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„Attachment and Biased Emotional Judgments: The Role
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Theoretical Background

Empathy

Introduction

(written by: Anna Pilz BSc)

One of the most fascinating characteristics of human nature is the ability to put oneself into the shoes of another person, this phenomenon is called *empathy* (Aragona et al., 2013). The term *Einfühlung*, which is the exact German translation of empathy, was first used in philosophy in the field of Aesthetics, to describe the feeling a person is experiencing, when viewing pieces of art (Aragona, 2013). A few years later the term *Einfühlung* was used by Theodor Lipps as a psychological term, to describe an unconscious and imitative process of fusion between two biological organisms (originally between an object and a biological organism) (Aragona et al., 2013). Eventually Edward Bredford Titchener translated the psychological idea of *Einfühlung* with *empathy*, which roots in the greek-neologism *empathia*. *Empathia* was created with the words “en” (in) and “pathos” (feeling) and therefore means *passion inside* (Aragona et al., 2013; Singer & Lamm, 2009). After this initial interest of philosophy in empathy, almost every study conducted on this phenomenon was a psychological one (Singer & Lamm, 2009). Especially developmental and social psychology showed interest in this research field (Singer & Lamm, 2009). Some time ago, with the discovery of mirror neurons (Rizzolatti, Fadiga, Gallese, & Fogassi, 1996) neuroscientists stepped in as well, to contribute to this challenging research field (Aragona et al., 2013; Singer & Lamm, 2009). But despite all these new information and scientific achievements on the topic of empathy, it seems, that a universally agreed definition of the concept is still missing. As Singer & Lamm (2009) stated, “there are almost as many definitions of empathy, as there are researchers on the field” (p.82), but there is also some common ground among these interpretations.

Definition

(written by: Anna Pilz BSc)

After Davis (1983), empathy is, in very broad definition, “the reaction of an individual to the observed experiences of another” (p. 113). Of course, there are various types of possible reactions. Thus, earlier research (e.g. Dymond, 1949) has treated empathy either as a cognitive or intellectual phenomenon (understanding another person’s perspective) or as an emotional or

affective one (emotional reactivity) (Davis, 1983). But since the 1980s, it is universally agreed, that empathy is not a unipolar construct, which is either cognitive or affective, but rather a multimodal concept, which combines both of these aspects (Davis, 1983).

To measure the complex phenomenon of empathy, Davis (1980, 1983) developed the *IRI – Interpersonal Reactivity Index*. The concept underlying this measurement considers empathy “as a set of constructs, related in that they all concern responsivity to others, but are also clearly discriminable from each other” (Davis, 1983, p.113). This multidimensional self-report measurement is still widely used in studies, which explore the concept of empathy (e.g. Enzi, Amirie & Brüne, 2016; Goldstein et al., 2016; Tullett & Plaks, 2016). The *IRI* consists of 4 subscales, each describing a different aspect of empathy (Davis, 1983). The *Perspective Taking (PT)* scale examines the ability to take over the psychological point of view or perspective of another person, the *Fantasy (FS)* scale measures the ability to transpose oneself into the emotions or actions of fictional characters. Taken together, these two scales result in the cognitive component of empathy. While, the *Empathic Concern (EC)* scale, which examines sympathy for unfortunate others and the *Personal Distress (PD)* scale, which assesses negative feelings or anxiety caused by witnessing unfortunate others. Both scales combined result in the affective component of empathy (Davis, 1983).

Although since Davis (1983) and his *IRI-Interpersonal Reactivity Index* it is agreed, that empathy is a multifaceted phenomenon, there is still disagreement among the scientific community on how to define this phenomenon and how to distinguish it from other related concepts like *emotional contagion*, *sympathy* or *perspective taking* (de Vignemont & Singer, 2006; Singer & Lamm, 2009). There are two main approaches in defining empathy: Some researchers prefer a broad definition like “understanding feelings of others or affective sharing” (Preston & de Waal, 2002). If a definition like that is used, one is not able to distinguish empathy from other related phenomena, like *emotional contagion*, *personal distress* or *perspective taking*. By using a broad definition, all these phenomena are summarized into one concept (de Vignemont & Singer, 2006). The second approach in defining empathy, is to narrow it down a little bit more, in this way, distinctions between empathy and other related social processes can be made and the phenomenon of empathy becomes clearer (de Vignemont & Singer, 2006).

De Vignemont & Singer (2006) chose the second approach and defined empathy as following: “1. one is in an affective state, 2. this state is isomorphic to another person’s affective state (*affec-*

tive sharing), 3. this state is elicited by the observation or imagination of another person's affective state 4. one knows that the other person is the source of one's own affective state (distinction of self and other)" (p. 435).

