old ($SD = 10.94$, $Min/Max = 28/66$ years), their working experience was $M = 13.21$ years ($SD = 10.36$, $Min/Max = 0/40$ years) and they taught a wide range of subjects. While most of them (87.9%) were teaching at either a lower-track school (14.2%; Mittelschule), a medium-track school (18.6%; Realschule), or a high-track-school (55.1%; Gymnasium), 12.1% taught at several school types simultaneously or other types of secondary schools (e.g. vocational schools). All data was collected using paper-pencil questionnaires between December 2016 and May 2017 as well as December 2017 and May 2018. Participation was voluntary, no incentives were handed out and all participants were recruited based on a convenience sampling approach (e.g. personal contact to schools or teachers). The questionnaires were handed out personally by trained student assistants or sent to the schools. Of all 483 invited teachers, 51.1% filled out and returned the questionnaires. This questionnaire return rate was highly satisfactory and exceeded that of similar paper-pencil studies (Taxer & Frenzel, 2015). For a close description of sample and recruitment see also previous publications from our research group (Frenzel et al., 2020).

The questionnaire consisted of three parts. In the first part, participants reported on their levels of job burnout. At the beginning of the second part, they were asked to randomly select a class they currently taught using the following prompting instruction (adopted from Frenzel et al., 2020, p. 5): “Imagine it is Tuesday after the first class period. Which class will you be teaching next, according to your schedule? (note down the class label, e.g., 6a). In responding to the following items, please refer to this particular group of students.”

Subsequently, teachers reported how they felt towards and while teaching this class in order to

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assess discrete class-specific teacher emotions. In the last part of the questionnaire, teachers reported on their sociodemographic status and their levels of attachment insecurity.

Attachment Insecurity. Teachers' attachment insecurity was measured using the 12-item subscale "insecurity" of the German translation of the Vulnerable Attachment Style Questionnaire (VASQ; Bifulco et al., 2003; Reck, Noe, & Bifulco, 2009). Response options ranged from 1 (completely disagree) to 5 (completely agree) on a Likert-scale (sample items: "I find it hard to trust others"; "It is best not to get too emotionally close to other people"). Internal consistency for the subscale "insecurity" was good (Cronbach's $\alpha = .87$). The second subscale of the VASQ "proximity seeking" was not included, since the insecure subscale has been shown to be sufficient to capture attachment insecurity as a stand-alone measure in earlier research (Bifulco et al., 2003). The attachment insecurity assessed on the insecurity subscale of the VASQ is found on the dimension of attachment avoidance.

Teacher Emotions. Teacher emotions during lessons were measured by the class-specific German version of the Teacher Emotions Scales, TES, (Frenzel et al., 2016). The TES assesses teachers' enjoyment, anger, and anxiety each by four items on a Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree) on a Likert-scale (sample items: "In this class I enjoy teaching" (Enjoyment), "In this class I often have reasons to get angry" (anger), and "When teaching this class, I am tense and nervous" (anxiety)). Internal consistencies for all subscales were good to excellent (Cronbach's α for enjoyment/anger/anxiety = .92/.87/.83).

Teacher Burnout. Burnout was assessed using the German translation of the Maslach Burnout Inventory (MBI; Enzmann & Kleiber, 1989; Maslach & Jackson, 1986), which conceptualizes burnout as the experience of emotional exhaustion, depersonalization, and lack of accomplishment during work. The subscale emotional exhaustion consists of nine items (e.g. "I feel emotionally drained by my work"), depersonalization of five items (e.g. "I really don't care about what happens to some of my students"), and lack of accomplishment of eight

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items (e.g. “I feel full of energy”; reversed). All items are answered on a scale spanning from 0 (never), 1 (several times a year or less), 2 (once a month), 3 (several times a month), 4 (once a week), 5 (several times a week), 6 (daily). In our study, we used the composite burnout scale consisting of all three subscales, which overall achieved good internal consistency (Cronbach’s $\alpha = .87$).

Statistical Analyses

All analyses in this study were conducted using the Statistical Package for Social Sciences (IBM SPSS v. 25.0). We calculated Pearson correlation coefficients for all study variables to present relationships between burnout and the assessed vulnerability (teachers’ gender, job experience, and insecurity of attachment) and emotional level of current stressors (enjoyment, anger and anxiety during lessons). To test our main hypothesis, we calculated a multiple regression analysis by regressing burnout on all independent variables. The multiple regression analysis was hierarchical to show the change in R^2 for all independent variables. Based on the vulnerability-stress model, we first entered vulnerability factors in the model, before entering the degree of current stressors assessed via emotional experiences during teaching. As a result, in Step 1 we entered the sociodemographic variables (teachers’ gender and job experience), followed by attachment insecurity in Step 2, and the discrete emotions (joy, anger, and anxiety) in Step 3. The assumptions of linearity, normality, independence, multicollinearity, and homoscedasticity were tested and satisfactorily met.

4.3 Study 1 Results

Descriptive Statistics

For an overview of the study variables see Table 10. Teachers' insecurity of attachment in our study was $M = 24.18$ ($SD = 5.96$ $VASQ_{min} = 13$, $VASQ_{max} = 50$), which is lower than in clinical samples (Bifulco et al., 2003; Reck et al., 2016).

Bivariate Correlations

Our results show moderately high correlations between job burnout and attachment insecurity as well as job burnout and teacher emotions (summarized in Table 10). Regarding the correlations between teacher emotions and attachment insecurity, small positive correlations were found concerning class-specifically experienced anxiety and anger. A small negative correlation was found between attachment insecurity and experienced joy (Hypothesis 3). Moreover, small positive correlations were found between job experience and attachment insecurity and teachers' gender and enjoyment.

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Table 10

Descriptive Statistics and Pearson Correlations of the Assessed Variables

	<i>M</i> (<i>SD</i>)	1	2	3	4	5	6	7
1. Job Experience		1	.001	.167*	-.083	.033	.045	.088
2. Gender ¹			1	-.087	.135*	-.057	-.016	.061
3. VASQ Insecurity	24.18 (5.96)			1	-.185**	.139*	.268**	.411**
4. TES Joy	4.0 (.87)				1	-.727**	-.668**	-.515**
5. TES Anger	2.12 (.92)					1	.675**	.443**
6. TES Anxiety	1.53 (.68)						1	.452**
7. MBI burnout	36.64 (15.67)							1

Note. ¹gender was dummy coded (0 = male, 1 = female); *M* = mean, *SD* = standard deviation,

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

Multivariate Analysis

A hierarchical multiple regression analysis revealed that the sociodemographic variables, teachers' gender and job experience, when entered at Step 1, explained 1,2% ($F(2,229) = 1.377, p > .05$) of the variance in teachers' job burnout. With attachment insecurity (VASQ) entered at Step 2, the model explained 16,3% of teachers' job burnout ($F(3,229) = 14.703, p < .01$). When the experienced enjoyment, anger, and anxiety (TES) were entered at Step 3, the overall regression model remained significant, $F(6,229) = 22.383, p < .01, R^2 = .376$. Of the six predictor variables, only attachment insecurity ($\beta = .317, t = 5.676, p < .01, \Delta R^2 = .151$) and enjoyment ($\beta = -.305, t = -3.560, p < .01, \Delta R^2 = .213$) significantly contributed to the model. The corrected R^2 indicates an explanation of variance of 35,9 %, which is considered a large-sized effect (Cohen, 1977). Consequently, these findings support our main hypothesis (Hypothesis 4) and show that teacher burnout is positively associated with attachment insecurity (vulnerability) and negatively with enjoyment while teaching (degree of current stressors) in a cross-sectional design. Table 11 presents the resulting three regression models from Study 1.

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Table 11

Regression Coefficients of Predictors of Teacher Burnout in Study 1

Variables	Step 1			Step 2			Step 3		
	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>
Job Experience	.078	.004	.238	.010	.004	.876	-.010	.003	.859
Sex	-.077	.096	.245	-.036	.089	.555	.003	.078	.957
Attachment Insecurity				.397	.084	<.01	.317	.076	<.01
Joy							-.305	.065	<.01
Anger							.141	.061	.097
Anxiety							.068	.076	.384
<i>R</i>	.109			.404			.613		
<i>R</i> ²	.012			.163			.376		
ΔR^2				.151			.213		

4.4 Study 2 Methods

For a longitudinal perspective on the relationship between teacher emotions and attachment insecurity and job burnout, we analyzed data from a larger longitudinal study to further test our main hypothesis.

Sample and Procedure

Study 2 was part of a longitudinal study assessing emotional, interactional, and performance developments over the school year 2018/2019 at 31 different secondary schools in Bavaria. Overall, $N = 91$ teachers (41,8% male, 58,2% female) were included in our study. Average age of participants was $M = 39,05$ years ($SD = 10,12$, range: 25-76 years) and their average working experience was $M = 9,82$ years ($SD = 8,62$, range: 0-33 years). Of all teachers, 38,7 % taught at lower-track schools (Mittelschule), 22,6 % at medium-track schools (Realschule), 26,9 % at high-track schools (Gymnasium), and 11,8 % at other school types, such as vocational schools.

All participants were recruited on school level. Participation was voluntary and no incentives were given. Teachers and their classes were not allowed to know each other before participation to minimize familiarity effects from earlier interactions. Participants answered questionnaires at four different times of measurement throughout the school year (for a closer description of the longitudinal study and all assessed variables see Schwartz et al., 2020; Schwartz et al., 2021). In our study, we analyzed data from the beginning of the school year (September/October 2018, baseline T0), and the end of the school year (June/July 2019, time of measurement T3).

As in Study 1, teachers' burnout levels were assessed using the German version of the Maslach Burnout Inventory (MBI), their attachment insecurity was assessed via the insecurity scale of the Vulnerable Attachment Style Questionnaire (VASQ), and discrete emotions while teaching were reported using the teacher emotion scales (TES) in regard to the class the teachers participated with in the study. Internal consistencies for these scales ranged from

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acceptable to excellent (see Table 12 for an overview of descriptive statistics for all studied scales) and there was no significant change in job burnout and attachment insecurity over the course of the school year.

Table 12

Reliabilities and Comparison of Assessed Scales

Scale	Baseline			End of School Year			<i>t</i>
	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α	
TES Joy	3.93	0.78	.920	3.78	0.84	.931	2.933**
TES Anger	1.88	0.89	.874	2.19	0.96	.876	-4.014**
TES Anxiety	1.44	0.62	.844	1.42	0.56	.778	.244
VASQ Insecurity	24.25	5.79	.750	24.07	5.83	.781	-.103
MBI	31.19	14.12	.872	32.37	14.54	.876	-1.299

Note. ** $p < .01$.

Statistical Analyses

In order to advance the findings of Study 1, we analyzed the longitudinal effects of the sociodemographic variables, teachers' attachment insecurity and teacher emotions on job burnout at the end of the school year. The longitudinal multiple regression analysis was hierarchical based on the vulnerability-stress model: In Step 1 we entered the basic sociodemographic variables (gender and job experience), in Step 2 we entered teachers' attachment insecurity at the end of the school year¹ (all three factors of vulnerability), in Step 3 we added the discrete teacher emotions at the end of the school year (the perceived degree of current class-related stressors), and in Step 4 we controlled for the level of burnout at the beginning of the school year.

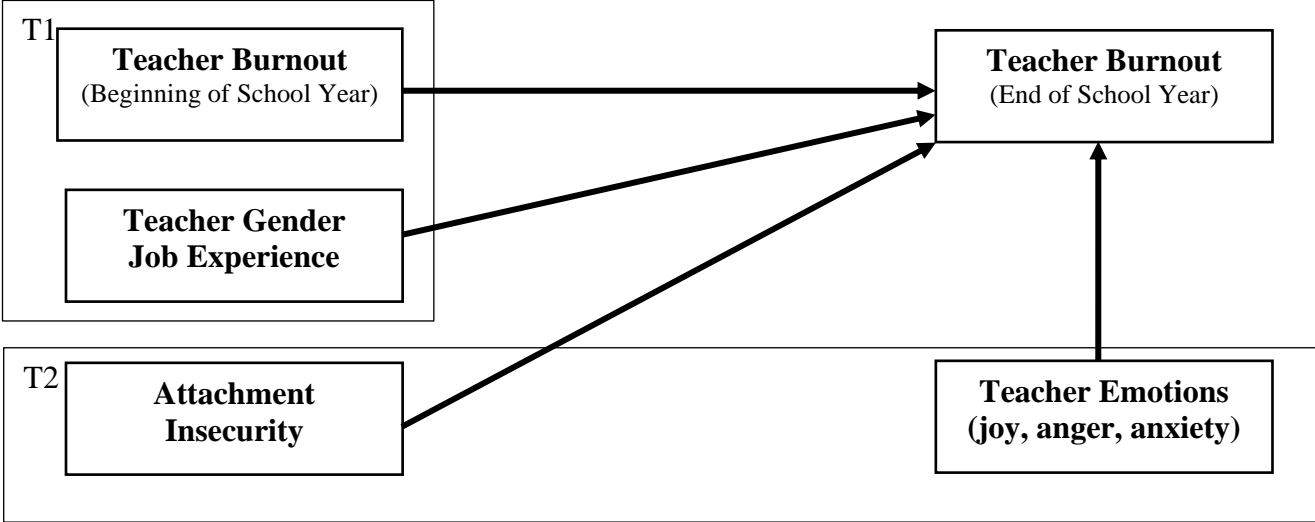
¹ The original design of our study used the VASQ at T0 (beginning of the school year). Since these results were not significant, we decided to use the VASQ at T3 (end of the school year), assuming that the differences between VASQ measures at T0 and T3 were not greatly different. See Figure 17 in the Appendix.

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Figure 13 depicts the longitudinal analysis. The assumptions of linearity, normality, independence, multicollinearity, and homoscedasticity were tested and satisfactorily met.

Figure 13

Longitudinal Analysis of Teacher Burnout in Study 2



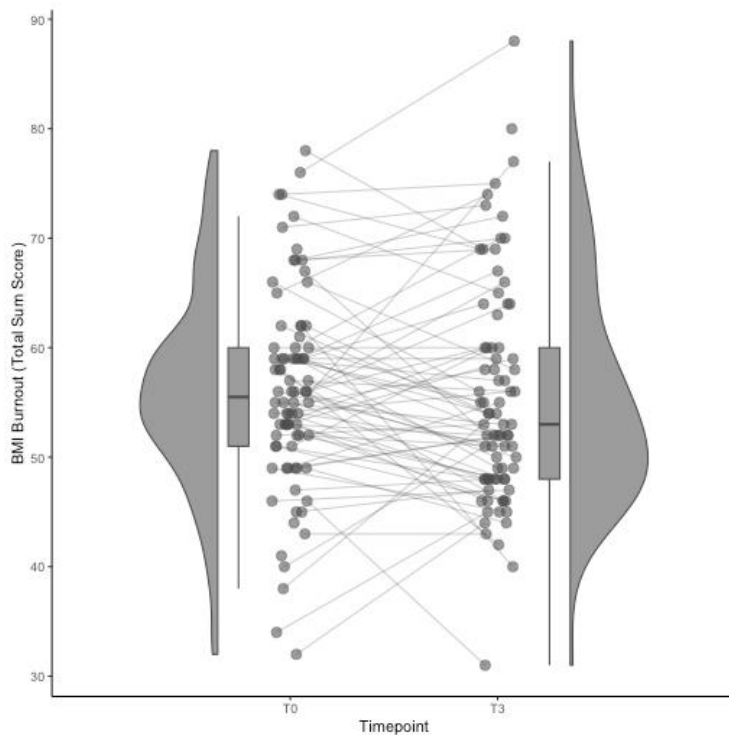
4.5 Study 2 Results

Bivariate Correlations

Bivariate correlations between all study variables are presented in Table 13. As in Study 1, our results show moderately high correlations between job burnout and attachment insecurity as well as job burnout and all discrete emotions at the end of the school year (summarized in Table 13): First, higher levels of self-reported anger, anxiety and attachment insecurity were linked to higher levels of self-reported job burnout (Hypothesis 1 and 2). Second, enjoyment was negatively correlated with job burnout (Hypothesis 2). Third, regarding the correlation between teacher emotions and attachment insecurity, a small positive correlation was found concerning experienced anger at the end of the school year. Last, there was a strong correlation between job burnout at the beginning of the school year and job burnout at the end of the school year ($r = .769, p < .01$).

Figure 14²

Development of Teacher Burnout from the Beginning to the End of the School Year



² Calculation and design of Figure 14 and Figure 15 (and Figure 17 Appendix) by Dr. A.K.G. Marx.

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Table 13

Pearson Correlations of the Assessed Variables at the End of the School Year (T3)

	1	2	3	4	5	6	7
1. Job Experience	1	0,051	-0,085	-0,042	0,156	0,067	-0,156
2. Gender		1	-0,072	0,008	0,022	0,066	0,148
3. VASQ insecurity			1	-0,063	,224*	0,177	,491**
4. TES joy				1	-,673**	-,539**	-,382**
5. TES anger					1	,692**	,382**
6. TES anxiety						1	,348**
7. MBI burnout							1

Note. ** $p < .01$, * $p < .05$.

Multivariate Analysis

A multiple regression analysis was carried out to reveal longitudinal effects. The sociodemographic variables (teachers' gender and job experience), when entered at Step 1, explained 2.1% ($F(2,83) = 1.874, p = .16$) of the variance in teachers' burnout at the end of the school year. With attachment insecurity entered at Step 2, the model explained 25.0% of the perceived burnout ($F(1,83) = 10.223, p < .01$). Teachers' attachment insecurity ($\beta = .486, t = 5.077, p < .01$) significantly contributed to the model. When the experienced enjoyment, anger, and anxiety (TES) were entered at Step 3, 36.4% of the variance were explained ($F(3,83) = 8.925, p < .01$). Finally, self-reported job burnout at baseline was entered at Step 4 and led to a significant overall regression model, which explained 66.1% of the variance. Of the six predictor variables, burnout at the beginning of the school year ($\beta = .626, t = 8.274, p < .01$), teachers' gender ($\beta = .173, t = 2.680, p < .01$) and attachment insecurity ($\beta = .214, t = 2.961, p < .01$) significantly contributed to the model. These results show that burnout levels at the end of the school year are higher, if teachers' burnout levels at the beginning of the school year are higher, teachers are more insecure and female. The corrected R^2 indicates an

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explanation of variance of 66,1 %, which is considered a large-sized effect (Cohen, 1977).

Table 14 presents the resulting four regression models.

Overall, our findings support Hypothesis 4 that attachment insecurity is associated with job burnout, even when controlling for concurrent teacher emotions.

Table 14

Regression Coefficients of Predictors of Teacher Burnout at the End of the School Year

Variables	Step 1			Step 2			Step 3			Step 4		
	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>
Job exp.	-.167	.008	.129	-.13	.007	.183	-.159	.007	.081	-.099	.005	.139
Sex	.141	.141	.198	.179	.124	.066	.178	.114	.048	.173	.083	<.01
Insecurity				.486	.125	<.01	.443	.120	<.01	.214	.095	<.01
Joy							-.274	.092	.026	-.078	.069	.393
Anger							.073	.095	.613	.030	.070	.773
Anxiety							.062	.141	.615	.073	.103	.418
Burnout (baseline)										.626	.078	<.01
<i>R</i>	.210			.526			.640			.830		
<i>R</i> ² <i>corrected</i>	.021			.250			.364			.661		
ΔR^2				.233			.133			.280		

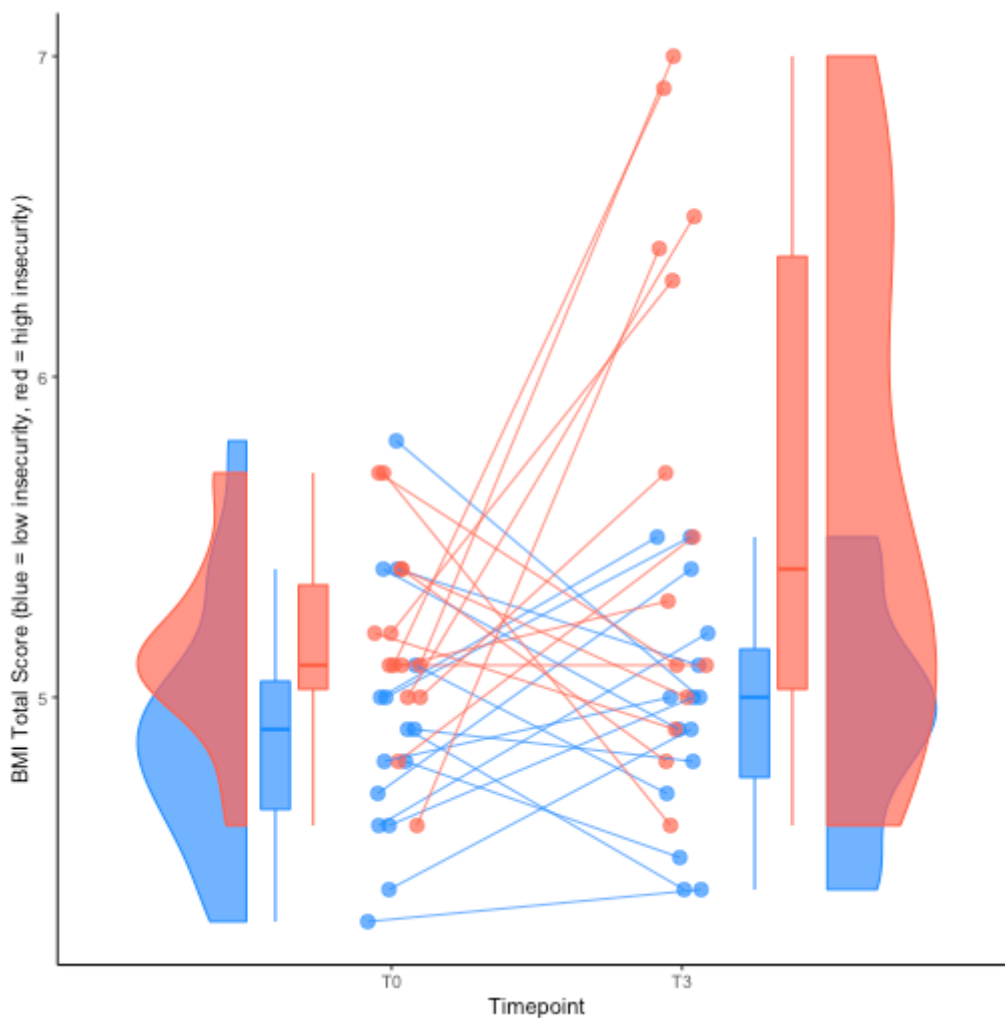
To illustrate the association of attachment insecurity and job burnout we visualized the development of job burnout for teachers who were low in attachment insecurity at the beginning of the school year (1 standard deviation below the mean VASQ, $n = 15$ teachers) in

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contrast to the development of job burnout for teachers high in attachment insecurity at baseline (1 standard deviation above the mean VASQ, $n = 15$ teachers). The two groups and their MBI measures at the beginning and the end of the school year can be seen in Figure 15.