Affective sharing and *self/other distinction*, which are mentioned above, are important terms in understanding the concept of empathy and differentiating it from other related constructs, which will be discussed in detail in chapter 4 (Overlaps and Distinction to Related Constructs) of this thesis.

A lot of other narrower definitions of empathy point out that empathy is an emotional experience, which is more suitable for another person's situation, than one's own (Hoffmann, 1982, as cited in Decety & Lamm, 2006). Some of these other definitions are missing one important point though, the *self-other differentiation*, which is unique to empathy and will be discussed further below (Decety & Lamm, 2006).

Although de Vignemont and Singer (2006) provided a definition of empathy, with which one is able to differentiate between other social processes, there are still some remaining open questions. First, there is still some debate, whether empathy is necessarily a conscious process or not (de Vignemont & Singer, 2006). Neuroscientists argue, that emotional states are unconsciously shared with others, while some philosophers state, that empathic responses are conscious (de Vignemont & Singer, 2006). The second open question concerns the isomorphism of the emotional state, mentioned in the second point of de Vignemont and Singer's (2006) definition. How congruent or isomorph has the shared affective state to be, to be counted as an empathic response? Does it only have to be of the same valence? Or does it have to be more precise and even have the same intensity of the shared emotion? Neuroscientists already started some research to answer this second question, but haven't come up with consistent results yet (de Vignemont & Singer, 2006). Therefore, these open questions have to be answered by future research.

Models and Theories of Empathy

(written by: Bernhard Köpf BSc)

As already stated above, there is disagreement regarding the definition of empathy. This led to a competition between a "broad approach" and a "narrow approach" in defining empathy (de Vignemont & Singer, 2006). Thus two contrary models were established that describe how the process of empathy works. The perception-action model from Preston & de Waal (2002) is based

on a broad definition of empathy, whereas the Early and Late Appraisal Model from de Vignemont & Singer (2006) is based on a narrow definition of empathy.

The Perception Action Model of Empathy

According to the perception action model (PAM) (Preston & de Waal, 2002) empathy is constituted by a fully automatic process. If a person witnesses the emotional state of another individual, representations of this emotional state are activated in the brain of the observer and as a result autonomic and somatic responses are generated. Preston & de Waal (2002) view empathy as a superordinate category that subsumes related constructs (emotional contagion, empathic concern, helping behavior ...) as subclasses that share aspects of underlying processes. A crucial factor if empathy takes place is the interdependence or relationship of observer and the other. More relationship/interdependence leads to better fit of representations, what facilitates an empathic response (Preston & de Waal, 2002). On the level of empathic responses the authors distinguish between responses “with the object”, what is referring to equally aligned emotional states (e.g. fear to fear), while responses “to the object” encompass all instrumental responses (e.g. fear to anger).

Unfortunately although Preston & de Waal (2002) clearly define the PAM as a process-model, the process that constitutes empathy is not described (Hoffman, 2002). Hoffman (2002) further criticizes that underlying processes can indeed be non-automatic (e.g. perspective taking) as well as non-representational (e.g. mimicry).

The Early and Late Appraisal Model of Empathy

While the PAM explains empathy on a very broad level, de Vignemont and Singer (2006) posit a narrower model of empathy, that involves non-automatic, contextual appraisal and modulation processes.

Contrary to the PAM, empathy is not seen as a main-category subsuming related processes, but differentiated by the condition of affective sharing and self/other distinction (de Vignemont & Singer, 2006).

If empathy would only be processed by automatic activated representations, one must empathize every time he observes another person with different emotions, what would further lead to

an emotional overload. Thus de Vignemont & Singer (2006) conclude that modulation and appraisal processes are indispensable for an appropriate explanation of empathy.

Relevant modulatory factors encompass: (1) intrinsic features as the intensity, saliency and valence of the shared emotion, (2) the relationship between the observer and the target, (3) personal characteristics of the empathizer as gender, personality traits, age or past experiences regarding the emotion as well as (4) situational contexts (de Vignemont & Singer, 2006).