Figure 15

Development of Teacher Burnout over the School Year for Low and High Attachment Insecurity



Note. Statistical Analysis and Graphic design by Dr. Anton K.G. Marx.

As you can see in Figure 15, the distribution of MBI scores was much more diverse at the end of the school year for teachers with high levels of attachment insecurity than for teachers with low levels of attachment insecurity. High levels of attachment insecurity seem to promote the possibility of stronger job burnout development in secondary school teachers.

4.6 Discussion

In the present study, we aimed to advance knowledge on job burnout in secondary school teachers using a vulnerability-stress approach. To this end, we analyzed the relationship between the vulnerability factor attachment insecurity and job burnout and found that, in support of Hypothesis 1, attachment insecurity is positively related to job burnout in a cross-sectional design (Study 1) and, in support of Hypothesis 4, is even related to job burnout over the course of a school year (Study 4). These findings are in line with recent burnout research focusing on other occupations (Copeland et al., 2020; Lenzo et al., 2021; Ronen & Mikulincer, 2012; Virgă et al., 2019; West, 2015). For example, Ronen and Mikulincer (2012) found positive relations between subordinates' attachment insecurities and their levels of job burnout and job dissatisfaction. Additionally, in a German study on burnout patients, attachment insecurity was found to be an interpersonal risk factor for burnout (Söllner et al., 2016). The female gender, in addition, was found to be predisposing to job burnout in our study, which was formerly reported in other studies (for example, Noor & Zainuddin, 2011).

In our study, we found relations between attachment insecurity and teachers' emotional experiences in class, supporting the assumption that vulnerabilities can be related to stressors in the vulnerability-stress model. In Study 1, attachment insecurity was positively related to negative emotions (anger and anxiety during teaching) and negatively related to positive emotions (joy during teaching), as stated in Hypothesis 3. In Study 2, only a small correlation between anger and attachment insecurity at the end of the school year was found and there were no longitudinal findings supporting Hypothesis 3.

In a cross-sectional design in Study 1, the current degree of stressors seen in emotional experiences was related to job burnout in such that positive emotions (enjoyment during teaching) were negatively related to job burnout, and negative emotions (anger and anxiety during teaching) were positively related to job burnout (Hypothesis 2). This relationship between emotions and burnout has already been shown in earlier research (Zysberg et al.,

2017). However, the effect of attachment insecurity outrules the effects of teacher emotions in a longitudinal analysis (main Hypothesis 4). In conclusion, personal vulnerability was found to be more important than perceived stressors for the development of job burnout over the course of a school year. As visualized in Figure 15, especially high levels of attachment insecurity were related to a strong increase in job burnout over the course of a school year. Identifying vulnerable teachers via a short self-report measure like the VASQ could be helpful in practice for secondary prevention of job burnout. The vulnerability-stress model implies an inverse relationship between vulnerability and stressors (Ingram & Luxton, 2005). Consequently, the degree of vulnerability can be counterbalanced by the number of stressors and vice versa, to prevent surpassing the threshold for the development of burnout. This opens new pathways for burnout prevention focusing on emotion and stress-regulation.

4.7 Conclusion and Limitations

Our study aimed at examining the relationships between personal vulnerabilities (gender, job experience, attachment insecurity), current stressors (assessed via the emotional experiences while teaching), and job burnout in teachers to find new pathways for burnout prevention. The fact that the negative relation of attachment insecurity and teachers' burnout was stable, even when we controlled for the initial amount of job burnout symptoms, demographic variables and discrete emotions while teaching, is encouraging. Our findings, therefore, indicate that attachment insecurity is predictive for job burnout. However, future research is necessary to underpin this finding of a possible predisposition to burnout based on the level of attachment insecurity.

Limitations in Sample and Procedure

There are some limitations to our study that need to be mentioned. Firstly, the sample of Study 1 is a convenience sample. Hence, it is possible that only highly motivated teachers answered our questionnaire, which diminishes generalizability. The same limitation can be

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found in Study 2. Since participation in the longitudinal study was time consuming and involved four times of measurement over the course of a school year, only motivated teachers completed all four questionnaires. Secondly, we exclusively used self-report measures of attachment insecurity, job burnout and teacher emotions. In-field observations and interviews could advance future research in this area. Thirdly, our findings are mainly correlative, causality assumptions are therefore not possible.

Future Research

In addition to the aforementioned improvements based on the limitations in our study, new ways to analyze teacher-class interactions could enhance future research. Another step further in the analysis of attachment insecurity and burnout, for example, could be the evaluation of reciprocal effects of teachers' and students' styles of attachment. Earlier research stated the influence of managers' attachment insecurities on their subordinates. Higher job burnout and lower job satisfaction among subordinates were predicted by managers' attachment insecurities (Ronen & Mikulincer, 2012). In another study, the effect of attachment insecurity on burnout in social keyworkers was increased when the cared for children displayed insecure attachment styles (Sochos & Aljasas, 2020).

The patterns of attachment styles between teachers and students have not yet been examined and should be taken into account in future research. While Milatz et al. (2015) found no direct link between teacher attachment and burnout, securely attached teachers seemed to be more capable in establishing close relationships with their students. In contrast, a direct link between teachers' attachment insecurity and burnout was found in our study, but we did not investigate teacher-student relationships. A newly-developed scale for the measurement of the teacher-class relationship (the TCR scale) from our research group could advance future research (Roza et al., 2021). Nonetheless, further reciprocal analyses are needed to enhance our knowledge about the effects of teacher attachment on student attachment and vice versa.

Practical Implications

Based on our findings, new pathways for the prevention of stress and burnout might be interventions focusing on the reduction of stress and improvement of emotion regulation. Recent research has found positive effects of stress-reduction interventions, including meditation and mindfulness, on teacher well-being (Hagermoser Sanetti et al., 2020). Attachment insecurity is associated with problems in emotion and stress regulation (Mikulincer & Shaver, 2019), resulting in an avoidance of social support. Especially individuals with high levels of attachment avoidance, which is measured in the VASQ insecurity subscale used in this study, tend to avoid social contact to reduce stress. Supervision or peer consulting groups in which participants learn how to deal with stress-evoking situations in class and how to regulate stress in contact with others might be most effective to overcome this pattern of avoidance. In groups, or dyads, insecurely attached teachers can learn not to avoid social support, improve stress-regulation, and prevent burnout by diminishing their personal vulnerability. The recollection of stress-evoking situations and evaluation of their perception and interpretation can also reduce the perceived current stress, especially when combined with mindfulness (Hagermoser Sanetti et al., 2020). Consequently, the vulnerability-stress approach of this study has shown that these factors, often observed separately, should be observed in combination and focused on in interventions reducing vulnerability as well as stressors.

5. General Discussion: Attachment and its Correlates in Infancy and Adulthood

This work had five goals presented in the Introduction (Chapter 1): (1) to summarize knowledge on attachment and especially attachment insecurity, (2) to practically advance research focusing on correlates of the development of attachment in infancy, (3) to summarize knowledge about correlates of attachment in adulthood, (4) to test correlates of attachment insecurity in the professional context, and (5) to critically discuss the role of attachment across the human lifespan and the contribution of this present work. The first four goals have been tackled in Chapters one to four. This fifth chapter focuses on a critical discussion of the findings summarized to date and the role attachment plays across the human lifespan with a focus on critical voices in the research community. Criticism is mainly due to ethical reservations, unclear definitions of assessed concepts, the neglect of cross-cultural differences, and the assumed predictivity of attachment across the human lifespan (e.g., Keller, 2021). These criticisms will be more closely examined in the following paragraphs, before I summarize my personal opinion.

5.1 Ethics in Attachment Research

The assessment of attachment in infancy based on the SST has particularly led to criticism, since it might be too stressful for infants. The setting and sequence of episodes to increase the infant's arousal and investigate attachment behaviors is questionable in regard to necessity to assess attachment (Keller, 2021). For some mothers the experience of their aroused infant during the SST is irritating and too stressful - as we experienced in Study A, in which especially mothers with anxiety symptomatology stopped the procedure due to high arousal of their infant. Another problem with the SST is, that behavior is not directly assignable to the different characteristics of the setting: novelty, stranger anxiety, and

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separation anxiety. A combination of home observations, field studies, and standardized laboratory tests might be more useful.

Ainsworth herself stressed the importance of home observations and stated that “The strange situation has been widely accepted as the basis for the assessment of infant-mother attachment, and the patterns themselves have been confirmed again and again in many studies. However, the psychological significance of these patterns rests upon their close association with patterns of mother-infant interaction at home and over time.” (Ainsworth, 1985, p. 776)

With regard to cross-cultural differences of parental and infant behavior, culture-sensitive research is necessary. Coders with different cultural backgrounds than the parent and infant might have difficulties in coding infant behavior and misinterpretations can be the result as we will discuss in section 5.3.

5.2 Unclear Definitions of Attachment Concepts

As mentioned in Chapter 1, attachment has been described as an affectional bond (Bowlby, 1977), which in itself cannot be measured. Attachment behaviors are observed to draw conclusions regarding the affectional bond and its quality in infancy (compare coding of the SST). In adulthood, attachment is classified based on the way a person talks about attachment experiences (AAI), builds and maintains close relationships (ASI), or answers self-reports. The concept of attachment remains a theoretical concept. In addition, the difference between attachment and relationships seems to be questionable. Is attachment a stand-alone concept, a subcategory of relationships, a special quality of relationships (attachment relationships), or a special kind of relationship (attachment network) individuals have (Morelli et al., 2017)? Morelli et al. (2017) also questioned whether attachment is a lifelong trait or rather only relevant in the first years of life, leading to the question whether educators and preschool teachers really need attachment to the children under their care or rather build relationships with them.

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Another concept under criticism, is the concept of attachment representations in the form of IWMs. It is obvious that personality is an individual factor influencing personal and working life (e.g., Woods et al., 2013). IWMs as part of personality, a central construct of attachment theory and a reason for stability and/or change of attachment over the human lifespan, is hard to grasp (Bretherton & Munholland, 2008). Bowlby never really systematically described IWMs related to attachment security or insecurity and IWMs cannot be observed (Thompson, 2017). These unclear definitions lead to misconceptions, different methods in research, and problems of comparability, especially with regard to cross-cultural studies.

5.3 Cross-cultural Differences in Attachment

There are three main hypotheses in attachment theory: (1) the universality hypothesis of attachment based on Bowlby's assumption that every human has an inborn urge to be attached to others (Bowlby, 1951), (2) the normativity hypothesis, stating that secure attachment is expected in environments that are not harmful or threatening for a child (Bowlby, 1969), and (3) the sensitivity hypothesis stressing the importance of a caregiver's availability and readiness to responsively react to the child leading to the establishment of the primary caregiver as a secure base and a secure haven (Ainsworth, 1993). These three main hypotheses have been challenged by cross-cultural researchers and studies to date.

Morelli et al. (2017, p. 141) put it the following way:

“We agree that the ability to develop social relationships is part of our human legacy, representing a universal need to belong to social groups and to form meaningful ties with others (Baumeister & Leary, 1995; Keller, 2015). We agree, as well, that children form attachments to people in relationships that are distinct in particular ways.

However, our approach insists on the central role of sociocultural processes and structures, in dynamic interplay with ecological processes, in the relational opportunities available to children and in the attachments they develop.”

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Several studies found cultural-individual patterns of attachment distributions, questioning the normativity hypothesis of secure attachment as primary attachment style and leading to the conclusion, that in some environments infants are better off when they develop avoidant or ambivalent attachment (Mesman et al., 2016). Moreover, studies undertaken in different cultures led to culture-specific changes in the measurement of attachment:

True et al. (2001), for example, observed 15 mother-infant pairs in Mali under a slightly altered procedure of the SST (no laboratory, shortened separations in front of their homes). They found that 67 % of the infants were classified as secure, 8 % resistant, and 25 % disorganized. The authors argued, that the separation was possibly still highly stressful rather than mildly stressful for the infants, leading to proximity seeking instead of avoidance and higher rates of disorganized attachment in insecurely attached infants, even though the infants were not tested in a laboratory setting. The use of the SST in cultures outside of the Western society has been doomed as cruel by culture-sensitive researchers (Otto, 2014). Studies in different cultural settings definitely show that culture-specific changes and culture-informed coding is necessary, otherwise misconceptions and incorrect classifications are the result. Stranger anxiety, for example, is not a typical reaction seen in Cameroonian infants, since their social context reinforces emotional neutrality and the infants are used to multiple caregivers (Otto, 2014).

Keller (2021) argues that for culture-informed research, other measurements (such as home observances, non-intrusive assessments, and interviews) are necessary, so that attachment is seen from multiple perspectives and multiple attachments are assessed rather than focusing on the mother. Instead of a strong focus on sensitivity, the surveying of a wider range of interaction behavior is suggested, for example synchrony (Feldman, 2007a), because synchronous processes help create biobehavioral connections among people, which establish affiliative bonds (Feldman, 2012).

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To conclude, Morelli et al. (2017, p. 169) proposed a pluralistic approach to attachment and attachment research in their earlier mentioned chapter on cross-cultural attachment research:

“The pluralistic approach to attachment proposed in this chapter is an alternative approach with substantive theoretical and empirical differences to classical attachment theory. We argue that no theories of child development and of the emotional needs of children can be developed without research from a wide range of communities. This research must rely on serious ethnographic work that investigates the role of the complex interplay of the physical environment; the ecosocial, political, and economic contexts; cultural views and practices (especially views of personhood and self) on children’s care; and the relational and attachment networks children develop. For each community studied, methodological tools must be empirically sound, meaningful, and ethically respectful. [...] scientific methods need to engage with the diverse realities of children’s lives to complement knowledge reached experimentally in psychological laboratories. Real communities are dynamic and ever-changing systems. Our science should be as well.”

Much more could be said in regard to cross-cultural studies of attachment and a cultural perspective on attachment research (for an overview see Morelli et al., 2017; Quinn & Mageo, 2013). Besides ethical, conceptual and cultural criticism, another important point has to be mentioned – the assumed predictivity of attachment for outcomes across the lifespan.

5.4 Predictivity of Attachment

Another hypothesis in attachment theory is the competence hypothesis, which states that secure attachment is related to positive developmental outcomes (Mesman et al., 2016). Meins (2017) summarized misconceptions of attachment in the literature and conclusions for every-day life that have been drawn from attachment research. She describes the importance of attachment as “overrated”, since most findings are solely correlational and do not offer

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causal explanations for behavior in later life. A child classified as secure, is not inevitably a good parent or will have securely attached infants, nor does insecure attachment in infancy mean that further development is irreversibly worse. In her point of view, the important role attachment plays in educational and legal decisions is too strong, and ignores the fact that attachment is just one factor contributing to infant well-being. A focus on establishing secure attachment to help infants develop in the best way might lead to the ignorance of other relevant environmental and individual factors. Instead of attachment, resilience should be addressed more in future research, to shed more light on the knowledge about what protects children and helps them to develop under adverse environmental circumstances.

5.5 Personal Opinion

As I summarized in Chapter 1 and Chapter 3, many correlates of attachment, both in infancy and in adulthood, have been found in the recent years of attachment research. However, they are not influences or effects, but correlates, meaning there seem to be relationships between these variables, but there are no causal conclusions that can be drawn from correlational analyses. Nonetheless, the vast amount of research and replication of findings on correlates of attachment demonstrates that attachment is an important factor across the human lifespan. There is an inborn need to be connected and relationships to others can be helpful and rewarding and also places of conflict and misunderstanding. As a psychotherapist, specialized in working with children and youth, and especially parents and their infants, I value attachment as a very important factor in psychotherapy. I have experienced, that different beliefs and basic assumptions about relationships, and how available and helpful others are, can have huge impact on behavior and relationship quality. As described in the introduction, infants that experience Circles of Security develop better stress-regulation mechanisms, which are important for later life. Early interventions, that are individual and help parents to understand patterns of behavior in their families are a great help to their children. Measurements of attachment that include observations, interviews, different

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settings, and the study of separation and reunion behavior, are needed to develop a view that includes various perspectives and information. Of course, cultural-sensitivity is crucial and new ways to measure attachment can help to understand relationships in people from different backgrounds. However, seeing and interpreting an infant's behavior and helping their parents to improve their reaction and mentalization abilities can have positive effects on relationships in different cultural settings.

It is most important to appreciate the different facets of attachment insecurity, when working with parent-infant dyads and when supporting older children and adults. Most studies combine different ratings of attachment insecurity to one group of people, comparing these participants to the securely attached participants. Attachment insecurity is a wide field and has many faces. Here again, individual analyses of behavioral patterns are necessary to find the best way to help individuals looking for support. Besides psychotherapy, group settings (e.g., friends, supervision, and peer consulting) in which individuals talk about their interpersonal experiences and learn how to regulate stress when in contact with others, can have positive effects on well-being and reduce avoidance behavior.

In recent years, psychotherapy has seen the evolution of new therapeutic approaches. One approach I would like to highlight in this context is the Cognitive Behavioral Analysis System of Psychotherapy (CBASP; McCullough, 2000), which focuses on the treatment of chronic depression in adults and can be labelled as an empirically supported treatment (Jäger & Brakemeier, 2014). CBASP focuses on the history of significant others and their influence on life as well as the interpretation of interactions nowadays. Patients are supported in the analysis of their history of relationships and the building of transference hypotheses. The aim is to learn to discriminate between former experiences and related reactions and experiences in their adult life in situational analyses, and improve their interpersonal skills. Moreover, the therapeutic relationship serves as a place for corrective interpersonal experiences. This therapeutic approach combines cognitive, behavioral, psychodynamic, and interpersonal

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strategies to help patients that suffer from chronic impairments in their relationships. I see CBASP as a good example of a multiple-method approach to psychotherapy which focuses on attachment and attachment experiences, and have experienced how helpful it can be in understanding and changing interpersonal interpretations and reactions of patients.

Another new approach is the inclusion of spiritual elements in psychotherapy (Friedrich-Killinger, 2014). Corrective experiences in the attachment to God, for example, led to earned security and improved well-being in a sample of $N = 211$ psychiatric inpatients (Friedrich-Killinger, 2020). The reorganization of IWMs through the experience of attachment to God was the focus of these studies. Although the concept of IWMs is difficult to grasp, they can still be helpful as is the individualized therapeutic work to reorganize them. Attachment and attachment research is a wide field, with various criticisms, as I highlighted in this Chapter 5. A lot of questions still remain unanswered and investigating these will enhance future research, as is summarized in the next chapter.