Two paths are explained that describe, how the process of empathic responses may take place, differing in when the appraisal and modulation processes take place (Fig. 1) (de Vignemont & Singer, 2006)

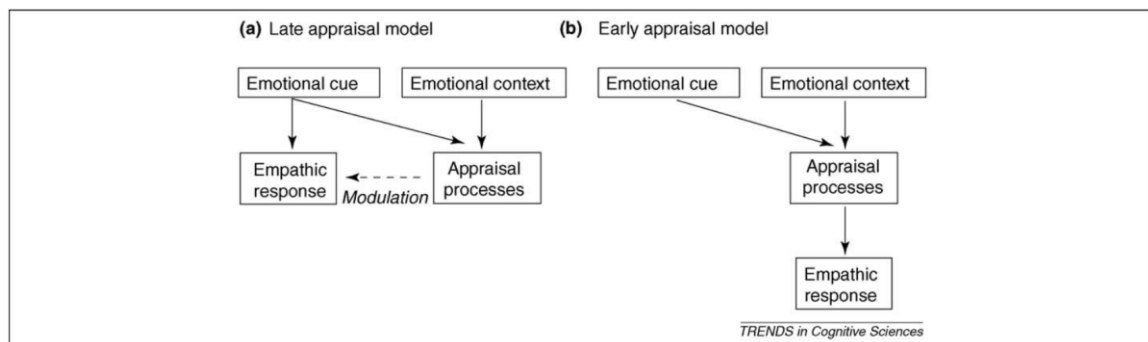


Figure 1: The Early and Late Appraisal Model of Empathy (de Vignemont & Singer, 2006) proposes two possible ways how empathy can be processed (a) According to the late appraisal model, empathic responses are always and automatically activated when one observes an emotional cue. If the response is modulated or inhibited, this happens at a later stage (b) According to the early appraisal model, an empathic outcome only arises as a result of appraisal processes.

According to the late appraisal model, an empathic response is processed by two simultaneously working, but independent systems: empathic resonance and appraisal. Every time one observes an emotional cue, empathic responses are directly and automatically activated. However in parallel context factors are appraised, what may or may not lead to a modulation of the empathic response (de Vignemont & Singer, 2006).

In contrast, according to the early appraisal model, the appraisal of the emotional context, is done before the empathic response arises. Only as a result of this appraisal process an empathic outcome takes place (de Vignemont & Singer, 2006).

Overlaps and Distinction to Related Constructs

(written by: Bernhard Köpf BSc)

Considering the above mentioned disagreement through the scientific community regarding the definition of empathy, it might be beneficial to sharpen its characteristics by comparing it with and distinguishing it to related constructs. These constructs encompass i.a. emotional contagion, mimicry, empathic concern, tenderness and sympathy. Similarly to the definition of empathy, there is also disagreement regarding the distinction of these constructs and throughout different research related constructs were often used synonymously (Maibom, 2012).

Some scholars even deny a clear distinction and see empathy as a main-category subsuming these related constructs, as they were entangled too much (e.g. Preston & de Waal, 2002). But although there are overlaps among these phenomena and some of them may occur simultaneously in daily life, there are crucial differences that call for a conceptual differentiation (regardless of what position empathy may have). As stated, de Vignemont & Singer (2006) distinguish empathy from other constructs by the condition of “affective sharing” and self/other distinction. Singer & Lamm (2009) further propose a chronological classification that see mimicry and emotional contagion as mechanisms that can be involved when empathy is preceded while sympathy and empathic concern may be responses that may result from empathy and may further precede prosocial behavior.

Mechanisms – Mimicry and Emotional Contagion

Emotional Contagion refers to the tendency that people “catch” the emotions of others and automatically converge their emotional expressions (Hatfield, Rapson & Le, 2009). Examples for emotional contagion are babies that start crying when they hear other babies crying (Singer & Lamm, 2009) or the infectious effect of laugh tracks in many sitcoms.

Hatfield et al. (2009) propose three mechanisms of the process of emotional contagion namely (1) mimicry (2) the bodily feedback from such mimicry and (3) judgments of one’s own expressive behavior that was converged to that of the other through mimicry and feedback.

Mimicry refers to the tendency to automatically and continuously synchronize affective facial expressions, vocal utterances, postures and movements with those of another person during a

conversation (Hatfield et al., 2009). This is further intensified or diminished by feedback from one's facial muscles (Hatfield et al., 2009), as well as vocal feedback as intonation, rhythm and pausing (Hatfield, Hsee, Weisman & Denney, 1995) and feedback from postures and movements (Hatfield, Cacioppo & Rapson, 1993).

While according to this explanation Mimicry is seen as a mechanism or stage in the process of Emotional Contagion. Singer & Lamm (2009) point out that although there are strong overlaps between these two phenomena, mimicry can occur without an emotional component and otherwise an automatic emotional response by observing another person can be triggered without any kind of mimicry.

They further doubt the widespread assumption that mimicry is a strictly automatic process, since research revealed the influence of top-down processes. For example Mimicry can be increased when subjects wish to constitute a relationship to the other (Lakin & Chartrand, 2003). Further it matters from which perspective one experiences an event. Witnessing other's pain through an imagine-self perspective ("How would I feel?") elicits close and consistent mimicry, whereas no such effect exists during an imagine-other perspective ("How will the object feel?") (Lamm, Porges, Cacioppo & Decety, 2008).