6. Overall Conclusion and Further Research Implications

This work aimed to summarize correlates of attachment in infancy and adulthood and to extend knowledge in two studies focusing on two periods of life, infancy and adulthood. The summary of current literature on attachment and its correlates, led to the development of an overview-model including internal and external correlates in infancy, which are associated with the development of attachment (namely, rearing environment, parental caregiving, maternal psychopathology, infant temperament, disability, gender, and genetic disposition), and internal/individual and external/interactional correlates that are associated with different attachment styles and levels of security vs. insecurity in adulthood (relationships to own parents, romantic relationships, parenting/ caregiving, work life, self-esteem, emotion regulation, physical and mental health). The summary of current research shows that a lot of different correlates have been studied. Longitudinal studies and experimental designs, however, are scarce. The suggested model of correlates of attachment is solely an overview of the recent years of research and needs to be further developed or changed with new findings. A new focus on intervention studies is evolving, but needs further replication (see for example Guild et al., 2021; McMahon & Maxwell, 2021). It is still unclear, how attachment influences developmental outcomes, or how IWMs are changed and whether these changes are sustainable.

In Study A of this work, maternal anxiety symptomatology, especially body sensations, was found to be associated with infant attachment. Future research needs to replicate these findings and shed more light on the underlying mechanism. Reasons for the effect of maternal anxiety on infant attachment need to be found to explain how this association evolves. We suggested video-intervention therapy and body-focused interventions to improve mother-infant relationships and buffer the effect of maternal psychopathology on

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infant development. This intervention-focus and examination of sustainable intervention effects is another important topic for future research.

The second part of this work aimed at enhancing research in adulthood, focusing on teachers and their attachment. Study B is a starting point for further research including a variety of statistical analyzes of the same data, like structural equation modeling in which several correlates of teacher burnout can be included to evaluate the contribution of adult attachment in explaining teacher burnout. Our study presented here, nonetheless, shows that attachment insecurity should not be overseen in future research when trying to find pathways to influence teacher burnout. Attachment insecurity is not easily tackled, but associated stress-coping might serve as a good starting point for further psychoeducation and support of teachers. In her dissertation, Roza (2021) introduced a model of teacher-class relationship on different levels of relationship quality. Teacher support and information training on teacher-class relationships, based on this model, could be enriched by our findings and include basic information on attachment, and IWMs and stress-regulation associated with it. This information on the underlying processes helping to build and maintain relationships and understand emotional reactions in interpersonal situations could be helpful for teachers to improve their interpersonal skills, and improve emotion regulation and reduce stress evoked by teacher-class interactions.

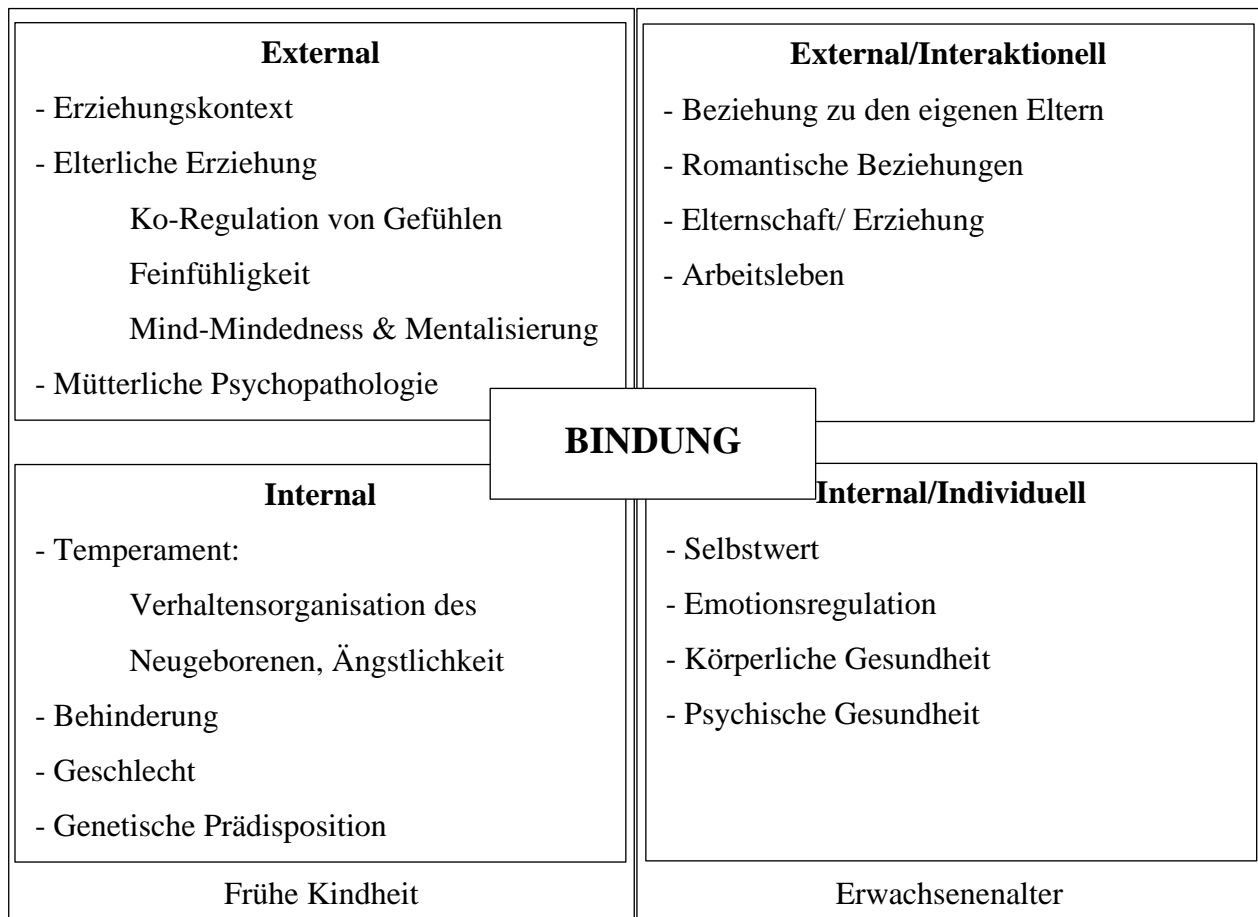
In the last part of this work, critical voices concerning attachment theory were quoted and summarized. Attachment theory is changing and needs to change. Research on attachment needs to be up-to-date, using creative and validated measurements of attachment, explaining processes of how attachment is influenced and influences personal lives. Fundamental research as well as intervention studies fueled by former research are necessary to close gaps in knowledge and enhance the transfer of research implications to daily life and clinical work. I hope that this work aroused interest in attachment and attachment research.

7. Zusammenfassung

Die vorliegende Arbeit hat zum Ziel, Bindung und Bindungszusammenhänge in Früher Kindheit und Erwachsenenalter darzustellen und zu untersuchen. Zu diesem Zweck wird im ersten Teil der Arbeit der bisherige Forschungsstand zu Bindung und wissenschaftlichen Erkenntnissen zu Zusammenhängen mit der Bindungsentwicklung in der Frühen Kindheit zusammengefasst. Für einen besseren Überblick über die einzelnen Bindungszusammenhänge wurde eine Graphik entwickelt (siehe Figure 16).

Figure 16

Bindungszusammenhänge in Früher Kindheit und Erwachsenenalter



Anmerkung: Selbstentwickelte Graphik zur Übersicht.

John Bowlby gilt als Vater der Bindungstheorie, die auf verschiedenen Annahmen beruht. Eine Annahme ist die, dass Bindung ein angeborenes Bedürfnis ist, dass sich in der Bildung eines emotionalen Bandes mit einer primären Bindungsperson oder mehreren

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Bindungspersonen entwickelt. Zudem spielen das Bindungssystem und das Explorationssystem des Kindes eine zentrale Rolle: Das Kind zeigt Explorationsverhalten (Spiel, Interaktion mit der Umwelt), wenn es nicht gestresst ist; Bindungsverhalten (z. B. anklammern, Nähe suchen, weinen, protestieren) zeigt das Kind in Situationen, die zu einem Anstieg der Anspannung führen. Forschung zum Konzept Bindung begann mit Beobachtungen von kleinen Kindern in ihrer gewohnten Umgebung (zunächst von Mary Ainsworth in Uganda) und wurde dann in eine strukturierte Beobachtung im Labor mit Trennungs- und Wiedervereinigungsmomenten überführt. Der Fremde Situation Test war entstanden. Auf Basis dieser Beobachtungen wurden die Konzepte der sicheren Basis und des sicheren Hafens entwickelt. Die sichere Basis steht hierbei für die primäre Bezugsperson, die als Ausgangspunkt für Explorationsverhalten des Kindes genutzt wird. In Momenten, die zu einem Anstieg der Unruhe, des Unwohlseins, oder gar der Angst des Kindes führen, dient der sichere Hafen (wiederum die primäre Bezugsperson) als Anlaufstelle für Trost und Schutz. Das Bindungsverhalten, das Kinder im Alter von 12-18 Monaten im Fremde Situation Test zeigten, führte zur Beschreibung von drei Bindungsklassifikationen, die organisiertes Bindungsverhalten beinhalten: sichere Bindung (B), unsicher-vermeidende Bindung (A), unsicher-ambivalente Bindung (C). Die Analyse des Bindungsverhalten von Kindern, die nicht aufgrund dieser drei Bindungstypen klassifiziert werden konnten, führte zur Beschreibung einer vierten Bindungsklassifikation, der desorganisierten Bindung (D).

Auf Grundlage dieser Bindungsklassifikationen wurden Bindungszusammenhänge erforscht, die im zweiten Kapitel der vorliegenden Arbeit näher beschrieben werden. Diese Bindungszusammenhänge sind externaler und internaler Art. Externale Zusammenhänge mit der Bindungsentwicklung in der Frühen Kindheit sind Umweltfaktoren, wie der Erziehungskontext, die Erziehung durch die Eltern und der mütterlichen Psychopathologie. Internale Zusammenhänge mit der Bindungsentwicklung in der Frühen Kindheit beziehen sich auf angeborene Charakteristiken des Kindes, wie sein Temperament, Behinderungen, das

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kindliche Geschlecht und genetische Prädispositionen. Im zweiten Kapitel dieser Arbeit wird eine Studie beschrieben, die zur Erweiterung dieser wissenschaftlichen Erkenntnisse beitragen soll. 71 Mütter und ihre kleinen Kinder wurden hierbei von der Schwangerschaft bis zum Alter von zwei Jahren wissenschaftlich befragt und untersucht. In der vorliegenden Studie wurden Angaben der Mütter zu ihrer Ängstlichkeit und Angstsymptomen im Postpartalzeitraum mit den Ergebnissen des Fremde Situation Test im Alter von 12 bis 24 Monaten der Kinder untersucht. Es zeigte sich, dass mütterliche Ängstlichkeit die Wahrscheinlichkeit für eine unsichere (inklusive desorganisierter) Bindung erhöhte. Insbesondere die Angst der Mütter vor körperbezogenen Angstsymptomen und ihr intrusives Verhalten in der Mutter-Kind-Interaktion war hierbei prädiktiv für die Bindungsentwicklung. Auf diese Ergebnisse aufbauend werden Video-Interventionstherapie und Körperübungen empfohlen, um möglichst frühzeitig die Folgen einer Postpartalen Angsterkrankung zu reduzieren.

Der zweite Teil dieser Arbeit beschäftigt sich mit Bindung im Erwachsenenalter. Um einen guten Überblick zu geben, werden zunächst Maße zur Bindungserfassung im Erwachsenenalter (wie das Attachment Style Interview (ASI), und das Adult Attachment Interview (AAI)) beschrieben und die abgeleiteten Bindungsklassifikationen im Erwachsenenalter (u.a. sicher, unsicher-vermeidend, präokkupiert, desorganisiert). Hier zeigt sich, dass die Klassifikation von Bindungsstilen im Erwachsenenalter nicht so einheitlich ist, wie in der Frühen Kindheit, da diverse Messmethoden existieren, die jedoch alle meist auf den Skalen sicher vs. unsicher, und Vermeidung vs. Angst einzuordnen sind. Auch für das Erwachsenenalter werden wissenschaftliche Befunde zu Bindungszusammenhängen im dritten Kapitel zusammengefasst. Die Unterscheidung ist hierbei zwischen internalen/individuellen Zusammenhängen mit Bindung (Selbstwert, Emotionsregulation, körperliche und psychische Gesundheit) und externalen/interaktionellen Faktoren. Die externalen/interaktionellen Faktoren sind hierbei verschiedene Beziehungsbereiche, in denen

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Erwachsene basierend auf ihrem Bindungsstil Herausforderungen begegnen oder die von dem für den Bindungsstil spezifischen Verhaltensweisen beeinflusst werden, wie die Beziehung zu den eigenen Eltern, romantische Beziehungen, Erziehung eigener Kinder und dem Arbeitsleben. Diese Befunde werden im vierten Kapitel um eine Studie bei Lehrkräften der Sekundarstufe erweitert. In dieser Studie wurden 247 Lehrkräfte im Querschnitt und weitere 91 Lehrkräfte im Längsschnitt zu Burnoutsymptomen, ihrer Bindungsunsicherheit und Unterrichtsemotionen befragt. Die Ergebnisse zeigten, dass Lehrkräfte, in der ersten querschnittlichen Studie, stärkere Burnoutsymptome aufwiesen, wenn sie weniger Freude beim Unterrichten und mehr Bindungsunsicherheit berichteten. Im Längsschnitt blieb der Effekt der Bindungsunsicherheit auf die Burnoutentwicklung erhalten und es zeigte sich, dass Lehrkräfte am Ende des Schuljahres stärker belastet waren, wenn sie schon zu Beginn des Schuljahres mehr Burnoutsymptome berichteten, weiblichen Geschlechts waren und eine höhere Bindungsunsicherheit aufwiesen. Diese Untersuchung ist die erste Studie, in der sowohl Bindungsunsicherheit, die als Vulnerabilitätsfaktor gesehen werden kann, als auch Unterrichtsemotionen, die als ein Gradmesser für die aktuelle Belastung durch den Unterricht gesehen werden können, untersucht wurden. Durch dieses Vorgehen konnte der Einfluss beider Faktoren auf die Burnoutentwicklung im Laufe eines Schuljahres evaluiert werden. Möglichkeiten, wie diese Erkenntnisse in Lehrertrainings zur Stressregulation und Verbesserung der Lehrer-Klasse-Beziehung eingebunden werden können, werden erläutert.

Der letzte Teil dieser Arbeit befasst sich mit kritischen Stimmen zur Bindungstheorie und Bindungsforschung. Insbesondere Forscher aus der kulturübergreifenden Forschung äußerten in der Vergangenheit Bedenken zur ethisch vertretbaren und validen Umsetzung der Bindungsforschung in verschiedenen Kulturen. Sowohl die hauptsächlich korrelativen Befunde, die keine kausalen Schlussfolgerungen zulassen, als auch die Anpassung von Messinstrumenten an verschiedene Kulturen werden nach dieser Zusammenfassung kritischer Stimmen thematisiert. Zudem werden eigene therapeutische Erfahrungen und ein

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exemplarisches integratives Therapiekonzept (CBASP; Cognitive Behavioral Analysis System of Psychotherapy) in diesem Kapitel erläutert. Die Arbeit wird abgerundet durch einen Ausblick auf zukünftige Forschungsmöglichkeiten. Bereits die Schlussfolgerungen zu den beiden durchgeführten Studien in Kapitel 2 und 4 enthalten spezifische Ideen zur weiteren Forschung, doch auch eine allgemeine Forschungsempfehlung wird formuliert. Die Mechanismen, die die Zusammenhänge zwischen Bindung und der Vielzahl an assoziierten Faktoren erklären, sind bisher unklar. Grundlagenforschung ist deshalb genauso von Nöten wie Interventionsstudien, die zeigen ob und inwieweit Bindungsentwicklung beeinflusst werden kann oder Bindungsstile sich im Erwachsenenalter ändern lassen. Die vorliegende Arbeit kann hier als ein kleiner Beitrag verstanden werden, um einen besseren Überblick zu erhalten, aber auch Forschungslücken zu erkennen und in zukünftiger Forschung zu schließen.

References

- Abós, Á., Sevil-Serrano, J., Haerens, L., Aelterman, N., & García-González, L. (2019). Towards a more refined understanding of the interplay between burnout and engagement among secondary school teachers: A person-centered perspective. *Learning and Individual Differences, 72*, 69-79. <https://doi.org/10.1016/j.lindif.2019.04.008>
- Ahnert, L. (2008). *Frühe Bindung. Entstehung und Entwicklung* (2 ed.). Reinhardt.
- Ainsworth, M. D. (1985). Patterns of infant-mother attachments: antecedents and effects on development. *Bulletin of the New York Academy of medicine, 61*(9), 771-791.
- Ainsworth, M. D. S., & Bell, S. M. (1970). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development, 41*(1), 49-67. <https://doi.org/10.2307/1127388>
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. F. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Ed.), *The integration of a child into a social world*. (pp. 99-135). Cambridge University Press.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Erlbaum.
- Ainsworth, M. D. S., & Eichberg, C. G. (1991). Effects on infant-mother attachment of mother's unresolved loss of an attachment figure, or other traumatic experience. In C. M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.), *Attachment across the life cycle* (pp. 160–183). Tavistock/Routledge.
- Ainsworth, M. S. (1993). Attachment as related to mother-infant interaction. *Advances in Infancy Research, 8*, 1-50.
- Alarcon, G., Eschleman, K. J., & Bowling, N. A. (2009). Relationships between personality variables and burnout: A meta-analysis. *Work & Stress, 23*(3), 244-263. <https://doi.org/10.1080/02678370903282600>
- Alessandri, G., Perinelli, E., De Longis, E., Schaufeli, W. B., Theodorou, A., Borgogni, L., Caprara, G. V., & Cinque, L. (2018). Job burnout: The contribution of emotional stability and emotional self-efficacy beliefs. *Journal of Occupational and Organizational Psychology, 91*(4), 823-851. <https://doi.org/10.1111/joop.12225>
- Allen, J. P., & Miga, E. M. (2010). Attachment in adolescence: A move to the level of emotion regulation. *Journal of Social and Personal Relationships, 27*(2), 181-190. <https://doi.org/10.1177/0265407509360898>
- APA. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (Fifth ed.). American Psychiatric Association.
- Arsiwalla, D. D. (2017). Associations between romantic relationship attachment and health among young adults: The mediating role of sleep and emotion regulation. *Journal of Relationships Research, 8*. <https://doi.org/10.1017/jrr.2017.11>

REFERENCES

- Asendorpf, J., Banse, R., Wilpers, S., & Neyer, F. (1997). Relationship-specific attachment scales for adults and their validation with network and diary procedures. *Diagnostica*, 43(4), 289-313.
- Bakermans- Kranenburg, M. J., & van IJzendoorn, M. H. (2004). No association of the dopamine D4 receptor (DRD4) and -521 C/T promoter polymorphisms with infant attachment disorganization. *Attachment & Human Development*, 6(3), 211-218. <https://doi.org/10.1080/14616730412331281584>
- Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2007). Research review: Genetic vulnerability or differential susceptibility in child development: The case of attachment. *Journal of Child Psychology and Psychiatry*, 48(12), 1160-1173. <https://doi.org/10.1111/j.1469-7610.2007.01801.x>
- Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2009). The first 10,000 adult attachment interviews: Distributions of adult attachment representations in clinical and non-clinical groups. *Attachment & Human Development*, 11(3), 223-263. <https://doi.org/10.1080/14616730902814762>
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309-328. <https://doi.org/10.1108/02683940710733115>
- Bakker, A. B., Demerouti, E., de Boer, E., & Shaufeli, W. B. (2003). Job demands and job resources as predictors of absence duration and frequency. *Journal of Vocational Behavior*, 62(2), 341-356. [https://doi.org/10.1016/S0001-8791\(02\)00030-1](https://doi.org/10.1016/S0001-8791(02)00030-1)
- Barnes, J., & Theule, J. (2019). Maternal depression and infant attachment security: A meta-analysis. *Infant Mental Health Journal*, 40(6), 817-834. <https://doi.org/10.1002/imhj.21812>
- Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships*, 7(2), 147-178. <https://doi.org/10.1177/0265407590072001>
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four- category model. *Journal of Personality and Social Psychology*(61), 226-244.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Becker-Stoll, F. (2015). *Skalierung und Klassifizierung von Kleinkindern in der Fremden Situation nach dem System von Mary Ainsworth (nur organisierte Muster)* [Manual]. Staatsinstitut für Frühpädagogik.
- Beebe, B., Jaffe, J., Markese, S., Buck, K., Chen, H., Cohen, P., Bahrack, L., Andrews, H., & Feldstein, S. (2010). The origins of 12-month attachment: A microanalysis of 4-month mother-infant interaction. *Attachment & Human Development*, 12(1-2), 6-141. <https://doi.org/10.1080/14616730903338985>
- Beebe, B., Steele, M., Jaffe, J., Buck, K. A., Chen, H., Cohen, P., Kaitz, M., Markese, S., Andrews, H., Margolis, A., & Feldstein, S. (2011). Maternal anxiety symptoms and mother-infant self- and interactive contingency. *Infant Mental Health Journal*, 32(2), 174-206. <https://doi.org/10.1002/imhj.20274>