Mimicry and Emotional Contagion are basal mechanisms that can (but not necessary must) be involved when we "feel into" another person through empathy and there are relations between these constructs. For example people with high empathy scores showed higher mimicking behavior than people with low empathy scores (Sonnyby-Borgström, 2002). However Singer & Lamm (2009) point out that although there are overlaps between these constructs, they especially differ by the point of self-other distinction which is not present during emotional contagion and mimicry. Therefore mimicry and emotional contagion are definitely distinct to and insufficient to fully explain the more complex construct of empathy.

Empathic Responses – Empathic Concern, Sympathy and Tenderness

Similar to empathy, there are some other terms in psychology, which represent emotional responses to the emotional state of another person. Some of these responses related to empathy are empathic concern, sympathy and tenderness.

A crucial characteristic to distinguish empathy from these constructs is the condition of affective sharing (Singer & Lamm, 2009, de Vignemont & Singer, 2006). While empathy requires correspondence of the emotions of self and other empathic concern, sympathy and tenderness reflect emotional states that are different to that of the other, (Singer & Lamm, 2009). For example we can share the grief of our friend because of her dead cat. In this case we empathize with our friend and are feeling the same emotion as she does. Otherwise we could feel pity without feeling grief for our own. In this case we also react to her grief, but our own emotions differ from hers, wherefore we speak from empathic concern then. Thus empathy is denoted as “Feeling with” a person, while sympathy, tenderness and empathic concern are denoted as “Feeling for” a person (Singer & Lamm, 2009).

Further a distinction between empathic concern, sympathy and tenderness should be made. All three constructs have in common that they reflect a reaction to an observed object that is in need (Lishner, Batson & Huss, 2009). But Lishner et al. (2009) established sympathy and tenderness as different aspects of empathic concern and distinguish these constructs with regard to the form of need they are triggered by. According to Lishner et al. (2009) we feel sympathy when we observe a person that is in “current need”, what is referring to a current discrepancy to the object’s well-being. Otherwise we feel tenderness when we fear that the object may experience need in the future, what is referred to vulnerability (e.g. a cute baby that may be harmed without care).

This sight of view with sympathy and tenderness as different aspects of empathic concern was supported by Niezink, Siero, Dijkstra, Buunk & Barelds (2012) evaluating the most common survey assessing empathic concern, the Emotional Response Questionnaire – ERQ (Coke et al., 1978) (Note: not to be confused with the Emotion Regulation Questionnaire used in this thesis!). According to this study, the ERQ consists of two different scales, reflecting sympathy and tenderness, whereby subjects observing a current-need situation scored higher on the sympathy scale than on the tenderness scale.

Summarized, although there are relations between different constructs reflecting empathic emotions and some of them might occur simultaneously, a conceptual differentiation of empathy and these related constructs is possible and useful to understand different interpersonal processes. An appropriate distinction may also shed light to another important but controversial discussed topic – the role of empathy and related constructs regarding prosocial behavior and thus how prosocial behavior can (or can't) be promoted through these processes.

Empathy – Pro-Social Behavior and Altruism

Popularly empathy is often seen as a precursor for pro-social behavior (Singer & Lamm, 2009) However, the association between empathy and pro-social behavior is controversially discussed among the scientific community (see Maibom, 2012 for a discussion)

Although already in the 1980ies Underwood & Moore (1982) contradicted the association between empathy and pro-social behavior in a meta-analysis, there are indeed results indicating that such an association exists. So Eisenberg & Miller (1987) analyzed the data of this meta-analysis more specific and showed that the association i.a. depends on the lifelikeness of the method used to assess empathy.

It should be noted, that conceptualizations of empathy differ through research and mostly related constructs as empathic concern, sympathy or perspective taking are integrated under the term of empathy (Singer & Lamm, 2009; Maibom, 2012). Considering these distinctions, an association of pro-social behavior with empathic concern and/or sympathy seems more likely.

Such correlations of pro-social behavior and sympathy (Eisenberg, Losoya & Spinrad 2009, as cited in Maibom, 2012), as well as empathic concern (Feldman, Hall, Dalglish, Evans & Mobbs, 2015) are documented – as mentioned two constructs that are closely related to each other. Further Johnson (2012) revealed a positive correlation between empathy and pro-social behavior. However the measure used in this study may more adequately refer to empathic concern, as it queries emotions as sympathy, tenderness or compassion.

It seems obvious that engaging in pro-social behavior is moderated by more factors, than just empathic feelings. E.g. one might empathize with a beggar but nevertheless gives no money.