REFERENCES

- Behrens, K. Y., Haltigan, J. D., & Bahm, N. I. G. (2016). Infant attachment, adult attachment, and maternal sensitivity: Revisiting the intergenerational transmission gap. *Attachment & Human Development, 18*(4), 337-353. <https://doi.org/10.1080/14616734.2016.1167095>
- Bermejo-Toro, L., Prieto-Ursúa, M., & Hernández, V. (2016). Towards a model of teacher well-being: Personal and job resources involved in teacher burnout and engagement. *Educational Psychology, 36*(3), 481-501. <https://doi.org/10.1080/01443410.2015.1005006>
- Bifulco, A., Mahon, J., Kwon, J.-H., Moran, P., & Jacobs, C. (2003). The Vulnerable Attachment Style Questionnaire (VASQ): an interview-based measure of attachment styles that predict depressive disorder. *Psychological Medicine, 33*(6), 1099-1110.
- Bifulco, A., Moran, P., Ball, C., & Bernazzani, O. (2002). Adult attachment style. I: Its relationship to clinical depression. *Social psychiatry and psychiatric epidemiology, 37*(2), 50-59.
- Bly, E. M., Wright, A. J., & Tuber, S. B. (2012, Spr 2012). Unemployed and poor in New York: The impact of mentalization and Axis II psychopathology on job outcome. *Bulletin of the Menninger Clinic, 76*(2), 101-129. <https://doi.org/10.1521/bumc.2012.76.2.101>
- Bögels, S. M., & Brechman-Toussaint, M. L. (2006). Family issues in child anxiety: Attachment, family functioning, parental rearing and beliefs. *Clinical Psychology Review, 26*(7), 834-856. <https://doi.org/10.1016/j.cpr.2005.08.001> (Anxiety of childhood and adolescence: Challenges and opportunities)
- Bottiani, J. H., Duran, C. A. K., Pas, E. T., & Bradshaw, C. P. (2019). Teacher stress and burnout in urban middle schools: Associations with job demands, resources, and effective classroom practices. *Journal of School Psychology, 77*, 36-51. <https://doi.org/10.1016/j.jsp.2019.10.002>
- Bowlby, J. (1951). *Maternal care and mental health* (Vol. 2). World Health Organization Geneva.
- Bowlby, J. (1969). *Attachment and loss: Attachment* (Vol. 1). Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Separation: Anxiety and Anger* (Vol. 2). Basic Books.
- Bowlby, J. (1977). The making and breaking of affectional bonds: I Aetiology and psychopathology in the light of attachment theory. *The British Journal of Psychiatry, 130*, 201-210. <https://doi.org/10.1192/bjp.130.3.201>
- Bowlby, J. (1980). *Attachment and loss: Sadness and depression* (Vol. 3). Basic Books.
- Bowlby, J. (1988). *A Secure Base: Parent-Child Attachment and Healthy Human Development* (Vol. 178). Basic Books.
- Braungart-Rieker, J. M., Garwood, M. M., Powers, B. P., & Wang, X. (2001). Parental sensitivity, infant affect, and affect regulation: Predictors of later attachment. *Child Development, 72*(1), 252-270. <https://doi.org/10.1111/1467-8624.00277>
- Bretherton, I. (1992). The origins of attachment theory: John Bowlby and Mary Ainsworth. *Developmental Psychology, 28*(5), 759-775. <https://doi.org/10.1037/0012-1649.28.5.759>

REFERENCES

- Bretherton, I. (1999). Updating the 'internal working model' construct: Some reflections. *Attachment & Human Development, 1*(3), 343-357.
- Bretherton, I., & Munholland, K. A. (2008). Internal working models in attachment relationships: Elaborating a central construct in attachment theory. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 102-127). The Guilford Press.
- Britton, J. R. (2005). Pre-discharge anxiety among mothers of well newborns: Prevalence and correlates. *Acta Paediatrica, 94*(12), 1771-1776. <https://doi.org/10.1111/j.1651-2227.2005.tb01852.x>
- Statisches Bundesamt (2017). *Zahl der Pensionierungen von Lehrkräften 2017 erneut rückläufig*.
- Burisch, M. (2011). *Das Burnout-Syndrom: Theorie der inneren Erschöpfung* (Vol. 4). Springer.
- Bylsma, W. H., Cozzarelli, C., & Sumer, N. (1997). Relation between adult attachment styles and global self-esteem. *Basic and Applied Social Psychology, 19*(1), 1-16. https://doi.org/10.1207/s15324834basps1901_1
- Calvo, V., & Bianco, F. (2015). Influence of adult attachment insecurities on parenting self-esteem: The mediating role of dyadic adjustment. *Frontiers in Psychology, 6*.
- Carr, A., Flanagan, E., Dooley, B., Fitzpatrick, M., Flanagan-Howard, R., Shevlin, M., Tierney, K., White, M., Daly, M., & Egan, J. (2009). Profiles of Irish survivors of institutional abuse with different adult attachment styles. *Attachment & Human Development, 11*(2), 183-201. <https://doi.org/10.1080/14616730802638741>
- Cenciotti, F., Tronick, E. Z., & Reck, C. (2004). *Maternal Sensitivity and Responsivity Scales-R*. Universitätsklinikum Heidelberg and Harvard Medical School.
- Chang, M.-L. (2009). An appraisal perspective of teacher burnout: Examining the emotional work of teachers. *Educational psychology review, 21*(3), 193-218.
- Chang, M.-L. (2013). Toward a theoretical model to understand teacher emotions and teacher burnout in the context of student misbehavior: Appraisal, regulation and coping. *Motivation and Emotion, 37*(4), 799-817. <https://doi.org/10.1007/s11031-012-9335-0>
- Cicirelli, V. G. (1983). Adult children's attachment and helping behavior to elderly parents: A path model. *Journal of Marriage and the Family, 45*(4), 815-825. <https://doi.org/10.2307/351794>
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneider (Eds.), *Social Phobia: Diagnosis, Assessment and Treatment* (pp. 69-93). The Guilford Press.
- Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*(1), 103-116. <https://doi.org/10.1037/0021-843X.103.1.103> (Personality and Psychopathology)
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and psychological measurement, 20*, 37-46. <https://doi.org/10.1177/001316446002000104>
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences (rev. ed.)*. Lawrence Erlbaum Associates, Inc.

REFERENCES

- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Cohn, J. F., Matias, R., Tronick, E. Z., Connell, D., & Lyons-Ruth, K. (1986). Face-to-face interactions of depressed mothers and their infants. In E. Z. Tronick & T. Fields (Eds.), *Maternal depression and infant disturbance*. Jossey-Bass.
- Cole, P. M., Martin, S. E., & Dennis, T. A. (2004). Emotion Regulation as a Scientific Construct: Methodological Challenges and Directions for Child Development Research. *Child Development*, 75(2), 317-333. <https://doi.org/10.1111/j.1467-8624.2004.00673.x>
- Collins, N. L., & Ford, M. B. (2010). Responding to the needs of others: The caregiving behavioral system in intimate relationships. *Journal of Social and Personal Relationships*, 27(2), 235-244. <https://doi.org/10.1177/0265407509360907>
- Cooper, G., Hoffman, K., Marvin, R., & Powell, B. (2000). *Secure and limited circles of security* [Unpublished Material]. Centre for Clinical Intervention and University of Virginia.
- Copeland, R., Stearns, L., Howard, A. R. H., & Call, C. (2020). Attachment classification and years of service in a sample of human service providers working in child welfare. *Journal of Human Behavior in the Social Environment*. <https://doi.org/10.1080/10911359.2020.1732256>
- Craske, M. G., Rauch, S. L., Ursano, R., Prenoveau, J., Pine, D. S., & Zinbarg, R. E. (2011). What is an anxiety disorder? *Focus*, 9(3), 369-388.
- D'Rozario, A. B., & Pilkington, P. D. (2021). Parental separation or divorce and adulthood attachment: The mediating role of the abandonment schema. *Clinical Psychology & Psychotherapy*. <https://doi.org/10.1002/cpp.2659>
- Davila, J., & Bradbury, T. N. (2001). Attachment insecurity and the distinction between unhappy spouses who do and do not divorce. *Journal of Family Psychology*, 15(3), 371-393. <https://doi.org/10.1037/0893-3200.15.3.371>
- De Wolff, M., & van Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68(4), 571-591. <https://doi.org/10.2307/1132107>
- Debrot, A., Stellar, J. E., MacDonald, G., Keltner, D., & Impett, E. A. (2021). Is touch in romantic relationships universally beneficial for psychological well-being? The role of attachment avoidance. *Personality and Social Psychology Bulletin*, 47(10), 1495-1509. <https://doi.org/10.1177/0146167220977709>
- Dejko-Wańczyk, K., Janusz, B., & Józefik, B. (2020). Understanding the externalizing behavior of school-age boys: The role of a mother's mentalization and attachment. *Journal of Child and Family Studies*, 29(1), 155-166. <https://doi.org/10.1007/s10826-019-01543-0>
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499.
- Dennis, C.-L., Falah-Hassani, K., & Shiri, R. (2017). Prevalence of antenatal and postnatal anxiety: Systematic review and meta-analysis. *British Journal of Psychiatry*, 210(5), 315-323. <https://doi.org/10.1192/bjp.bp.116.187179>

REFERENCES

- Diener, M. L., & Mangelsdorf, S. C. (1999). Behavioral strategies for emotion regulation in toddlers: Associations with maternal involvement and emotional expressions. *Infant Behavior & Development*, 22(4), 569-583. [https://doi.org/10.1016/S0163-6383\(00\)00012-6](https://doi.org/10.1016/S0163-6383(00)00012-6)
- Dobson, O., Price, E. L., & DiTommaso, E. (2022). Recollected caregiver sensitivity and adult attachment interact to predict mental health and coping. *Personality and Individual Differences*, 187. <https://doi.org/10.1016/j.paid.2021.111398>
- Downing, G. (1996). *Körper und Wort in der Psychotherapie: Leitlinien für die Praxis*. Kösel.
- Downing, G. (2006). Frühkindlicher Affektaustausch und dessen Beziehung zum Körper. In *Handbuch der Körperpsychotherapie* (pp. 333-350). Schattauer.
- Downing, G., Wortmann-Fleischer, S., Von Einsiedel, R., Jordan, W., & Reck, C. (2014). Video intervention therapy for parents with a psychiatric disturbance. In K. Brandt, B. D. Perry, S. Seligman, & E. Tronick (Eds.), *Infant and Early Childhood Mental Health. Core Concepts and Clinical Practice* (pp. 261-279). American Psychiatric Publishing.
- Drake, E. E., Humenick, S. S., Amankwaa, L., Younger, J., & Roux, G. (2007). Predictors of maternal responsiveness. *Journal of Nursing Scholarship*, 39(2), 119-125. <https://doi.org/10.1111/j.1547-5069.2007.00156.x>
- Dubber, S., Reck, C., Müller, M., & Gawlik, S. (2015). Postpartum bonding: The role of perinatal depression, anxiety and maternal–fetal bonding during pregnancy. *Archives of Women's Mental Health*, 18(2), 187-195. <https://doi.org/10.1007/s00737-014-0445-4>
- Ehlers, A., Margraf, J., & Chambless, D. (2001). *Fragebogen zu körperbezogenen Ängsten, Kognitionen und Vermeidung: AKV*. Beltz-Test.
- Einav, M. (2014). Perceptions about parents' relationship and parenting quality, attachment styles, and young adults' intimate expectations: A cluster analytic approach. *The Journal of Psychology: Interdisciplinary and Applied*, 148(4), 413-434. <https://doi.org/10.1080/00223980.2013.805116>
- Elliot, A. J., & Reis, H. T. (2003). Attachment and exploration in adulthood. *Journal of Personality and Social Psychology*, 85(2), 317-331. <https://doi.org/10.1037/0022-3514.85.2.317>
- Enzmann, D., & Kleiber, D. (1989). *Helfer-Leiden: Stress und Burnout in psychosozialen Berufen*. Asanger.
- Epstein, S., & Weiner, I. B. (2003). Cognitive-experiential self-theory of personality. In M. J. Lerner (Ed.), *Comprehensive Handbook of Psychology* (Vol. 5, pp. 159-184). John Wiley & Sons, Inc.
- Erickson, N., Julian, M., & Muzik, M. (2019). Perinatal depression, PTSD, and trauma: Impact on mother–infant attachment and interventions to mitigate the transmission of risk. *International Review of Psychiatry*, 31(3), 245-263. <https://doi.org/10.1080/09540261.2018.1563529>
- Erzar, T., & Erzar, K. K. (2008). 'If I commit to you, I betray my parents': Some negative consequences of the intergenerational cycle of insecure attachment for young adult

REFERENCES

- romantic relationships. *Sexual and Relationship Therapy*, 23(1), 25-35.
<https://doi.org/10.1080/14681990701660408>
- Falgares, G., Lo Gioco, A., Verrocchio, M. C., & Marchetti, D. (2019). Anxiety and depression among adult amputees: The role of attachment insecurity, coping strategies and social support. *Psychology, Health & Medicine*, 24(3), 281-293.
<https://doi.org/10.1080/13548506.2018.1529324>
- Falkenberg, F. (2014). *Psychische, emotionale und körperliche Erschöpfung: Quellen und Gegenmaßnahmen zu dem Burnout-Syndrom bei Lehrkräften*. disserta Verlag.
- Feeney, B. C., & Collins, N. L. (2003). Motivations for caregiving in adult intimate relationships: Influences on caregiving behavior and relationship functioning. *Personality and Social Psychology Bulletin*, 29(8), 950-968.
<https://doi.org/10.1177/0146167203252807>
- Feldman, R. (1998). *Coding Interactive Behavior (CIB)* [Unpublished Manuscript].
- Feldman, R. (2003). Infant-mother and infant-father synchrony: The coregulation of positive arousal. *Infant Mental Health Journal*, 24(1), 1-23. <https://doi.org/10.1002/imhj.10041>
- Feldman, R. (2007a). Parent-infant synchrony and the construction of shared timing; Physiological precursors, developmental outcomes, and risk conditions. *Journal of Child Psychology and Psychiatry*, 48(3-4), 329-354. <https://doi.org/10.1111/j.1469-7610.2006.01701.x>
- Feldman, R. (2007b). Parent-infant synchrony: Biological foundations and developmental outcomes. *Current Directions in Psychological Science*, 16(6), 340-345.
<https://doi.org/10.1111/j.1467-8721.2007.00532.x>
- Feldman, R. (2012). Parent-infant synchrony: A biobehavioral model of mutual influences in the formation of affiliative bonds. *Monographs of the Society for Research in Child Development*, 77(2), 42-51.
- Field, T. (2018). Postnatal anxiety prevalence, predictors and effects on development: A narrative review. *Infant Behavior & Development*, 51, 24-32.
<https://doi.org/10.1016/j.infbeh.2018.02.005>
- Fischer-Kern, M., Fonagy, P., Kapusta, N. D., Luyten, P., Boss, S., Naderer, A., Blüml, V., & Leithner, K. (2013). Mentalizing in female inpatients with major depressive disorder. *Journal of Nervous and Mental Disease*, 201(3), 201-207.
<https://doi.org/10.1097/NMD.0b013e3182845c0a>
- Fonagy, P. (1999). Psychoanalytic theory from the viewpoint of attachment theory and research. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment* (pp. 595-624). Guilford Press.
- Fonagy, P., Luyten, P., & Strathearn, L. (2011). Borderline personality disorder, mentalization, and the neurobiology of attachment. *Infant Mental Health Journal*, 32(1), 47-69. <https://doi.org/10.1002/imhj.20283> (Akachan ni kanpai (Celebrating the baby: Baby, family, and culture))
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development*, 62(5), 891-905. <https://doi.org/10.2307/1131141>

REFERENCES

- Fraley, R. C. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review*, 6(2), 123-151. https://doi.org/10.1207/S15327957PSPR0602_03
- Fraley, R. C., Gillath, O., & Deboeck, P. R. (2021). Do life events lead to enduring changes in adult attachment styles? A naturalistic longitudinal investigation. *Journal of Personality and Social Psychology*, 120(6), 1567-1606. <https://doi.org/10.1037/pspi0000326>
- 10.1037/pspi0000326.supp (Supplemental)
- Fraley, R. C., Vicary, A. M., Brumbaugh, C. C., & Roisman, G. I. (2011). Patterns of stability in adult attachment: An empirical test of two models of continuity and change. *Journal of Personality and Social Psychology*, 101(5), 974-992. <https://doi.org/10.1037/a0024150>
- Frenzel, A. C. (2014). Teacher emotions. In R. Pekrun & E. A. Linnenbrink (Eds.), *International handbook of emotions in education* (pp. 504-529). Routledge.
- Frenzel, A. C., Daniels, L., & Burić, I. (2021). Teacher emotions in the classroom and their implications for students. *Educational Psychologist*, 56(4), 250-264.
- Frenzel, A. C., Fiedler, D., Marx, A. K., Reck, C., & Pekrun, R. (2020). Who enjoys teaching, and when? between-and within-person evidence on teachers' appraisal-emotion links. *Frontiers in Psychology*, 11, 1092.
- Frenzel, A. C., Pekrun, R., Goetz, T., Daniels, L. M., Durksen, T. L., Becker-Kurz, B., & Klassen, R. M. (2016). Measuring teachers' enjoyment, anger, and anxiety: The Teacher Emotions Scales (TES). *Contemporary Educational Psychology*, 46, 148-163.
- Frenzel, A. C., & Stephens, E. J. (2017). Emotionen. In T. Götz (Ed.), *Emotion, Motivation und selbstreguliertes Lernen* (Vol. 2, pp. 16-77). utb.
- Freudenberger, H. J. (1974). Staff burn-out. *Journal of social issues*, 30(1), 159-165.
- Friedrich-Killinger, S. (2014). *Die Bindungsbeziehung zu Gott: Ein dynamischer Wirkfaktor in der Therapie?* Verlag Dr. Kovac.
- Friedrich-Killinger, S. (2020). Wo Liebe heilsam wirksam wird - Die Bindungsbeziehung zu Gott ein dynamischer Wirkfaktor in der Psychotherapie? 22. Arbeitstagung Empirische Forschung zu Glaube, Psychotherapie und Seelsorge, Evangelische Hochschule TABOR, Marburg.
- Fuertes, M., Lopes-dos-Santos, P., Beeghly, M., & Tronick, E. (2009). Infant coping and maternal interactive behavior predict attachment in a Portuguese sample of healthy preterm infants. *European Psychologist*, 14(4), 320-331. <https://doi.org/10.1027/1016-9040.14.4.320>
- Furtado, M., Van Lieshout, R. J., Van Ameringen, M., Green, S. M., & Frey, B. N. (2019). Biological and psychosocial predictors of anxiety worsening in the postpartum period: A longitudinal study. *Journal of Affective Disorders*, 250, 218-225. <https://doi.org/10.1016/j.jad.2019.02.064>
- Gagné, K., Lemelin, J.-P., & Tarabulsky, G. M. (2021). Non-verbal and verbal parental mentalization as predictors of infant attachment security: Contributions of parental embodied mentalizing and mind-mindedness and the mediating role of maternal