Lockwood, Seara-Cardoso & Viding (2014) identified cognitive reappraisal as such a moderator. The association between empathy and pro-social behavior was higher, when subjects reported from less use of cognitive-reappraisal.

Singer & Lamm (2009) further point out that “feeling into” a person can also be used for actions with negative consequences for the other (e.g. warfare) or for egoistic purpose (e.g. business operations). Thus they propose that although empathy and prosocial behavior are linked on a conceptual level and empathic emotions and helping behavior may sometimes accompany, empathy neither always leads to pro social behavior, nor is it necessary for it.

Self-Other Awareness & Empathy Related Responding

(written by: Anna Pilz BSc)

As already mentioned above, the distinction between self and other is crucial to the phenomenon of empathy (Decety & Lamm, 2006), the reasons for that will be discussed in the following chapter. Processes of social cognition depend on similarities, as well as differences between human beings (Decety & Lamm, 2006). Beside those important similarities, it is crucial for all forms of social interactions, which also includes empathy, that the interaction partners maintain their individuality. In the case of empathy, it would cause emotional distress because of empathic overarousal, if the self-other representations in the shared emotion are completely identical (Decety & Lamm, 2006). Therefore, it is necessary for a successful empathic encounter, to differentiate between one's own feelings and the one's shared with another person. It requires *self-awareness* to successfully attribute mental states to others and make judgements about those states. *Agency*, as recognizing oneself as the agent of one's actions, is a requirement for building independency from the world around us (Decety & Lamm, 2006). Furthermore, it plays a crucial role in the development of *self-awareness* (Decety & Lamm, 2006). As already mentioned, it is crucial for a successful empathic encounter between two individuals to stay aware which feelings belong to oneself and which belong to the other person. Therefore, according to Decety & Lamm (2006), *agency* is an important aspect of empathy, which modulates whether a person wants to escape the situation, out of empathic overarousal (egoistic response) or engage in altruistic behavior, out of empathic concern (altruistic response).

The distinction between self and other influences what kind of empathic reactions an individual displays (Lamm et al., 2007). If one imagines how another person might feel in a particular situation, usually empathic concern, also known as sympathy, is expressed, which is an other-oriented response. If one on the other hand imagines how oneself would feel in the same situation, personal distress is expressed, which can be seen as a self-oriented response (Lamm et al., 2007). Lamm and colleagues (2007) revised these ideas in an experiment. Participants watched video clips where faces of people in great pain, caused by a certain medical treatment, were displayed. Depending on instructions, subjects were asked to either imagine how this person might feel (imagine other) or how they would feel themselves in this painful situation (imagine self). Besides the discussed impact of self-other differentiation on empathic responses, cognitive appraisal seems to have an effect on empathic responses as well (Lamm et al., 2007). To clarify the involvement of appraisal processes, Lamm et al. (2007) added another manipulation to their experiment, to evoke different cognitive appraisals in the subjects. Participants were told, that one group of patients in the video clips got better after the painful treatment, while the other group remained ill and didn't profit from it. With this information, different cognitive appraisals could be elicited in the subjects, while watching identical pictures (Lamm et al., 2007). As expected, perspective taking (imagine self, imagine other) as well as cognitive appraisal (treatment effectiveness) had an influence on the empathic response of the participants. It could be confirmed, that imagining how the other person might feel, produced higher empathic concern, while thinking about how oneself would feel in this painful situation, caused higher personal distress. In terms of treatment effectiveness, it could be examined, that when taking the perspective of the other person (imagine other), subjects showed higher personal distress, if the treatment was not effective. Lamm and colleagues (2007) supposed this indicates, that subjects did not focus on the actual observed pain, but rather on how "bad" it was in the end for the patient, by also thinking of the health consequences in the long term.

According to Eisenberg & Morris (2001), empathic responses depend on the emotionality of a person and consequently on the ability to regulate those emotions. An individual, who is able to keep his emotional arousal, caused by another person's feelings, on a moderate level, is experiencing sympathy or empathic concern towards the other. If a person is impulsive and tends to experience intense emotions, personal distress is more likely to be higher than empathic concern. At the same time, emotion regulation plays a role in this process (Eisenberg & Morris,

2001). Eisenberg & Morris (2001) argue, that individuals which tend to experience intense emotions are also able to experience sympathy rather than personal distress, if they are at the same time able to regulate those emotions. That means, if a person with intense emotionality is able to regulate the shared emotion during an empathic encounter, this person is also able to experience empathic concern rather than personal distress (Eisenberg & Morris, 2001).

Evolutionary roots & Role of empathy

(written by: Anna Pilz BSc)

After clarifying the definition of empathy and differentiating it from other related concepts, the following chapter examines, why human beings empathize and what consequences does it bring (de Vignemont & Singer, 2006).

Why do we empathize?

The question why human beings empathize with each other, refers to the adaptive function of the phenomenon of empathy, meaning why empathy was chosen by evolution as a useful feature for mankind (de Vignemont & Singer, 2006). There are a lot of different opinions in the scientific community to this particular question, therefore it is not that easy to answer. Empathy is linked to useful and important human behavior or phenomena, like altruism, prosocial behavior (Eisenberg & Morris, 2001) or mother-child bonding (Darwin, 1872, reprinted 1998, as cited in de Vignemont & Singer, 2006), this link could act as an explanation for its adaptive function. However, these described behavioral tendencies could also be explained with other social processes, for example altruism with sympathy or cognitive perspective taking and bonding with emotional contagion (de Vignemont & Singer, 2006). Some researchers argue, that empathy itself doesn't have any specific evolutionary benefits and is simply a byproduct of more general learning mechanisms (e.g. Brass & Heyes, 2005; Keysers & Perrett, 2004). Some might even say, sharing emotions of others is maladaptive (what good does it do to feel sad, just because someone else feels sad?) and hasn't been selected, but rather "tolerated" by evolution, as a byproduct of other learning mechanisms (de Vignemont & Singer, 2006). Considering all the major roles that empathy plays in communicating with each other and in everyday life in general, a more positive view on the topic might be preferred. Hoffmann (2000) for example, asserts that empathy is essential for the survival of mankind and stated: "empathy is the spark of human concern for others, the glue that makes social life possible" (Hoffmann, 2000, p. 3).

What role does empathy play in our everyday lives?

The phenomenon of empathy is linked to many other psychological concepts, such as altruism, pro social behavior, social functioning and self-esteem (Davis, 1983; Eisenberg & Morris, 2001). Davis (1983) assessed the relationship between the 4 scales of the *IRI* and found interesting results. Especially *perspective taking (PT)*, part of cognitive empathy, was correlated with higher self-esteem and better social functioning. *Empathic concern (EC)*, part of affective empathy, was associated with emotionality and non-selfish concern for others (Davis, 1983). But what kind of consequences do these findings have on human social life? Which role does empathy play on our everyday life and social interactions?

According to de Vignemont & Singer (2006) the role of empathy can be examined on two levels, an epistemological one and a social one.

Epistemological Level

By sharing emotions with other people, empathy gives humans a chance to understand what others feel (de Vignemont & Singer). One might argue, that understanding what others feel is also possible with cognitive perspective taking (de Vignemont & Singer). But according to de Vignemont and Singer (2006), empathy has two advantages over perspective taking.

First, by counting on empathy and not perspective taking in social interactions, one might be able to predict future behavior of others, as a result of an emotional state, faster (de Vignemont & Singer, 2006).

Second, empathy is useful to gain knowledge about important features of the environment (de Vignemont & Singer). For example, if one watches another person getting hurt in a situation, the situation will automatically be avoided by this particular person, without having to get hurt oneself, because he or she already knows about the danger of this situation (de Vignemont & Singer, 2006).

Social Level

The role of empathy, which has been assessed and discussed a lot more in research and literature, is the social one (de Vignemont & Singer, 2006).

First, empathy is proposed as a motivator for prosocial behavior and altruism (Eisenberg & Morris, 2001). There is scientific evidence, for the claim that humans tend to help others more, when

they empathized with the other person before (Eisenberg & Morris, 2001). De Vignemont and Singer (2006) argue, that the relationship between empathy and prosocial behavior is more complex. They suggest, that it is not empathy itself, which motivates people to engage in prosocial behavior, but that empathy has to be transformed into *sympathy*, which then motivates helping behavior (de Vignemont & Singer, 2006).

Second, empathy is linked to more socially competent behavior and higher social functioning skills in general (Eisenberg & Morris, 2001; Davis, 1983). This counts especially for cognitive empathy, because understanding what another person feels, allows one to predict the behavior and emotional reactions of others and therefore create more fulfilling and satisfying relationships (Davis, 1983).

Third, a lot about the social role of empathy can be understood, by assessing individuals, which are lacking it. Hoffmann (2000) stated, that aggression can be partly explained by deficits of empathy. This statement is underlined with findings of Miller & Eisenberg (1988), which showed, that people with lower empathy skills tend to show more aggressive and antisocial reactions toward others.