REFERENCES

- sensitivity. *Infant Behavior & Development*, 65. <https://doi.org/10.1016/j.infbeh.2021.101622>
- García-Carmona, M., Marín, M. D., & Aguayo, R. (2019). Burnout syndrome in secondary school teachers: A systematic review and meta-analysis. *Social Psychology of Education: An International Journal*, 22(1), 189-208. <https://doi.org/10.1007/s11218-018-9471-9>
- Gardner, A. A., Zimmer-Gembeck, M. J., & Campbell, S. M. (2020). Attachment and emotion regulation: A person-centred examination and relations with coping with rejection, friendship closeness, and emotional adjustment. *British Journal of Developmental Psychology*, 38(1), 125-143. <https://doi.org/10.1111/bjdp.12310>
- George, C., Kaplan, N., & Main, M. (1996). *Adult attachment interview*. University of California.
- Gervai, J., Novak, A., Lakatos, K., Toth, I., Danis, I., Ronai, Z., Nemoda, Z., Sasvari-Szekely, M., Bureau, J.-F., Bronfman, E., & Lyons-Ruth, K. (2007). Infant genotype may moderate sensitivity to maternal affective communications: Attachment disorganization, quality of care, and the DRD4 polymorphism. *Social Neuroscience*, 2(3-4), 307-319. <https://doi.org/10.1080/17470910701391893> (Interpersonal sensitivity: Entering others' worlds)
- Geuens, N., Franck, E., Verheyen, H., De Schepper, S., Roes, L., Vandevijvere, H., Geurden, B., & Van Bogaert, P. (2021). Vulnerability and stressors for burnout within a population of hospital nurses: a qualitative descriptive study. *Canadian Journal of Nursing Research*, 53(1), 16-26.
- Geuter, U. (2015). *Körperpsychotherapie: Grundriss einer Theorie für die klinische Praxis*. Springer.
- Glasheen, C., Richardson, G. A., & Fabio, A. (2010). A systematic review of the effects of postnatal maternal anxiety on children. *Archives of Women's Mental Health*, 13(1), 61-74. <https://doi.org/10.1007/s00737-009-0109-y>
- González-Morales, M. G., Rodríguez, I., & Peiró, J. M. (2010). A longitudinal study of coping and gender in a female-dominated occupation: Predicting teachers' burnout. *Journal of Occupational Health Psychology*, 15(1), 29-44. <https://doi.org/10.1037/a0018232>
- Granqvist, P., Sroufe, L. A., Dozier, M., Hesse, E., Steele, M., van Ijzendoorn, M., Solomon, J., Schuengel, C., Fearon, P., Bakermans-Kranenburg, M., Steele, H., Cassidy, J., Carlson, E., Madigan, S., Jacobvitz, D., Foster, S., Behrens, K., Rifkin-Graboi, A., Gribneau, N., Spangler, G., Ward, M. J., True, M., Spieker, S., Reijman, S., Reisz, S., Tharner, A., Nkara, F., Goldwyn, R., Sroufe, J., Pederson, D., Pederson, D., Weigand, R., Siegel, D., Dazzi, N., Bernard, K., Fonagy, P., Waters, E., Toth, S., Cicchetti, D., Zeanah, C. H., Lyons-Ruth, K., Main, M., & Duschinsky, R. (2017). Disorganized attachment in infancy: A review of the phenomenon and its implications for clinicians and policy-makers. *Attachment & Human Development*, 19(6), 534-558. <https://doi.org/10.1080/14616734.2017.1354040>
- Grawe, K. (2004). *Neuropsychotherapie*. Hogrefe.
- Griffin, S. M., & Howard, S. (2021). Individual differences in emotion regulation and cardiovascular responding to stress. *Emotion*. <https://doi.org/10.1037/emo0001037>

REFERENCES

10.1037/emo0001037.supp (Supplemental)

- Grigoriadis, S., Graves, L., Peer, M., Mamisashvili, L., Tomlinson, G., Vigod, S. N., Dennis, C.-L., Steiner, M., Brown, C., Cheung, A., Dawson, H., Rector, N. A., Guenette, M., & Richter, M. (2019). A systematic review and meta-analysis of the effects of antenatal anxiety on postpartum outcomes. *Archives of Women's Mental Health*, 22(5), 543-556. <https://doi.org/10.1007/s00737-018-0930-2>
- Guidetti, G., Viotti, S., Badagliacca, R., Colombo, L., & Converso, D. (2019). Can mindfulness mitigate the energy-depleting process and increase job resources to prevent burnout? A study on the mindfulness trait in the school context. *PLoS ONE*, 14(4). <https://doi.org/10.1371/journal.pone.0214935>
- Guild, D. J., Alto, M. E., Handley, E. D., Rogosch, F., Cicchetti, D., & Toth, S. L. (2021). Attachment and affect between mothers with depression and their children: Longitudinal outcomes of child parent psychotherapy. *Research on Child and Adolescent Psychopathology*, 49(5), 563-577. <https://doi.org/10.1007/s10802-020-00681-0>
- Guo, Y., Spieker, S. J., & Borelli, J. L. (2020). Emotion co-regulation among mother-preschooler dyads completing the strange situation: Relations to internalizing and externalizing symptoms. *Journal of Child and Family Studies*. <https://doi.org/10.1007/s10826-020-01812-3>
- Guthier, C., Dormann, C., & Voelkle, M. C. (2020). Reciprocal effects between job stressors and burnout: A continuous time meta-analysis of longitudinal studies. *Psychological Bulletin*, 146(12), 1146-1173. <https://doi.org/10.1037/bul0000304>
- Guzmán-González, M., Wlodarczyk, A., Contreras, P., Rivera-Ottenberger, D., & Garrido, L. (2019). Romantic attachment and adjustment to separation: The role of forgiveness of the former partner. *Journal of Child and Family Studies*, 28(11), 3011-3021. <https://doi.org/10.1007/s10826-019-01476-8>
- Hadadian, A. (1995). Attitudes toward deafness and security of attachment relationships among young deaf children and their parents. *Early Education and Development*, 6(2), 181-191. https://doi.org/10.1207/s15566935eed0602_6
- Hagermoser Sanetti, L. M., Boyle, A. M., Magrath, E., Cascio, A., & Moore, E. (2020). Intervening to decrease teacher stress: A review of current research and new directions. *Contemporary School Psychology*. <https://doi.org/10.1007/s40688-020-00285-x>
- Hankin, B. L., & Abela, J. R. Z. (2005). *Development of psychopathology: a vulnerability-stress perspective*. Sage Publications.
- Harmon, D. K., & Perry, A. R. (2011). Fathers' unaccounted contributions: Paternal involvement and maternal stress. *Families in Society*, 92(2), 176-182. <https://doi.org/10.1606/1044-3894.4101>
- Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, 52(3), 511-524. <https://doi.org/10.1037/0022-3514.52.3.511>
- Hazan, C., & Zeifman, D. (1994). Sex and the psychological tether. In K. Bartholomew & D. Perlman (Eds.), *Attachment processes in adulthood* (pp. 151-178). Jessica Kingsley Publishers.

REFERENCES

- Hesse, E. (2008). The Adult Attachment Interview: Protocol, method of analysis, and empirical studies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 552-598). The Guilford Press.
- Hillert, A., Koch, S., & Lehr, D. (2013). Das Burnout-Phänomen am Beispiel des Lehrerberufs. *Der Nervenarzt*, 84(7), 806-812.
- Holmes, J. (2013). On Bowlby's 'trilogy'. *The British Journal of Psychiatry*, 202(5), 371-371. <https://doi.org/10.1192/bjp.bp.112.116020>
- Honkonen, T., Ahola, K., Pertovaara, M., Isometä, E., Kalimo, R., Nykyri, E., Aromaa, A., & Lönnqvist, J. (2006). The association between burnout and physical illness in the general population--Results from the Finnish Health 2000 Study. *Journal of Psychosomatic Research*, 61(1), 59-66. <https://doi.org/10.1016/j.jpsychores.2005.10.002>
- Howe, D. (2011). *Attachment across the lifecourse: A brief introduction*. Red Globe Press.
- Huang, J., Wang, Y., & You, X. (2016). The job demands-resources model and job burnout: The mediating role of personal resources. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, 35(4), 562-569. <https://doi.org/10.1007/s12144-015-9321-2>
- Hui, Q., Yao, C., Li, M., & You, X. (2022). Upward social comparison sensitivity on teachers' emotional exhaustion: A moderated moderation model of self-esteem and gender. *Journal of Affective Disorders*, 299, 568-574. <https://doi.org/10.1016/j.jad.2021.12.081>
- Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-Stress Models. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 32-46). Sage Publications
- Ito, M. (2000). Burnout among teachers: Teaching experience and type of teacher. *Japanese Journal of Educational Psychology*, 48(1), 12-20. https://doi.org/10.5926/jjep1953.48.1_12
- Jäger, A.-M., & Brakemeier, E.-L. (2014). Cognitive Behavioral Analysis System of Psychotherapy (CBASP) als schulübergreifende psychotherapie der chronischen depression = The Cognitive Behavioral Analysis System of Psychotherapy (CBASP) as treatment for chronic depression. *Zeitschrift für Klinische Psychologie und Psychotherapie: Forschung und Praxis*, 43(4), 259-269. <https://doi.org/10.1026/1616-3443/a000281>
- Jiang, L. (2017). Perception of and reactions to job insecurity: The buffering effect of secure attachment. *Work & Stress*, 31(3), 256-275. <https://doi.org/10.1080/02678373.2017.1305005>
- Jones, J. D., Fraley, R. C., Ehrlich, K. B., Stern, J. A., Lejuez, C. W., Shaver, P. R., & Cassidy, J. (2018). Stability of attachment style in adolescence: An empirical test of alternative developmental processes. *Child Development*, 89(3), 871-880. <https://doi.org/10.1111/cdev.12775>
- Jones, S. (2015). Attachment Theory. In. <https://doi.org/10.1002/9781118540190.wbeic161>

REFERENCES

- Junker, R., Donker, M. H., & Mainhard, T. (2021, 2021/10/01/). Potential classroom stressors of teachers: An audiovisual and physiological approach. *Learning and Instruction, 75*, 101495. <https://doi.org/https://doi.org/10.1016/j.learninstruc.2021.101495>
- Kadir, N. B. y. A., Wan Sulaiman, W. S., Desa, A., Omar, F., wati Halim, F., & Yusooff, F. (2017, Sum 2017). Relationship of adult attachment styles and external shame on depression symptoms among married couples: A preliminary study. *Journal of Muslim Mental Health, 11*(1), 3-18. <https://doi.org/10.3998/jmmh.10381607.0011.101>
- Kaitz, M., Maytal, H. R., Devor, N., Bergman, L., & Mankuta, D. (2010). Maternal anxiety, mother–infant interactions, and infants’ response to challenge. *Infant Behavior & Development, 33*(2), 136-148. <https://doi.org/10.1016/j.infbeh.2009.12.003>
- Keizer, R., Helmerhorst, K. O. W., & van Rijn-van Gelderen, L. (2019). Perceived quality of the mother–adolescent and father–adolescent attachment relationship and adolescents’ self-esteem. *Journal of Youth and Adolescence, 48*(6), 1203-1217. <https://doi.org/10.1007/s10964-019-01007-0>
- Keller, H. (2015). *Die Entwicklung der Generation Ich*. Springer Essentials.
- Keller, H. (2021). *Mythos Bindungstheorie: Konzept, Methode, Bilanz* (Vol. 2). verlag das netz.
- Keller, M. M., Chang, M.-L., Becker, E. S., Goetz, T., & Frenzel, A. C. (2014). Teachers’ emotional experiences and exhaustion as predictors of emotional labor in the classroom: An experience sampling study. *Frontiers in Psychology, 5*, 1442.
- Kersten-Alvarez, L. E., Hosman, C. M. H., Riksen-Walraven, J. M., Van Doesum, K. T. M., & Hoefnagels, C. (2011). Which preventive interventions effectively enhance depressed mothers' sensitivity? A meta-analysis. *Infant Mental Health Journal, 32*(3), 362-376. <https://doi.org/10.1002/imhj.20301>
- Kertz, S. J., Smith, C. L., Chapman, L. K., & Woodruff-Borden, J. (2008). Maternal sensitivity and anxiety: Impacts on child outcome. *Child & Family Behavior Therapy, 30*(2), 153-171. <https://doi.org/10.1080/07317100802060336>
- Kim, S. H., Baek, M., & Park, S. (2021). Association of parent–child experiences with insecure attachment in adulthood: A systematic review and meta-analysis. *Journal of Family Theory & Review, 13*(1), 58-76. <https://doi.org/10.1111/jftr.12402>
- Kingsley, K., Sagester, G., & Weaver, L. L. (2020). Interventions supporting mental health and positive behavior in children ages birth–5 yr: A systematic review. *American Journal of Occupational Therapy, 74*(2), 1-29. <https://doi.org/10.5014/ajot.2020.039768>
- Klaus, M., Kennell, J., & Klaus, P. (1995). *Bonding Building the Foundations of Secure Attachment and Independence*. 1996. *Massachusetts: Addison-Wesley Publishing Company*.
- Klauser, N. (2013). *Positive mother-infant interaction: The role of maternal speech*. Heidelberg University.
- Kobak, R., Rosenthal, N. L., & Serwik, A. (2005). The attachment hierarchy in middle childhood. In K. A. Kerns & R. A. Richardson (Eds.), *Attachment in Middle Childhood* (pp. 71-88). Guilford Press.

REFERENCES

- Kraft, A., Knappe, S., Petrowski, K., Petzoldt, J., & Martini, J. (2017). Unterschiede in der Mutter-Kind-Bindung bei Frauen mit und ohne Soziale Phobie = Maternal bonding and infant attachment in women with and without social phobia. *Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie*, 45(1), 49-57. <https://doi.org/10.1024/1422-4917/a000454>
- Krause, A. M., & Haverkamp, B. E. (1996). Attachment in adult child–older parent relationships: Research, theory, and practice. *Journal of Counseling & Development*, 75(2), 83-92. <https://doi.org/10.1002/j.1556-6676.1996.tb02318.x>
- Kuipers, G. S., den Hollander, S., van der Ark, L. A., & Bekker, M. H. J. (2017). Recovery from eating disorder 1 year after start of treatment is related to better mentalization and strong reduction of sensitivity to others. *Eating and Weight Disorders*, 22(3), 535-547. <https://doi.org/10.1007/s40519-017-0405-x>
- Kvitkovičová, L., Umemura, T., & Macek, P. (2017). Roles of attachment relationships in emerging adults' career decision-making process: A two-year longitudinal research design. *Journal of Vocational Behavior*, 101, 119-132. <https://doi.org/10.1016/j.jvb.2017.05.006>
- Lakatos, K., Nemoda, Z., Toth, I., Ronai, Z., Ney, K., Sasvari- Szekely, M., & Gervai, J. (2002). Further evidence for the role of the dopamine D4 receptor (DRD4) gene in attachment disorganization: Interaction of the exon III 48-bp repeat and the -521 C/T promoter polymorphisms. *Molecular Psychiatry*, 7(1), 27-31. <https://doi.org/10.1038/sj/mp/4000986>
- Lakatos, K., Toth, I., Nemoda, Z., Ney, K., Sasvari-Szekely, M., & Gervai, J. (2000). Dopamine D4 receptor (DRD4) gene polymorphism is associated with attachment disorganization in infants. *Molecular Psychiatry*, 5(6), 633-637.
- Landen, S. M., & Wang, C.-C. D. C. (2010). Adult attachment, work cohesion, coping, and psychological well-being of firefighters. *Counselling Psychology Quarterly*, 23(2), 143-162. <https://doi.org/10.1080/09515071003776028>
- Laux, L., Glanzmann, P., Schaffner, P., & Spielberger, C. (1981). *Das State-Trait-Angstinventar. Theoretische Grundlagen und Handanweisung*. Beltz Test GmbH.
- Lazarus, R. S. (1991). Cognition and motivation in emotion. *American Psychologist*, 46(4), 352-367. <https://doi.org/10.1037/0003-066X.46.4.352>
- Lazarus, R. S. (1993). From psychological stress to the emotions: A history of changing outlooks. *Annual Review of Psychology*, 44, 1-21. <https://doi.org/10.1146/annurev.ps.44.020193.000245>
- Lee, M., Pekrun, R., Taxer, J. L., Schutz, P. A., Vogl, E., & Xie, X. (2016). Teachers' emotions and emotion management: Integrating emotion regulation theory with emotional labor research. *Social Psychology of Education: An International Journal*, 19(4), 843-863. <https://doi.org/10.1007/s11218-016-9359-5>
- Lenzo, V., Sardella, A., Maisano Branca, G., Bordino, V., Aragona, M., Garipoli, C., Schimmenti, A., & Quattropiani, M. C. (2021). The interplay between burnout risk and attachment styles among palliative care practitioners. *Psychodynamic Practice: Individuals, Groups and Organisations*. <https://doi.org/10.1080/14753634.2021.1922305>

REFERENCES

- Lewczuk, K., Kobylińska, D., Marchlewska, M., Krysztofiak, M., Glica, A., & Moiseeva, V. (2021). Adult attachment and health symptoms: The mediating role of emotion regulation difficulties. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, 40(4), 1720-1733. <https://doi.org/10.1007/s12144-018-0097-z>
- Liu, Y., Guo, N., Li, T., Zhuang, W., & Jiang, H. (2020). Prevalence and associated factors of postpartum anxiety and depression symptoms among women in Shanghai, China. *Journal of Affective Disorders*, 274, 848-856. <https://doi.org/10.1016/j.jad.2020.05.028>
- Ludmer, J. A., Gonzalez, A., Kennedy, J., Masellis, M., Meinz, P., & Atkinson, L. (2018). Association between maternal childhood maltreatment and mother-infant attachment disorganization: Moderation by maternal oxytocin receptor gene and cortisol secretion. *Hormones and Behavior*, 102, 23-33. <https://doi.org/10.1016/j.yhbeh.2018.04.006>
- Lyons-Ruth, K., & Block, D. (1996, Fal 1996). The disturbed caregiving system: Relations among childhood trauma, maternal caregiving, and infant affect and attachment. *Infant Mental Health Journal*, 17(3), 257-275. [https://doi.org/10.1002/\(SICI\)1097-0355\(199623\)17:3<257::AID-IMHJ5>3.0.CO;2-L](https://doi.org/10.1002/(SICI)1097-0355(199623)17:3<257::AID-IMHJ5>3.0.CO;2-L) (Defining the caregiving system)
- MacRae, K. A. M. (2003). *Attachment in blind infants: A systematic investigation using Ainsworth's Strange Situation* [Dissertation]. University of Toronto.
- Main, M., Goldwyn, R., & Hesse, E. (2008). *The Adult Attachment Interview: Scoring and Classification System* (Version 8)[Unpublished Manuscript]. University of California.
- Main, M., & Hesse, E. (1990). *Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism?* The University of Chicago Press.
- Main, M., & Solomon, J. (1986). Discovery of a new insecure-disorganized/disoriented attachment pattern: Procedures, findings and implications for the classification of behavior. In T. B. Brazelton & M. Yogman (Eds.), *Affective development in infancy* (pp. 95-124). Ablex Press.
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 121-160). The University of Chicago Press.
- Marchand, A., Blanc, M. E., & Beaugard, N. (2018). Do age and gender contribute to workers' burnout symptoms? *Occupational Medicine*, 68(6), 405-411. <https://doi.org/10.1093/occmed/kqy088>
- Marvin, R., Cooper, G., Hoffman, K., & Powell, B. (2002). The Circle of Security project: Attachment-based intervention with caregiver-pre-school child dyads. *Attachment & Human Development*, 4(1), 107-124. <https://doi.org/10.1080/14616730252982491>
- Maslach, C. (1981). Burnout: A social psychological analysis. In J. W. Jones (Ed.), *The Burnout Syndrome* (pp. 30-53). London House.
- Maslach, C. (1993). Burnout: A multidimensional perspective. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Series in applied psychology: Social issues and*

REFERENCES

- questions. *Professional burnout: Recent developments in theory and research* (pp. 19-32). Taylor & Francis.
- Maslach, C., & Jackson, S. E. (1984). Patterns of burnout among a national sample of public contact workers. *Journal of health and human resources administration*, 189-212.
- Maslach, C., & Jackson, S. E. (1986). *The Maslach Burnout Inventory* (2nd ed.). Consulting Psychologists Press.
- Maslach, C., & Leiter, M. P. (1999). Teacher burnout: A research agenda. In R. Vandenberghe & A. M. Huberman (Eds.), *Understanding and preventing teacher burnout: A sourcebook of international research and practice* (pp. 295-303). Cambridge University Press.
<https://doi.org/https://doi.org/10.1017/CBO9780511527784.021>
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397-422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- McCarthy, C. J., Lambert, R. G., O'Donnell, M., & Melendres, L. T. (2009). The relation of elementary teachers' experience, stress, and coping resources to burnout symptoms. *The Elementary School Journal*, 109(3), 282-300. <https://doi.org/10.1086/592308>
- McCullough, J. P. (2000). *Treatment of chronic depression: Cognitive Behavioral Analysis System of Psychotherapy*. The Guilford Press.
- McMahon, C. A., & Maxwell, A.-M. (2021). Commentary on Guild et al (2020): The importance of well-designed intervention studies for advancing attachment theory and its clinical applications. *Research on Child and Adolescent Psychopathology*, 49(5), 583-589. <https://doi.org/10.1007/s10802-020-00702-y>
- McWilliams, L. A. (2017). Adult attachment insecurity is positively associated with medically unexplained chronic pain. *European Journal of Pain*, 21(8), 1378-1383.
<https://doi.org/10.1002/ejp.1036>
- McWilliams, L. A., & Bailey, S. J. (2010). Associations between adult attachment ratings and health conditions: Evidence from the National Comorbidity Survey Replication. *Health Psychology*, 29(4), 446-453. <https://doi.org/10.1037/a0020061>
- Meadow-Orlans, K. P., & Steinberg, A. G. (1993). Effects of infant hearing loss and maternal support on mother-infant interactions at 18 months. *Journal of Applied Developmental Psychology*, 14(3), 407-426. [https://doi.org/10.1016/0193-3973\(93\)90017-P](https://doi.org/10.1016/0193-3973(93)90017-P)
- Meadow, K. P., Greenberg, M. T., & Erting, C. (1984). Attachment behaviour of deaf children with deaf parents. *Annual Progress in Child Psychiatry and Child Development*, 22, 176-187.
- Meins, E. (2017). Overrated: The Predictive Power of Attachment. *The Psychologist*, 30, 20-24.
- Meins, E., Bureau, J. F., & Fernyhough, C. (2018). Mother-child attachment from infancy to the preschool years: Predicting security and stability. *Child Development*, 89(3), 1022-1038. <https://doi.org/10.1111/cdev.12778>
- Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants' mental processes predict security of attachment at 12 months. *Journal of Child Psychology and Psychiatry*, 42(5), 637-648.
<https://doi.org/10.1111/1469-7610.00759>