Lack of empathy is furthermore associated with many different psychiatric illnesses (Eisenberg & Morris, 2001; Cox et al., 2012). Most of these conditions are either characterized by deficits in cognitive or in affective empathy (Cox et al., 2012). Schizophrenia, psychopathy and narcissism are associated with impairments of affective empathy, but functional cognitive empathy. Autism, bipolar disorder and borderline traits are characterized by deficits in cognitive, but not affective empathy (Cox et al., 2012). Cox et al. (2012) found, that the balance between cognitive and affective empathy is even more crucial, than the absolute empathic ability of a person. By using the *relative empathic ability (REA)*, which is an IRI-based measure, Cox et al. (2012) examined, that the subjects with the biggest discrepancy between cognitive and affective empathy levels, also showed the most pathological traits, not necessarily those with lowest level in one empathy domain or the other. Further, higher scores in REA predicted higher levels of aggression and impulsivity, which have not been examined with cognitive or affective empathy levels alone (Cox et al., 2012).

Social Judgments

(written by: Anna Pilz BSc)

The differentiation of one's own emotional or mental state and the one of another person is crucial for everyday empathic judgements (Hoffmann et al., 2016). To judge a mental state of another individual, humans often rely on mechanisms such as *self-projection* and *simulation* (Silani et al., 2013). But these mechanisms are not useful, if the mental state of the other person clearly differs from one's own. This biased projection of one's own mental state onto another individual is called *egocentricity bias* (Hoffmann, Singer & Steinbeis, 2015; Silani et. al., 2013). Similarly, interpersonal judgements can be biased in the opposite way. If one's own mental state is influenced by the other person's mental state, the resulting distorted judgement is called *altercentricity bias* (Hoffmann et al., 2016).

Social Projection

(written by Bernhard Köpf BSc)

In daily life, when meeting others, people constantly have to estimate what these others know, feel, think or what they are going to do. For this purpose people mostly tend to use their own knowledge, feelings or action tendencies regarding a situation and project these on their interaction partners (Nickerson, Butler & Carlin, 2009)

Some scholars argue, that knowledge about oneself may be the best (as it's sometimes the only) source to judge the state of the other (Hoch 1987; also see Nickerson 1999 for a discussion) and it has even been shown that people who tend to project more, have benefits in judging opinions of others (Nickerson et al., 2009).

During communication it's crucial to use common ground assumptions or "shared knowledge". But as it's not specified what this shared knowledge is, people refer to their own knowledge as commonly known and adjust their assumed shared knowledge when gaining more information about the other during interaction (Nickerson et al., 2009).

Ahn, Oettingen and Gollwitzer (2016) further point out that projection can also be an important mechanism to feel empathy, as people project their visceral needs onto others and thereby may or may not engage in empathy depending on their own visceral state. Thus people tend to overestimate other's hunger/thirst if they are hungry/thirsty themselves (Van Boven & Loewenstein,

2003; Ahn et al., 2016) but otherwise underestimate their state if their own need is satisfied (Ahn et al. 2016) or if the other is perceived as dissimilar to one's own (O'Brien & Ellsworth, 2012).

Although projection might ease encounters in daily life, especially when one has to interact with strangers, troubles may occur when the other's state significantly differs from one's own. On the emotional domain this refers to the emotional egocentricity bias (EEB).

Social Reflection

(written by: Anna Pilz BSc)

Most of the time, people tend to make inferences from oneself to others, which is described above, as social-projection. But sometimes this phenomenon works in the exact opposite way, when individuals use others as a reference to make assumptions about oneself – this process is called *reflection* – or projection in reverse. (Nickerson et al., 2009).

This process can be observed, when people have to perform specific tasks, where they have no prior knowledge about their abilities. A tendency on taking the abilities (or believed abilities) of a referential peer group into account by judging one's own ability was assessed (Nickerson et al. 2009)

Emotional Egocentricity Bias

(written by: Bernhard Köpf BSc)

As stated above emotional egocentricity bias refers to people's tendency to (falsely) judge other's emotions on the basis of one's own emotions (Silani et al., 2013).

A very early documentation of egoistic oriented emotional judgments was provided by Goldings (1954), showing that happy people rate others as happy and unhappy people rate others as unhappy. Another example are the above mentioned findings about projection of visceral states. Silani et al. (2013) provide a modern documentation of the EEB. This study demonstrated that although an EEB exists in humans, people are also able to overcome the bias, whereby the right supramarginal gyrus (rSMG) was identified as neural location, which enables overcoming EEB. Steinbeis, Bernhardt & Singer (2014) extended these findings, regarding EEB decreases with a higher connectivity of the rSMG to the dorsolateral prefrontal cortex (DLPFC).