REFERENCES

- Meins, E., Fernyhough, C., Wainwright, R., Clark-Carter, D., Gupta, M. D., Fradley, E., & Tuckey, M. (2003). Pathways to Understanding Mind: Construct Validity and Predictive Validity of Maternal Mind-Mindedness. *Child Development, 74*(4), 1194-1211. <https://doi.org/10.1111/1467-8624.00601>
- Meng, X., D'Arcy, C., & Adams, G. C. (2015). Associations between adult attachment style and mental health care utilization: Findings from a large-scale national survey. *Psychiatry Research, 229*(1-2), 454-461. <https://doi.org/10.1016/j.psychres.2015.05.092>
- Mertesacker, B., Bade, U., Haverkock, A., & Pauli-Pott, U. (2004). Predicting maternal reactivity/sensitivity: The role of infant emotionality, maternal depressiveness/anxiety, and social support. *Infant Mental Health Journal, 25*(1), 47-61. <https://doi.org/10.1002/imhj.10085>
- Mesman, J., Van Ijzendoorn, M. H., & Sagi-Schwartz, A. (2016). Cross-cultural patterns of attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (Vol. 3, pp. 852-877). Guilford Press.
- Mikulincer, M., & Florian, V. (1999, Fal 1999). Maternal–fetal bonding, coping strategies, and mental health during pregnancy—The contribution of attachment style. *Journal of Social and Clinical Psychology, 18*(3), 255-276. <https://doi.org/10.1521/jscp.1999.18.3.255>
- Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. Guilford Press.
- Mikulincer, M., & Shaver, P. R. (2019). Attachment orientations and emotion regulation. *Current Opinion in Psychology, 25*, 6-10. <https://doi.org/10.1016/j.copsyc.2018.02.006>
- Milatz, A., Lüftenegger, M., & Schober, B. (2015). Teachers' relationship closeness with students as a resource for teacher wellbeing: A response surface analytical approach. *Frontiers in Psychology, 6*.
- Milot, T., Lorent, A., St-Laurent, D., Bernier, A., Tarabulsy, G., Lemelin, J.-P., & Éthier, L. S. (2014). Hostile-Helpless state of mind as further evidence of adult disorganized states of mind in neglecting families. *Child Abuse & Neglect, 38*(8), 1351-1357. <https://doi.org/10.1016/j.chiabu.2014.02.015>
- Morelli, G. A., Chaudhary, N., Gottlieb, A., Keller, H., Murray, M., Quinn, N., Rosabal-Coto, M., Scheidecker, G., Takada, A., & Vicedo, M. (2017). Taking culture seriously: A pluralistic approach to attachment. In H. Keller & K. A. Bard (Eds.), *The cultural nature of attachment: Contextualizing relationships and development* (pp. 139-170). MIT Press.
- Mullen, G. (2019). Mapping evidence from systematic reviews regarding adult attachment and mental health difficulties: A scoping review. *Irish Journal of Psychological Medicine, 36*(3), 207-229. <https://doi.org/10.1017/ipm.2017.27>
- Müller, L. E., Bertsch, K., Bülow, K., Herpertz, S. C., & Buchheim, A. (2019). Emotional neglect in childhood shapes social dysfunctioning in adults by influencing the oxytocin and the attachment system: Results from a population-based study. *International Journal of Psychophysiology, 136*, 73-80. <https://doi.org/10.1016/j.ijpsycho.2018.05.011>

REFERENCES

- Müller, M., Tronick, E., Zietlow, A.-L., Nonnenmacher, N., Verschoor, S., & Träuble, B. (2016). Effects of maternal anxiety disorders on infant self-comforting behaviors: The role of maternal bonding, infant gender and age. *Psychopathology*, *49*(4), 295-304. <https://doi.org/10.1159/000448404>
- Müller, M., Zietlow, A.-L., Klauser, N., Woll, C., Nonnenmacher, N., Tronick, E., & Reck, C. (2022, 2022-January-20). From Early Micro-Temporal Interaction Patterns to Child Cortisol Levels: Toward the Role of Interactive Reparation and Infant Attachment in a Longitudinal Study [Original Research]. *Frontiers in Psychology*, *12*. <https://doi.org/10.3389/fpsyg.2021.807157>
- Müller, M., Zietlow, A.-L., Tronick, E., & Reck, C. (2015). What dyadic reparation is meant to do: an association with infant cortisol reactivity. *Psychopathology*, *48*(6), 386-399.
- Murray, L., Cooper, P., Creswell, C., Schofield, E., & Sack, C. (2007). The effects of maternal social phobia on mother-infant interactions and infant social responsiveness. *Journal of Child Psychology and Psychiatry*, *48*(1), 45-52. <https://doi.org/10.1111/j.1469-7610.2006.01657.x>
- Murray, L., Fiori-Cowley, A., Hooper, R., & Cooper, P. (1996). The impact of postnatal depression and associated adversity on early mother–infant interactions and later infant outcomes. *Child Development*, *67*(5), 2512-2526. <https://doi.org/10.2307/1131637>
- Nath, S., Pearson, R. M., Moran, P., Pawlby, S., Molyneaux, E., Challacombe, F. L., & Howard, L. M. (2019). The association between prenatal maternal anxiety disorders and postpartum perceived and observed mother-infant relationship quality. *Journal of Anxiety Disorders*, *68*. <https://doi.org/10.1016/j.janxdis.2019.102148>
- Naveed, S., Saboor, S., & Zeshan, M. (2020). An overview of attachment patterns: Psychology, neurobiology, and clinical implications. *Journal of Psychosocial Nursing and Mental Health Services*, *58*(8), 18-22. <https://doi.org/10.3928/02793695-20200717-01>
- Nicol-Harper, R., Harvey, A. G., & Stein, A. (2007). Interactions between mothers and infants: Impact of maternal anxiety. *Infant Behavior & Development*, *30*(1), 161-167. <https://doi.org/10.1016/j.infbeh.2006.08.005>
- Nolvi, S., Karlsson, L., Bridgett, D. J., Pajulo, M., Tolvanen, M., & Karlsson, H. (2016). Maternal postnatal psychiatric symptoms and infant temperament affect early mother-infant bonding. *Infant Behavior & Development*, *43*, 13-23. <https://doi.org/10.1016/j.infbeh.2016.03.003>
- Noor, N. M., & Zainuddin, M. (2011). Emotional labor and burnout among female teachers: Work–family conflict as mediator. *Asian Journal of Social Psychology*, *14*(4), 283-293. <https://doi.org/10.1111/j.1467-839X.2011.01349.x>
- Nouwen, H. J. M. (1996). *Bread for the Journey: A Daybook of Wisdom and Faith*. Harper One.
- Nygren, M., Carstensen, J., Ludvigsson, J., & Frostell, A. S. (2012). Adult attachment and parenting stress among parents of toddlers. *Journal of Reproductive and Infant Psychology*, *30*(3), 289-302. <https://doi.org/10.1080/02646838.2012.717264>
- Obsuth, I., Hennighausen, K., Brumariu, L. E., & Lyons-Ruth, K. (2014). Disorganized behavior in adolescent–parent interaction: Relations to attachment state of mind,

REFERENCES

- partner abuse, and psychopathology. *Child Development*, 85(1), 370-387.
<https://doi.org/10.1111/cdev.12113>
- Olsavsky, A. L., Berrigan, M., & Schoppe-Sullivan, S. J. (2020). Self-reported adult attachment and observed parenting behavior of new mothers and fathers. *Social Psychological and Personality Science*, 11(6), 821-834.
<https://doi.org/10.1177/1948550619887701>
- Opie, J. E., McIntosh, J. E., Esler, T. B., Duschinsky, R., George, C., Schore, A., Kothe, E. J., Tan, E. S., Greenwood, C. J., & Olsson, C. A. (2020). Early childhood attachment stability and change: A meta-analysis. *Attachment & Human Development*.
<https://doi.org/10.1080/14616734.2020.1800769>
- Otto, H. (2014). Don't show your emotions!: Emotion regulation and attachment in the Cameroonian Nso. In H. Otto & H. Keller (Eds.), *Different faces of attachment: Cultural variations on a universal human need* (pp. 215-229). Cambridge University Press.
- Owens, G., Crowell, J. A., Pan, H., Treboux, D., O'Connor, E., & Waters, E. (1995). The prototype hypothesis and the origins of attachment working models: Adult relationships with parents and romantic partners. *Monographs of the Society for Research in Child Development*, 60(2-3), 216-233. <https://doi.org/10.2307/1166180>
- Paetzold, R. L., Rholes, W. S., & Kohn, J. L. (2015). Disorganized attachment in adulthood: Theory, measurement, and implications for romantic relationships. *Review of General Psychology*, 19(2), 146-156. <https://doi.org/10.1037/gpr0000042>
- Pappa, I., Szekely, E., Mileva-Seitz, V. R., Luijk, M. P. C. M., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., & Tiemeier, H. (2015). Beyond the usual suspects: A multidimensional genetic exploration of infant attachment disorganization and security. *Attachment & Human Development*, 17(3), 288-301.
<https://doi.org/10.1080/14616734.2015.1037316>
- Paul, I. M., Downs, D. S., Schaefer, E. W., Beiler, J. S., & Weisman, C. S. (2013). Postpartum anxiety and maternal-infant health outcomes. *Pediatrics*, 131(4), e1218-e1224. <https://doi.org/10.1542/peds.2012-2147>
- Pearson, J. L., Cowan, P. A., Cowan, C. P., & Cohn, D. A. (1993). Adult attachment and adult child-older parent relationships. *American Journal of Orthopsychiatry*, 63(4), 606-613. <https://doi.org/10.1037/h0079471>
- Pietromonaco, P. R., & Beck, L. A. (2019). Adult attachment and physical health. *Current Opinion in Psychology*, 25, 115-120. <https://doi.org/10.1016/j.copsyc.2018.04.004>
- Pines, A. M. (2004). Adult attachment styles and their relationship to burnout: A preliminary, cross-cultural investigation. *Work & Stress*, 18(1), 66-80.
<https://doi.org/10.1080/02678370310001645025>
- Pines, A. M., & Aronson, E. (1988). *Career Burnout: Causes and Cures*. Free Press.
- Pinquart, M., Feußner, C., & Ahnert, L. (2013). Meta-analytic evidence for stability in attachments from infancy to early adulthood. *Attachment & Human Development*, 15(2), 189-218. <https://doi.org/10.1080/14616734.2013.746257>

REFERENCES

- Planalp, E. M., O'Neill, M., & Braungart-Rieker, J. M. (2019). Parent mind-mindedness, sensitivity, and infant affect: Implications for attachment with mothers and fathers. *Infant Behavior & Development, 57*. <https://doi.org/10.1016/j.infbeh.2019.101330>
- Polte, C., Junge, C., Soest, T., Seidler, A., Eberhard-Gran, M., & Garthus-Niegel, S. (2019). Impact of maternal perinatal anxiety on social-emotional development of 2-year-olds, a prospective study of Norwegian mothers and their offspring: The impact of perinatal anxiety on child development. *Maternal and Child Health Journal, 23*(3), 386-396. <https://doi.org/10.1007/s10995-018-2684-x>
- Puig, J., Englund, M. M., Simpson, J. A., & Collins, W. A. (2013). Predicting adult physical illness from infant attachment: A prospective longitudinal study. *Health Psychology, 32*(4), 409-417. <https://doi.org/10.1037/a0028889>
- Pyhältö, K., Pietarinen, J., & Salmela-Aro, K. (2011). Teacher–working-environment fit as a framework for burnout experienced by Finnish teachers. *Teaching and Teacher Education, 27*(7), 1101-1110. <https://doi.org/10.1016/j.tate.2011.05.006>
- Quinn, N., & Mageo, J. M. (Eds.). (2013). *Attachment reconsidered: Cultural perspectives on a Western theory*. Palgrave Macmillan.
- Rahimnia, F., & Sharifirad, M. S. (2015). Authentic leadership and employee well-being: The mediating role of attachment insecurity. *Journal of Business Ethics, 132*(2), 363-377. <https://doi.org/10.1007/s10551-014-2318-1>
- Ramos, K., & Lopez, F. G. (2018). Attachment security and career adaptability as predictors of subjective well-being among career transitioners. *Journal of Vocational Behavior, 104*, 72-85. <https://doi.org/10.1016/j.jvb.2017.10.004>
- Reck, C., Hunt, A., Fuchs, T., Weiss, R., Noon, A., Moehler, E., Downing, G., Tronick, E. Z., & Mundt, C. (2004). Interactive Regulation of Affect in Postpartum Depressed Mothers and Their Infants: An Overview. *Psychopathology, 37*(6), 272-280. <https://doi.org/10.1159/000081983>
- Reck, C., Müller, M., Tietz, A., & Möhler, E. (2013). Infant distress to novelty is associated with maternal anxiety disorder and especially with maternal avoidance behavior. *Journal of Anxiety Disorders, 27*(3), 207-214. <https://doi.org/10.1016/j.janxdis.2013.03.009>
- Reck, C., Noe, D., Cenciotti, F., Weinberg, M. K., & Tronick, E. Z. (2009). *Infant and Caregiver Engagement Phases, German Revised Ed. (ICEP-R)*.
- Reck, C., Noe, D., Stefenelli, U., Fuchs, T., Cenciotti, F., Stehle, E., Mundt, C., Downing, G., & Tronick, E. Z. (2011). Interactive coordination of currently depressed inpatient mothers and their infants during the postpartum period. *Infant Mental Health Journal, 32*(5), 542-562. <https://doi.org/10.1002/imhj.20312>
- Reck, C., Nonnenmacher, N., & Zietlow, A.-L. (2016). Intergenerational transmission of internalizing behavior: The role of maternal psychopathology, child responsiveness and maternal attachment style insecurity. *Psychopathology, 49*(4), 277-284. <https://doi.org/10.1159/000446846>
- Reck, C., Struben, K., Backenstrass, M., Stefenelli, U., Reinig, K., Fuchs, T., Sohn, C., & Mundt, C. (2008). Prevalence, onset and comorbidity of postpartum anxiety and depressive disorders. *Acta Psychiatrica Scandinavica, 118*(6), 459-468. <https://doi.org/10.1111/j.1600-0447.2008.01264.x>

REFERENCES

- Reck, C., Tietz, A., Müller, M., Seibold, K., & Tronick, E. (2018). The impact of maternal anxiety disorder on mother-infant interaction in the postpartum period. *PLoS ONE*, *13*(5). <https://doi.org/10.1371/journal.pone.0194763>
- Reck, C., Van Den Bergh, B., Tietz, A., Müller, M., Ropeter, A., Zipser, B., & Pauen, S. (2018). Maternal avoidance, anxiety cognitions and interactive behaviour predicts infant development at 12 months in the context of anxiety disorders in the postpartum period. *Infant Behavior & Development*, *50*, 116-131. <https://doi.org/10.1016/j.infbeh.2017.11.007>
- Richter, N., & Reck, C. (2013). Positive maternal interaction behavior moderates the relation between maternal anxiety and infant regulatory problems. *Infant Behavior & Development*, *36*(4), 498-506. <https://doi.org/10.1016/j.infbeh.2013.04.007>
- Romano, M., Cacciatore, A., Giordano, R., & La Rosa, B. (2010). Postpartum period: three distinct but continuous phases. *Journal of prenatal medicine*, *4*(2), 22-25.
- Ronen, S., & Mikulincer, M. (2012). Predicting employees' satisfaction and burnout from managers' attachment and caregiving orientations. *European Journal of Work and Organizational Psychology*, *21*(6), 828-849. <https://doi.org/10.1080/1359432X.2011.595561>
- Roza, J. M. (2021). *The teacher-class-relationship: Investigating teachers relationships with their classes*. Ludwig-Maximilians University, Department of Psychology.
- Roza, J. M., Frenzel, A. C., & Klassen, R. M. (2021). The teacher-class relationship. *Zeitschrift für Pädagogische Psychologie*.
- Sable, P. (2007). Accentuating the positive in adult attachments. *Attachment & Human Development*, *9*(4), 361-374. <https://doi.org/10.1080/14616730701711573> (The life and work of John Bowlby: A tribute to his centenary)
- Santona, A., De Cesare, P., Tognasso, G., De Franceschi, M., & Sciandra, A. (2019). The mediating role of romantic attachment in the relationship between attachment to parents and aggression. *Frontiers in Psychology*, *10*. <https://doi.org/10.3389/fpsyg.2019.01824>
- Schaufeli, W. B., & Enzmann, D. (1998). *The Burnout Companion to Study & Practice: A Critical Analysis* Taylor & Francis.
- Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social science information*, *44*(4), 695-729.
- Scheuch, K., Haufe, E., & Seibt, R. (2015). Teachers' health. *Deutsches Ärzteblatt International*, *112*(20), 347-356.
- Schoppe-Sullivan, S. J., Diener, M. L., Mangelsdorf, S. C., Brown, G. L., McHale, J. L., & Frosch, C. A. (2006). Attachment and Sensitivity in Family Context: The Roles of Parent and Infant Gender. *Infant and Child Development*, *15*(4), 367-385. <https://doi.org/10.1002/icd.449>
- Schoppe-Sullivan, S. J., Settle, T., Lee, J.-K., & Kamp Dush, C. M. (2016). Supportive coparenting relationships as a haven of psychological safety at the transition to parenthood. *Research in Human Development*, *13*(1), 32-48. <https://doi.org/10.1080/15427609.2016.1141281>

REFERENCES

- Schuengel, C., Bakermans-Kranenburg, M. J., & Van Ijzendoorn, M. H. (1999). Frightening maternal behavior linking unresolved loss and disorganized infant attachment. *Journal of Consulting and Clinical Psychology, 67*(1), 54-63. <https://doi.org/10.1037/0022-006X.67.1.54>
- Schutz, P. A., & Zembylas, M. (Eds.). (2009). *Advances in teacher emotion research: The impact on teachers' lives*. Springer.
- Schwartz, M. M., Frenzel, A. C., Goetz, T., Marx, A. K. G., Reck, C., Pekrun, R., & Fiedler, D. (2020). Excessive boredom among adolescents: A comparison between low and high achievers. *PLoS ONE, 15*(11). <https://doi.org/10.1371/journal.pone.0241671>
- Schwartz, M. M., Frenzel, A. C., Goetz, T., Pekrun, R., Reck, C., Marx, A. K., & Fiedler, D. (2021). Boredom Makes Me Sick: Adolescents' Boredom Trajectories and Their Health-Related Quality of Life. *International Journal of Environmental Research and Public Health, 18*(12), 6308.
- Scrima, F., Di Stefano, G., Guarnaccia, C., & Lorito, L. (2015). The impact of adult attachment style on organizational commitment and adult attachment in the workplace. *Personality and Individual Differences, 86*, 432-437. <https://doi.org/10.1016/j.paid.2015.07.013>
- Shai, D., & Belsky, J. (2011). When words just won't do: Introducing parental embodied mentalizing. *Child Development Perspectives, 5*(3), 173-180. <https://doi.org/10.1111/j.1750-8606.2011.00181.x>
- Shai, D., & Belsky, J. (2017). Parental embodied mentalizing: How the nonverbal dance between parents and infants predicts children's socio-emotional functioning. *Attachment & Human Development, 19*(2), 191-219. <https://doi.org/10.1080/14616734.2016.1255653>
- Shai, D., & Meins, E. (2018). Parental embodied mentalizing and its relation to mind-mindedness, sensitivity, and attachment security. *Infancy, 23*(6), 857-872. <https://doi.org/10.1111/infa.12244>
- Shin, H., Park, Y.-J., Ryu, H., & Seomun, G.-A. (2008). Maternal sensitivity: A concept analysis. *Journal of Advanced Nursing, 64*(3), 304-314. <https://doi.org/10.1111/j.1365-2648.2008.04814.x>
- Simonelli, A., & Parolin, M. (2016). Strange Situation Test. *Encyclopedia of Personality and Individual Differences. Cham, Switzerland: Springer*. https://doi.org/10.1007/978-3-319-28099-8_2043-1.
- Smith, M., & South, S. (2020). Romantic attachment style and borderline personality pathology: A meta-analysis. *Clinical Psychology Review, 75*. <https://doi.org/10.1016/j.cpr.2019.101781>
- Sochos, A., & Aljasas, N. (2020). The role of child-keyworker attachment in burnout among Saudi residential staff. *International Journal of Psychology*. <https://doi.org/10.1002/ijop.12692>
- Söllner, W., Behringer, J., Böhme, S., Stein, B., Reiner, I., & Spangler, G. (2016). Repräsentationen früher Bindungsbeziehungen und Emotionsregulation bei Patienten mit Burnout-Syndrom = Attachment representation and emotion regulation in patients with burnout syndrome. *PPmP: Psychotherapie Psychosomatik Medizinische Psychologie, 66*(6), 227-234. <https://doi.org/10.1055/s-0042-106729>

REFERENCES

- Solomon, J., & George, C. (1999). *Attachment disorganization*. Guilford Press.
- Solomon, J., & George, C. (2008). The measurement of attachment security and related constructs in infancy and early childhood. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 383-416). Guilford Press.
- Spangler, G., Johann, M., Ronai, Z., & Zimmermann, P. (2009). Genetic and environmental influence on attachment disorganization. *Journal of Child Psychology and Psychiatry*, 50(8), 952-961. <https://doi.org/10.1111/j.1469-7610.2008.02054.x>
- Spangler, G., Schieche, M., Ilg, U., Maier, U., & Ackermann, C. (1994). Maternal sensitivity as an external organizer for biobehavioral regulation in infancy. *Developmental Psychobiology*, 27(7), 425-437. <https://doi.org/10.1002/dev.420270702>
- Sprangler, G., Fremmer-Bombik, E., & Grossman, K. (1996, Sum 1996). Social and individual determinants of infant attachment security and disorganization. *Infant Mental Health Journal*, 17(2), 127-139. [https://doi.org/10.1002/\(SICI\)1097-0355\(199622\)17:2<127::AID-IMHJ3>3.0.CO;2-N](https://doi.org/10.1002/(SICI)1097-0355(199622)17:2<127::AID-IMHJ3>3.0.CO;2-N)
- Sroufe, L. A. (2002). From infant attachment to promotion of adolescent autonomy: Prospective, longitudinal data on the role of parents in development. In J. G. Borkowski, S. L. Ramey, & M. Bristol-Power (Eds.), *Parenting and the child's world: Influences on academic, intellectual, and social-emotional development* (pp. 187-202). Lawrence Erlbaum Associates Publishers.
- Sroufe, L. A., Carlson, E. A., Levy, A. K., & Egeland, B. (1999, Win 1999). Implications of attachment theory for developmental psychopathology. *Development and Psychopathology*, 11(1), 1-13. <https://doi.org/10.1017/S0954579499001923>
- Stayton, D. J., Hogan, R., & Ainsworth, M. D. (1971). Infant obedience and maternal behavior: The origins of socialization reconsidered. *Child Development*, 42(4), 1057-1069. <https://doi.org/10.2307/1127792>
- Stein, A., Craske, M. G., Lehtonen, A., Harvey, A., Savage-McGlynn, E., Davies, B., Goodwin, J., Murray, L., Cortina-Borja, M., & Counsell, N. (2012). Maternal cognitions and mother–infant interaction in postnatal depression and generalized anxiety disorder. *Journal of Abnormal Psychology*, 121(4), 795-809. <https://doi.org/10.1037/a0026847>
- Stern, J. A., Fraley, R. C., Jones, J. D., Gross, J. T., Shaver, P. R., & Cassidy, J. (2018). Developmental processes across the first two years of parenthood: Stability and change in adult attachment style. *Developmental Psychology*, 54(5), 975-988. <https://doi.org/10.1037/dev0000481>
- 10.1037/dev0000481.supp (Supplemental)
- Stevenson-Hinde, J. (2005). The interplay between attachment, temperament, and maternal style. In K. E. Grossmann, K. Grossmann, & E. Waters (Eds.), *Attachment from Infancy to Adulthood: The Major Longitudinal Studies* (pp. 198-222). Guilford Press.
- Stevenson-Hinde, J. (2007). Attachment theory and John Bowlby: Some reflections. *Attachment & Human Development*, 9(4), 337-342. <https://doi.org/10.1080/14616730701711540> (The life and work of John Bowlby: A tribute to his centenary)

REFERENCES

- Stevenson-Hinde, J., Chicot, R., Shouldice, A., & Hinde, C. A. (2013). Maternal anxiety, maternal sensitivity, and attachment. *Attachment & Human Development, 15*(5-6), 618-636. <https://doi.org/10.1080/14616734.2013.830387>
- Stevenson-Hinde, J., Shouldice, A., & Chicot, R. (2011). Maternal anxiety, behavioral inhibition, and attachment. *Attachment & Human Development, 13*(3), 199-215.
- Tasca, G. A. (2019). Attachment and eating disorders: A research update. *Current Opinion in Psychology, 25*, 59-64. <https://doi.org/10.1016/j.copsyc.2018.03.003>
- Taxer, J. L., & Frenzel, A. C. (2015). Facets of teachers' emotional lives: A quantitative investigation of teachers' genuine, faked, and hidden emotions. *Teaching and Teacher Education, 49*, 78-88. <https://doi.org/10.1016/j.tate.2015.03.003>
- Thomas, A., & Chess, S. (1977). *Temperament and development*. Brunner/Mazel.
- Thompson, R. A. (2017). Twenty-first century attachment theory: Challenges and opportunities. In H. Keller & K. A. Bard (Eds.), *The Cultural Nature of Attachment* (pp. 301-320). MIT Press.
- Tichelman, E., Westerneng, M., Witteveen, A. B., van Baar, A. L., van der Horst, H. E., de Jonge, A., Berger, M. Y., Schellevis, F. G., Burger, H., & Peters, L. L. (2019). Correlates of prenatal and postnatal mother-to-infant bonding quality: A systematic review. *PLoS ONE, 14*(9). <https://doi.org/10.1371/journal.pone.0222998>
- Tietz, A., Zietlow, A. L., & Reck, C. (2014). Maternal bonding in mothers with postpartum anxiety disorder: The crucial role of subclinical depressive symptoms and maternal avoidance behaviour. *Archives of Women's Mental Health, 17*(5), 433-442. <https://doi.org/10.1007/s00737-014-0423-x>
- Tronick, E. Z. (1989). Emotions and emotional communication in infants. *American Psychologist, 44*(2), 112-119. <https://doi.org/10.1037/0003-066x.44.2.112> (Children and Their Development: Knowledge Base, Research Agenda, and Social Policy Application)
- Tronick, E. Z., Als, H., Adamson, L., Wise, S., & Brazelton, T. B. (1978). The infant's response to entrapment between contradictory messages in face-to-face interaction. *Journal of the American Academy of Child Psychiatry, 17*(1), 1-13.
- True, M. M., Pisani, L., & Oumar, F. (2001). Infant-mother attachment among the Dogon of Mali. *Child Development, 72*(5), 1451-1466. <https://doi.org/10.1111/1467-8624.00359>
- van der Zee-van den Berg, A. I., Boere-Boonekamp, M. M., Groothuis-Oudshoorn, C. G. M., & Reijneveld, S. A. (2021). Postpartum depression and anxiety: A community-based study on risk factors before, during and after pregnancy. *Journal of Affective Disorders, 286*, 158-165. <https://doi.org/10.1016/j.jad.2021.02.062>
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin, 117*(3), 387-403. <https://doi.org/10.1037/0033-2909.117.3.387>
- van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2004). Maternal Sensitivity and Infant Temperament in the Formation of Attachment. In G. Bremner & A. Slater (Eds.), *Theories of Infant Development* (pp. 233-258). Blackwell.

REFERENCES

- van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2010). Invariance of adult attachment across gender, age, culture, and socioeconomic status? *Journal of Social and Personal Relationships*, 27(2), 200-208. <https://doi.org/10.1177/0265407509360908>
- van IJzendoorn, M. H., Goldberg, S., Kroonenberg, P. M., & Frenkel, O. J. (1992). The relative effects of maternal and child problems on the quality of attachment: A meta-analysis of attachment in clinical samples. *Child Development*, 63(4), 840-858. <https://doi.org/10.2307/1131237>
- van IJzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999, Spr 1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology*, 11(2), 225-249. <https://doi.org/10.1017/S0954579499002035>
- Vasileva, M., & Petermann, F. (2018). Attachment, development, and mental health in abused and neglected preschool children in foster care: A meta-analysis. *Trauma, Violence, & Abuse*, 19(4), 443-458. <https://doi.org/10.1177/1524838016669503>
- Venet, M., Bureau, J.-F., Gosselin, C., & Capuano, F. (2007). Attachment representations in a sample of neglected preschool-age children. *School Psychology International*, 28(3), 264-293. <https://doi.org/10.1177/0143034307078534>
- Verdecias, R. N., Jean-Louis, G., Zizi, F., Casimir, G. J., & Browne, R. C. (2009). Attachment styles and sleep measures in a community-based sample of older adults. *Sleep Medicine*, 10(6), 664-667. <https://doi.org/10.1016/j.sleep.2008.05.011>
- Verhage, M. L., Schuengel, C., Madigan, S., Fearon, R. M. P., Oosterman, M., Cassibba, R., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2016). Narrowing the transmission gap: A synthesis of three decades of research on intergenerational transmission of attachment. *Psychological Bulletin*, 142(4), 337-366. <https://doi.org/10.1037/bul0000038>
- 10.1037/bul0000038.supp (Supplemental)
- Vîrgă, D., Schaufeli, W. B., Taris, T. W., van Beek, I., & Sulea, C. (2019). Attachment styles and employee performance: The mediating role of burnout. *The Journal of Psychology: Interdisciplinary and Applied*, 153(4), 383-401. <https://doi.org/10.1080/00223980.2018.1542375>
- Wan, M. W., & Green, J. (2009). The impact of maternal psychopathology on child-mother attachment. *Archives of Women's Mental Health*, 12(3), 123-134. <https://doi.org/10.1007/s00737-009-0066-5>
- Watts, J., & Robertson, N. (2011). Burnout in university teaching staff: A systematic literature review. *Educational Research*, 53(1), 33-50. <https://doi.org/10.1080/00131881.2011.552235>
- Weber, A., Weltle, D., & Lederer, P. (2004). Frühinvalidität im Lehrerberuf: Sozial- und arbeitsmedizinische Aspekte. *Deutsches Ärzteblatt*, 101(13), 691-697.
- Weinberg, M. K., Beeghly, M., Olson, K. L., & Tronick, E. (2008). Effects of maternal depression and panic disorder on mother-infant interactive behavior in the face-to-face still-face paradigm. *Infant Mental Health Journal*, 29(5), 472-491. <https://doi.org/10.1002/imhj.20193> (Perinatal mood and anxiety disorders and mother-infant relationships)

REFERENCES

- West, A. L. (2015). Associations among attachment style, burnout, and compassion fatigue in health and human service workers: A systematic review. *Journal of Human Behavior in the Social Environment, 25*(6), 571-590. <https://doi.org/10.1080/10911359.2014.988321>
- West, C. P., Dyrbye, L. N., & Shanafelt, T. D. (2018). Physician burnout: contributors, consequences and solutions. *Journal of internal medicine, 283*(6), 516-529.
- Winnicott, D. W. (1969). *The Child, the Family, and the Outside World*. Penguin Books.
- Winnicott, D. W. (2021). *The child, the family, and the outside world*. Penguin UK.
- Wittchen, H.-U., Wunderlich, U., Gruschwitz, S., & Zaudig, M. (1997). *SKID-I: Strukturiertes Interview für DSM-IV. Achse I: Psychische Störungen*. Hogrefe.
- Woods, S. A., Lievens, F., De Fruyt, F., & Wille, B. (2013). Personality across working life: The longitudinal and reciprocal influences of personality on work. *Journal of Organizational Behavior, 34*, 7-25.
- Yu, X., Wang, P., Zhai, X., Dai, H., & Yang, Q. (2015). The effect of work stress on job burnout among teachers: The mediating role of self-efficacy. *Social Indicators Research, 122*(3), 701-708. <https://doi.org/10.1007/s11205-014-0716-5>
- Yuspendi, Handojo, V., Athota, V. S., Sihotang, M. Y. M., & Aryani, P. N. A. D. (2018). Adult attachment stability–instability before and after marriage between intimate partner violence (IPV) and non-IPV women separated from partners during military duty in Indonesia. *Australian and New Zealand Journal of Family Therapy, 39*(1), 103-116. <https://doi.org/10.1002/anzf.1281>
- Zeanah, C. H., Boris, N. W., & Lieberman, A. F. (2000). Attachment disorders of infancy. In A. J. Sameroff, M. Lewis, & S. M. Miller (Eds.), *Handbook of developmental psychopathology* (2nd ed., pp. 293-307). Kluwer Academic/Plenum Publishers.
- Zeegers, M. A. J., Colonesi, C., Stams, G.-J. J. M., & Meins, E. (2017). Mind matters: A meta-analysis on parental mentalization and sensitivity as predictors of infant–parent attachment. *Psychological Bulletin, 143*(12), 1245-1272. <https://doi.org/10.1037/bul0000114>
- 10.1037/bul0000114.supp (Supplemental)
- Zhu, M., Liu, Q., Fu, Y., Yang, T., Zhang, X., & Shi, J. (2018). The relationship between teacher self-concept, teacher efficacy and burnout. *Teachers and Teaching: Theory and Practice, 24*(7), 788-801. <https://doi.org/10.1080/13540602.2018.1483913>
- Zietlow, A.-L., Nonnenmacher, N., Reck, C., Ditzen, B., & Müller, M. (2019). Emotional stress during pregnancy—Associations with maternal anxiety disorders, infant cortisol reactivity, and mother–child interaction at pre-school age. *Frontiers in Psychology, 10*. <https://doi.org/10.3389/fpsyg.2019.02179>
- Zimmer-Gembeck, M. J., Webb, H. J., Pepping, C. A., Swan, K., Merlo, O., Skinner, E. A., Avdagic, E., & Dunbar, M. (2017). Review: Is parent–child attachment a correlate of children’s emotion regulation and coping? *International Journal of Behavioral Development, 41*(1), 74-93.
- Zimmermann, P. (1999). Structure and functions of internal working models of attachment and their role for emotion regulation. *Attachment & Human Development, 1*(3), 291-306. <https://doi.org/10.1080/14616739900134161> (Internal working models revisited)

REFERENCES

Zysberg, L., Orenshtein, C., Gimmon, E., & Robinson, R. (2017). Emotional intelligence, personality, stress, and burnout among educators. *International Journal of Stress Management*, 24(Suppl 1), 122-136. <https://doi.org/10.1037/str0000028> (The Role of Affect and Emotion to Cope with Stressful Situations)

Appendices

A. Syntax for Study A

Demographics

```
FREQUENCIES VARIABLES=FST_ges  
/PIECHART PERCENT  
/ORDER=ANALYSIS.
```

```
FREQUENCIES VARIABLES=panic_disorder_agoraphobia sociophobia specific_phobia  
obsessive_compulsive_disorder posttraumatic_stress_disorder generalized_anxiety_disorder  
anxiety_disorder_nos inpatients maternal_age maternal_education social_marriage  
maternal_age maternal_education infant_sex_index_infant amount_infants infant_age_ICEP  
/STATISTICS=STDDEV MINIMUM MAXIMUM MEAN  
/ORDER=ANALYSIS.
```

```
T-TEST GROUPS=diagnosis(0 1)  
/MISSING=ANALYSIS  
/VARIABLES=maternal_age infant_age_ICEP  
/CRITERIA=CI(.95).
```

NPTESTS

```
/INDEPENDENT TEST (amount_infants) GROUP (diagnosis) MANN_WHITNEY  
/MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE  
/CRITERIA ALPHA=0.05 CILEVEL=95.
```

Comparison of Attachment Styles

CROSSTABS

```
/TABLES=diagnosis BY FST_ges  
/FORMAT=AVALUE TABLES  
/STATISTICS=CHISQ PHI  
/CELLS=COUNT  
/COUNT ROUND CELL  
/BARHART  
/METHOD=EXACT TIMER(5).
```

CROSSTABS

```
/TABLES=diagnosis BY FST_num  
/FORMAT=AVALUE TABLES  
/STATISTICS=CHISQ PHI  
/CELLS=COUNT  
/COUNT ROUND CELL  
/BARHART  
/METHOD=EXACT TIMER(5).
```

APPENDICES

Correlations of Study Variables

CORRELATIONS

```
/VARIABLES=FST_num maternal_age maternal_education social_marriage diagnosis  
STAIT_A1 STAIS_A1 PBQ_16_10 LMSCS_A1 ACQ_A1 BSQ_A1 MIA_A1 MIB_A1  
EPDS_A1 EPDS_A0 STAIT_A2 STAIS_A2 ACQ_A2 BSQ_A2 MIA_A2 MIB_A2  
STAIT_A3 STAIS_A3 LMSCS_A3 ACQ_A3 BSQ_A3 MIA_A3 MIB_A3 STAIT_A4  
STAIS_A4 ACQ_A4 BSQ_A4 MIA_A4 MIB_A4  
/PRINT=TWOTAIL NOSIG  
/MISSING=PAIRWISE.
```

Main Analysis

```
LOGISTIC REGRESSION VARIABLES FST_num  
/METHOD=BSTEP(LR) diagnosis STAIT_A1 ACQ_A1 BSQ_A1  
/CLASSPLOT  
/PRINT=ITER(1) CI(95)  
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
```

Exploratory Analyses

CORRELATIONS

```
/VARIABLES=FST_num MSRSR_sensitivity MSRSR_uncontrol MSRSR_overcontrol  
/PRINT=TWOTAIL NOSIG  
/MISSING=PAIRWISE.
```

NONPAR CORR

```
/VARIABLES=FST_num CPOS_e_relzeitanteil_P1_P3 CNEU_e_relzeitanteil_P1_P3  
CINT_e_relzeitanteil_P1_P3 CPOS_e_relzeitanteil_P1 CNEU_e_relzeitanteil_P1  
CINT_e_relzeitanteil_P1 CPOS_e_relzeitanteil_P3 CNEU_e_relzeitanteil_P3  
CINT_e_relzeitanteil_P3  
/PRINT=SPEARMAN TWOTAIL NOSIG  
/MISSING=PAIRWISE.
```

```
LOGISTIC REGRESSION VARIABLES FST_num  
/METHOD=BSTEP(LR) diagnosis STAIT_A1 ACQ_A1 BSQ_A1  
CINT_e_relzeitanteil_P1_P3  
/CLASSPLOT  
/PRINT=ITER(1) CI(95)  
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
```

APPENDICES

B. Syntax for Study B

STUDY 1

Demographics

```
FREQUENCIES VARIABLES=sex exp school class hours Age18 vasq_inseq_sum  
MBI_gesamt_sum  
/STATISTICS=STDDEV MINIMUM MAXIMUM MEAN  
/ORDER=ANALYSIS.
```

COMPUTE

```
vasq_inseq_sum=SUM(insec_01,insec_02,insec_03,insec_04,insec_05,insec_06,insec_07,ins  
ec_08, insec_09,insec_10,insec_11,insec_12). EXECUTE.
```

COMPUTE

```
vasq_inseq_mean=MEAN.6(insec_01,insec_02,insec_03,insec_04,insec_05,insec_06,insec_0  
7, insec_08,insec_09,insec_10,insec_11,insec_12). EXECUTE.
```

COMPUTE

```
MBI_gesamt_sum=SUM(ee_01,ee_02,ee_03,ee_04,ee_05,ee_06,ee_07,ee_08,ee_09,dp_01,d  
p_02, dp_03,dp_04,dp_05,6-la_01,6-la_02,6-la_03,6-la_04,6-la_05,6-la_06,6-la_06,6-  
la_07,6-la_08).
```

EXECUTE.

```
COMPUTE joy_class1_mean=MEAN.2(joy_c01,joy_c02,joy_c03,joy_c04). EXECUTE.
```

```
COMPUTE anger_class1_mean=MEAN.2(ang_c01,ang_c02,ang_c03,ang_c04). EXECUTE.
```

```
COMPUTE anxiety_class1_mean=MEAN.2(anx_c01,anx_c02,anx_c03,anx_c04).
```

EXECUTE.

(same procedure for all variables in Study 2)

RELIABILITY

```
/VARIABLES=joy_c01,joy_c02,joy_c03,joy_c04  
/SCALE('Joy_0') ALL  
/MODEL=ALPHA  
/STATISTICS=DESCRIPTIVE SCALE CORR COV  
/SUMMARY=TOTAL.
```

RELIABILITY

```
/VARIABLES=ang_c01,ang_c02,ang_c03,ang_c04  
/SCALE('Anger_0') ALL  
/MODEL=ALPHA  
/STATISTICS=DESCRIPTIVE SCALE CORR COV  
/SUMMARY=TOTAL.
```

RELIABILITY

```
/VARIABLES=anx_c01,anx_c02,anx_c03,anx_c04  
/SCALE('Anxiety_0') ALL  
/MODEL=ALPHA  
/STATISTICS=DESCRIPTIVE SCALE CORR COV  
/SUMMARY=TOTAL.
```

RELIABILITY

```
/VARIABLES=insec_01,insec_02,insec_03,insec_04,insec_05,insec_06,insec_07,insec_08,in  
sec_09,insec_10,insec_11,insec_12  
/SCALE('VASQ_isct_0') ALL  
/MODEL=ALPHA
```

APPENDICES

```
/STATISTICS=DESCRIPTIVE SCALE CORR COV
```

```
/SUMMARY=TOTAL.
```

RELIABILITY

```
/VARIABLES=ee_01,ee_02,ee_03,ee_04,ee_05,ee_06,ee_07,ee_08,ee_09,dp_01,dp_02,dp_03,dp_04,dp_05,la_01r,la_02r,la_03r,la_04r,la_05r,la_06r,la_07r,la_08r
```

```
/SCALE('MBI') ALL
```

```
/MODEL=ALPHA
```

```
/STATISTICS=DESCRIPTIVE SCALE CORR COV
```

```
/SUMMARY=TOTAL.
```

Main Analyses

CORRELATIONS

```
/VARIABLES=exp sex vasq_inseq_mean joy_class1_mean anger_class1_mean anxiety_class1_mean MBI_gesamt_mean
```

```
/PRINT=TWOTAIL NOSIG
```

```
/MISSING=PAIRWISE.
```

REGRESSION

```
/MISSING LISTWISE
```

```
/STATISTICS COEFF OUTS R ANOVA CHANGE
```

```
/CRITERIA=PIN(.05) POUT(.10)
```

```
/NOORIGIN
```

```
/DEPENDENT MBI_gesamt_mean
```

```
/METHOD=ENTER sex exp
```

```
/METHOD=ENTER vasq_inseq_mean
```

```
/METHOD=ENTER joy_class1_mean anger_class1_mean anxiety_class1_mean
```

```
/PARTIALPLOT ALL
```

```
/SCATTERPLOT=(*ZRESID ,*ZPRED)
```

```
/RESIDUALS DURBIN HISTOGRAM(ZRESID).
```

STUDY 2

Demographics

```
FREQUENCIES VARIABLES=sext_0 expt_0 scholt_0 classt_0 hourst_0 Age2018
```

```
vasq_isct_0_sum vasq_isct_3_sum MBIt_0_sum MBIt_3_sum
```

```
joyt_0_mean joyt_3_mean angt_0_mean angt_3_mean anxt_0_mean anxt_3_mean
```

```
/STATISTICS=STDDEV MINIMUM MAXIMUM MEAN
```

```
/ORDER=ANALYSIS.
```

```
T-TEST PAIRS=joyt_0_mean angt_0_mean anxt_0_mean vasq_isct_0_mean MBIt_0_mean
```

```
WITH joyt_3_mean angt_3_mean anxt_3_mean vasq_isct_3_mean MBIt_3_mean (PAIRED)
```

```
/CRITERIA=CI(.9500)
```

```
/MISSING=ANALYSIS.
```

RELIABILITY

```
/VARIABLES=joyt1_0 joyt2_0 joyt3_0 joyt4_0
```

```
/SCALE('Joy_0') ALL
```

```
/MODEL=ALPHA
```

```
/STATISTICS=DESCRIPTIVE SCALE CORR COV
```

APPENDICES

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=angt1_0 angt2_0 angt3_0 angt4_0

/SCALE('Anger_0') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=anxt1_0 anxt2_0 anxt3_0 anxt4_0

/SCALE('Anxiety_0') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=isct1_0,isct2_0,isct3_0,isct4_0,isct5_0,isct6_0,isct7_0,isct8_0,
isct9_0,isct10_0,isct11_0,isct12_0

/SCALE('VASQ_isct_0') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=eet1_0,eet2_0,eet3_0,eet4_0,eet5_0,eet6_0,eet7_0,eet8_0,eet9_0,dpt1_0,dpt2
_0,dpt3_0,dpt4_0,dpt5_0,lat1_0r,lat2_0r,lat3_0r,lat4_0r,lat5_0r,lat6_0r,lat7_0r,lat8_0r

/SCALE('MBI_0') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=joyt1_3 joyt2_3 joyt3_3 joyt4_3

/SCALE('Joy_3') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=angt1_3 angt2_3 angt3_3 angt4_3

/SCALE('Anger_3') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=anxt1_3 anxt2_3 anxt3_3 anxt4_3

/SCALE('Anxiety_3') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=isct1_3,isct2_3,isct3_3,isct4_3,isct5_3,isct6_3,isct7_3,isct8_3,
isct9_3,isct10_3,isct11_3,isct12_3

/SCALE('VASQ_isct_3') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR COV

APPENDICES

```
/SUMMARY=TOTAL.  
RELIABILITY  
/VARIABLES=eet1_3,eet2_3,eet3_3,eet4_3,eet5_3,eet6_3,eet7_3,eet8_3,eet9_3,dpt1_3,dpt2_3,dpt3_3,dpt4_3,dpt5_3,lat1_3r,lat2_3r,lat3_3r,lat4_3r,lat5_3r,lat6_3r,lat7_3r,lat8_3r  
/SCALE('MBI_3') ALL  
/MODEL=ALPHA  
/STATISTICS=DESCRIPTIVE SCALE CORR COV  
/SUMMARY=TOTAL.#
```

Additional Analyses

```
CORRELATIONS  
/VARIABLES= expt_0 sext_0 vasq_isct_0_mean joyt_0_mean angt_0_mean anxt_0_mean  
MBIt_0_mean  
/PRINT=TWOTAIL NOSIG  
/MISSING=PAIRWISE.
```

```
CORRELATIONS  
/VARIABLES= expt_0 sext_0 vasq_isct_3_mean joyt_3_mean angt_3_mean anxt_3_mean  
MBIt_3_mean  
/PRINT=TWOTAIL NOSIG  
/MISSING=PAIRWISE.
```

```
CORRELATIONS /VARIABLES=expt_0 sext_0 vasq_isct_0_mean joyt_0_mean  
angt_0_mean anxt_0_mean MBIt_0_mean WITH expt_0 sext_0 vasq_isct_3_mean  
joyt_3_mean angt_3_mean anxt_3_mean MBIt_3_mean /PRINT=TWOTAIL NOSIG  
/MISSING=PAIRWISE .
```

```
REGRESSION  
/MISSING LISTWISE  
/STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE  
/CRITERIA=PIN(.05) POUT(.10)  
/NOORIGIN  
/DEPENDENT MBIt_0_mean  
/METHOD=ENTER sext_0 expt_0  
/METHOD=ENTER vasq_isct_0_mean  
/METHOD=ENTER joyt_0_mean angt_0_mean anxt_0_mean  
/PARTIALPLOT ALL  
/SCATTERPLOT=(*ZRESID ,*ZPRED)  
/RESIDUALS DURBIN HISTOGRAM(ZRESID).
```

Main Analyses

```
CORRELATIONS  
/VARIABLES= expt_0 sext_0 vasq_isct_3_mean joyt_3_mean angt_3_mean anxt_3_mean  
MBIt_3_mean  
/PRINT=TWOTAIL NOSIG  
/MISSING=PAIRWISE.
```

```
REGRESSION  
/MISSING LISTWISE
```

APPENDICES

```
/STATISTICS COEFF OUTS R ANOVA COLLIN TOL CHANGE  
/CRITERIA=PIN(.05) POUT(.10)  
/NOORIGIN  
/DEPENDENT MBIt_3_mean  
/METHOD=ENTER sext_0 expt_0  
/METHOD=ENTER vasq_isct_3_mean  
/METHOD=ENTER joyt_3_mean angt_3_mean anxt_3_mean  
/METHOD=ENTER MBIt_0_mean  
/PARTIALPLOT ALL  
/SCATTERPLOT=(*ZRESID ,*ZPRED)  
/RESIDUALS DURBIN HISTOGRAM(ZRESID).
```


C. Additional calculations for Study 2 of Study B (Chapter 4)

Bivariate Analyses

Bivariate correlations among the study variables are presented in table 15, 16 and 17. Similar to Study 1, our results show moderately high correlations between teachers' burnout, attachment insecurity and all emotional variables at T0 and T3: the higher anger, anxiety and attachment insecurity at both times of measurement, the higher burnout was perceived by the teachers (Hypotheses 1 and 2). Regarding the correlation between experienced emotions and attachment insecurity, a small positive correlation was found concerning experienced anger at T0 and T3, and a small negative correlation between attachment insecurity and experienced joy at T3 (Hypothesis 3). Concerning burnout, comparable correlations can be found between attachment insecurity and teachers' emotions at T0 and burnout at T3 (see table 17) and vice versa: attachment insecurity, anger and anxiety were positively correlated with burnout, joy was negatively correlated with burnout (Hypotheses 1 and 2).

Table 15

Pearson Correlations of the Assessed Variables at Baseline (T0)

	1	2	3	4	5	6	7
1. Job Experience	1	0,051	-0,051	0,092	-0,038	-0,133	-0,136
2. Gender		1	-0,102	0,096	0,006	0,035	0,035
3. VASQ insecurity			1	-,240*	,228*	0,164	,505**
4. TES joy				1	-,695**	-,344**	-,509**
5. TES anger					1	,517**	,457**
6. TES anxiety						1	,355**
7. MBI burnout							1

Note. ** $p < .01$, * $p < .05$.

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Table 16

Pearson Correlations of the Assessed Variables at the End of the School Year (T3)

	1	2	3	4	5	6	7
1. Job Experience	1	0,051	-0,085	-0,042	0,156	0,067	-0,156
2. Gender		1	-0,072	0,008	0,022	0,066	0,148
3. VASQ insecurity			1	-0,063	,224*	0,177	,491**
4. TES joy				1	-,673**	-,539**	-,382**
5. TES anger					1	,692**	,382**
6. TES anxiety						1	,348**
7. MBI burnout							1

Note. ** $p < .01$, * $p < .05$.

Table 17

Pearson Correlations of the Assessed Variables at T0 and T3

Variables T0	Variables T3						
	1	2	3	4	5	6	7
1. Job experience	1	0,051	-0,085	-0,042	0,156	0,067	-0,156
2. Gender	0,051	1	-0,072	0,008	0,022	0,066	0,148
3. VASQ insecurity	-0,051	-0,102	,810**	-0,043	0,170	0,139	,364**
4. TES joy	0,092	0,096	-0,133	,679**	-,410**	-,287**	-,394**
5. TES anger	-0,038	0,006	0,121	-,485**	,530**	,435**	,391**
6. TES anxiety	-0,133	0,035	0,116	-,330**	,342**	,491**	,280**
7. MBI burnout	-0,136	0,035	,407**	-,371**	,336**	,260*	,769**

Note. ** $p < .01$, * $p < .05$.

Multivariate Analysis

At baseline the hierarchical multiple regression analysis revealed that only attachment insecurity ($\beta = .399, t = 4.715, p < .01, \Delta R^2 = .251$) and joy ($\beta = -.320, t = -2.781, p < .01, \Delta R^2 = .182$) significantly contributed to the final model. The corrected R^2 for the overall model indicates an explanation of variance of 41,4 % which is considered a large-sized effect (Cohen, 1977). Table 18 presents the resulting three regression models and coefficients.

Table 18

Regression Coefficients of Predictors of Teachers' Burnout at Baseline (Study 2)

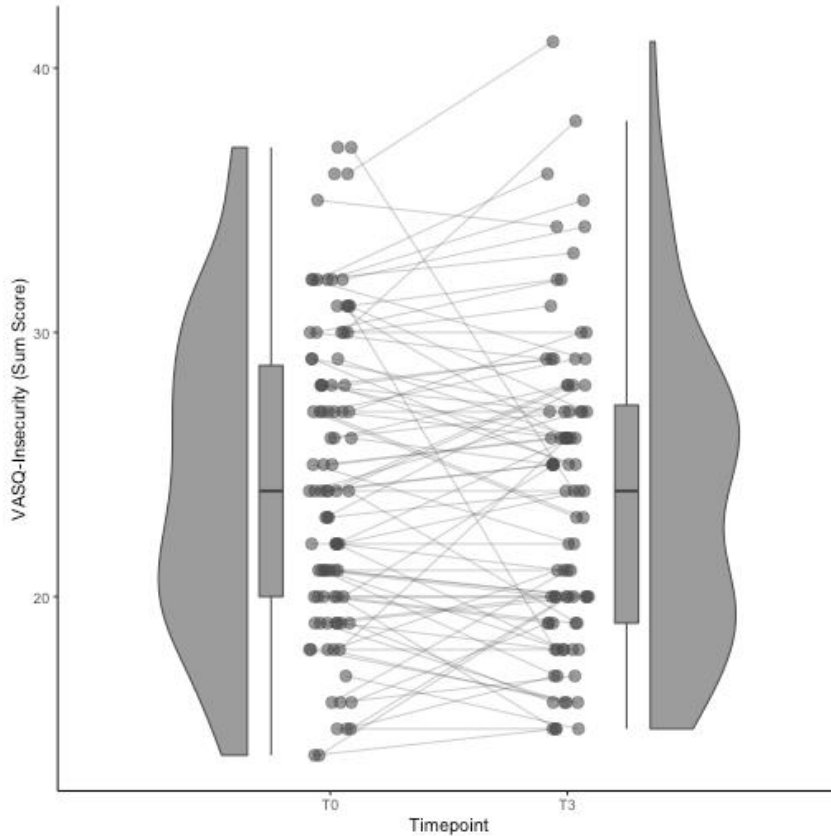
Variables	Step 1			Step 2			Step 3		
	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>
Gender	.041	.139	.705	.081	.121	.383	.101	.108	.228
Job Experience	-.143	.008	.184	-.105	.007	.261	-.065	.006	.433
Insecurity				.504	.128	<.01	.399	.116	<.01
Joy							-.320	.095	<.01
Anger							.075	.090	.548
Anxiety							.129	.100	.183
<i>R</i>	.146			.522			.674		
R^2	.021			.273			.454		
ΔR^2				.251			.182		

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For the main analysis in Study 2 we decided to calculate a hierarchical multiple regression analysis. Since the teachers' attachment insecurity reported at T0 was not significant in the overall model, we chose the attachment insecurity reported at T3, which yielded significant results. To compare the measurements of attachment at the beginning and the end of the school year, Dr. Anton K.G. Marx thankfully developed the following graph. The assumed moderate stability of attachment insecurity over the course of time led us to the decision, that it would not make a great difference if we calculated based on the beginning or the end of the school year. As you can see in Figure 16, most sum scores remained relatively stable from T0 to T3, some participants however reported higher or lower attachment insecurity across the two times of measurement. In further analyses we will more closely examine this trend.

Figure 17

VASQ Insecurity Sum Scores at Beginning (T0) and End of the School Year (T3)



Note. Statistical Analysis and Graphic Design by Dr. Anton K. G. Marx.

D. Items of the Vulnerable Attachment Style Questionnaire (VASQ)

- Assessment:** T0 (baseline); T3 (end of school year)
- Abbreviations:** isct (insecurity of style), prxt (proximity seeking)
- Literature:** English version: Bifulco, A., Mahon, J., Kwon, J.-H., Moran, P., & Jacobs, C. (2003). The Vulnerable Attachment Style Questionnaire (VASQ): An interview-derived measure of attachment styles that predict depressive disorder. *Psychological Medicine, 33*, 1099-1110.
German version: Reck, C., Stehle, E., Reinig, K., & Mundt, C. (2009). Maternity blues as a predictor of DSM-IV depression and anxiety disorders in the first three months postpartum. *Journal of Affective Disorders, 113*(1-2), 77-87.
- Rating scale:** 1 (stimme überhaupt nicht zu)
2 (stimme nicht zu)
3 (unsicher)
4 (stimme zu)
5 (stimme völlig zu).
- Scale cutoffs:** subscale Insecurity of Style (cutoff = 30)
subscale Proximity Seeking (cutoff = 27)
composite score (cutoff = 57)
- Instructions:** Die folgenden Aussagen beziehen sich darauf, wie eine Person sich in Beziehungen zu Anderen sieht. Bitte geben Sie an, inwiefern Sie der jeweiligen Aussage als Beschreibung Ihrer eigenen Person zustimmen. Kreuzen Sie dazu die zutreffende Antwortmöglichkeit an.

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Table 19

German Version of the VASQ Items Used in Study B

Item code	Item code	Item content
T0	T3	
isct1_0	isct1_3	Ich lasse mir Zeit, wenn ich neue Menschen kennenlerne.
prxt1_0	prxt1_3	Wenn ich Entscheidungen treffen muss, verlasse ich mich dabei auf Andere.
isct2_0	isct2_3	Menschen lassen mich oft im Stich.
prxt2_0	prxt2_3	Wenn ich allein bin, vermisse ich die Gesellschaft anderer Menschen.
isct3_0	isct3_3	Es ist besser, anderen Menschen emotional nicht zu nahe zu kommen.
prxt3_0	prxt3_3	Ich bin sehr besorgt, wenn Menschen, mit denen ich zusammen lebe, später nach Hause kommen als erwartet.
prxt4_0	prxt4_3	Für gewöhnlich verlasse ich mich auf Ratschläge von Anderen, wenn ich ein Problem habe.
isct4_0	isct4_3	Ich fühle mich unwohl, wenn Menschen mir zu nahe kommen.
isct5_0	isct5_3	Menschen, die mir nahe sind, gehen mir oft auf die Nerven.
isct6_0	isct6_3	Ich habe das Gefühl, dass Menschen gegen mich sind.
prxt5_0	prxt5_3	Ich mache mir Sorgen, dass meinen engen Freunden oder meiner Familie etwas zustoßen könnte.
isct7_0	isct7_3	Ich bin oft in Streitigkeiten verwickelt.
prxt6_0	prxt6_3	Ich bin Anderen gegenüber anhänglich.
prxt7_0	prxt7_3	Ich freue mich darauf, wenn ich Zeit allein verbringen kann (reversed).
prxt8_0	prxt8_3	Ich mag es, Entscheidungen allein zu treffen (reversed).
prxt9_0	prxt9_3	Ich werde ängstlich, wenn mir nahestehende Menschen unterwegs sind.
isct8_0	isct8_3	Ich fühle mich unwohl, wenn Andere mir etwas anvertrauen.
isct9_0	isct9_3	Es fällt mir schwer, Anderen zu vertrauen.
isct10_0	isct10_3	Menschen um mich herum zu haben, kann nervig sind.

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E. Publications during doctoral studies

Poster (*in relationship with this work)

Marx, A. K. G., Frenzel, A. C., Reck, C., Klauser, N., Müller, M., & Pekrun, R. (2019, April).

Susceptibility to Emotional Contagion Relates to Teachers' Emotions and Burnout [Peer-reviewed poster presentation]. American Educational Research Association (AERA) annual conference, Toronto, Canada.

Marx, A. K. G., Frenzel, A. C., Klauser, N., Müller, M., Reck, C., & Pekrun, R. (2018,

September). *Teachers' Facial Expressions of Affect Relate to Their Emotional Experiences - Combining automated facial action coding with self-report*. Poster presented at the 51st Congress of the German Society for Psychology (DGPs), Frankfurt, Germany.

*Klauser, N., Reck, C., Marx, A. K. G., Müller, M., Frenzel, A. C., & Pekrun, R. (2018).

Bedeutung der Bindungsunsicherheit für Unterrichtsemotionen und Burnout bei Lehrkräften. Poster presented at the 51st Congress of the German Society for Psychology (DGPs), Frankfurt, Germany.

Articles

Published:

Müller, M., Zietlow, A.-L., Klauser, N., Woll, C., Nonnenmacher, N., Tronick, E., & Reck, C.

(2022). From Early Micro-Temporal Interaction Patterns to Child Cortisol Levels: Toward the Role of Interactive Reparation and Infant Attachment in a Longitudinal Study. *Frontiers in Psychology*, 12. doi:10.3389/fpsyg.2021.807157

In Preparation (*in relationship with this work):

*Klauser, N., Müller, M., Zietlow, A. L., Nonnenmacher, N., Woll, C., Becker-Stoll, F., &

Reck, C. (in prep.). Maternal Postpartum Anxiety and the Development of Infant Attachment: The Effect of Body Sensations on Infant Attachment. *Journal of Affective Disorders*.

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*Klauser, N., Marx, A. K. G., Müller, M., Pekrun, R., Frenzel, A. C., & Reck, C. (in prep.).

How Teacher Burnout is Associated with Teachers' Attachment Insecurity and Emotions – A Vulnerability-Stress Approach. *Journal of School Psychology*.

Book Sections

Klauser N., Steinebach P. (2019) Psychotherapy for Adolescents: Mindfulness and Compassion in Individual and Group Settings. In: Steinebach C., Langer Á. (eds) *Enhancing Resilience in Youth*. Springer, Cham. https://doi.org/10.1007/978-3-030-25513-8_14