Attachment biased Emotional Judgements:

The Role of Adult Attachment in Emotional Egocentricity and Altercentricity Bias

Further research revealed a gender difference regarding EEB. Thus while men showed an increased EEB under stress, women's EEB decreased under stress condition (Tomova, Dawans, Heinrichs, Silani & Lamm, 2014). Tomova et al. (2014) attribute this to gender differences in stress coping behavior, whereby women may tend to affiliate to others and men may tend to save resources.

Emotional egocentricity also differs during age. While it's well documented that children are more subject to an EEB (e.g. Steinbeis et al., 2014), recent research revealed an U-shape course during life-span (Riva, Tricoli, Lamm, Carnaghi & Silani, 2016). Thus EEB is high in adolescence (12-17y), decreases in middle adulthood (20-55) and then increases again in higher age (up to 63y). These findings are conform with the inverted u-shaped developmental course of the rSMG that matures during adolescents and starts degenerating after reaching adulthood (Sowell et al., 2003; Riva et al., 2016)

Emotional Altercentricity Bias

(written by: Anna Pilz BSc)

The exact opposite of *egocentricity* is called *altercentricity*. Stern (2004, p. 241-242, as cited in Bråten, 2007) describes *altero-centered participation* as "the capacity to experience, usually out of awareness, what another is experiencing... if your center of orientation and perspective were centered in the other..". Furthermore, according to Stern (2004, as cited in Bråten, 2007), this *altero-centered participation*, is the essential basis for a number of social phenomena, as *imitation*, *emotional contagion*, *sympathy* and *empathy*.

Although, the phenomenon of *altercentricity* seems to be an important process for interpersonal understanding (Stern, 2004, as cited in Bråten, 2007), distorted judgements of one's own mental state can occur, if they are influenced by the mental state of another individual (Hoffmann et al., 2016). These distorted judgements are called *altercentricity* or *altercentric bias*.

Some research has been conducted on the cognitive domain of the *altercentric bias* (e.g Furlanetto et al., 2016; Nielson et al., 2015; Samson et al., 2010). Samson et al. (2010) examined these so called *altercentric intrusions* on a Level 1 perspective taking task, which only requires judging if another person sees a stimulus or not. In this experiment, a picture of a room, with an avatar facing a wall was shown to the subjects. Depending on instructions before, participants had to

rate how many objects the avatar (other-condition) or how many objects the participants themselves (self-condition) saw from their perspective on the wall of the room, while leaving the irrelevant perspective aside. In the consistent condition, the subject and the avatar saw the same amount of objects, while in the inconsistent condition, the subject and the avatar saw a different amount of objects. By analyzing length of response rates, as well as, error rates, Samson et al. (2010), found *egocentric* as well as *altercentric* intrusions. As expected, subjects showed an *egocentric bias*, while judging the avatar's perspective, but what seems even more interesting, participants were also affected by the avatar's perspective, when judging their own perspective, which resulted in slower response times and more errors (Samson et al., 2010).

There has been critique, that this reported *altercentric intrusion* (Samson et al., 2010) could also be due to the avatar acting as a spatial directional cue, which shifts the subject's attention automatically to one side of the room and not because the subject takes the avatar's distinct perspective automatically into account (Furlanetto et al., 2015). To examine, whether this criticism is legitimate or not, Furlanetto et al. (2015) extended the experiment with a seeing-condition (the avatar wore a pair of goggles, which was transparent and could therefore see the objects on the wall) or a non-seeing condition (the avatar wore an opaque pair of goggles and couldn't see anything). If the assumption that the altercentric bias only occurred because of the spatial cue was correct, then it should be present in both (seeing and non-seeing) conditions. But Furlanetto et al. (2015) found the contrary. When participants believed that the avatar couldn't see anything, because of the opaque goggles, no *altercentric intrusion* was reported. While in the seeing condition (transparent goggles), participants obviously took the avatar's perspective into account and an altercentric bias was found, by being more error prone and slower in responding (Furlanetto et al., 2015).

Similarly, Nielson et al. (2015) wanted to examine whether this described effect is a social, or rather a more general process. Therefore they repeated the experiment by using whether a social cue (avatar), a semi-social cue (arrow) or a nonsocial cue (dual-colored block), to assess if altercentric intrusions only occur in the social condition. Altercentric intrusions have been found in all conditions, but were strongest in the social condition. Furthermore, Nielson et al. (2015) measured *perspective taking* and *empathic concern* of the IRI (Davis, 1983) and found a positive correlation with altercentric intrusions in the social condition, but not in the other two groups. This

also strongly indicates, that altercentric intrusions are a social phenomenon (Nielson et al., 2015).

An *altercentric bias* can also occur in the emotional domain, meaning an individual is influenced by the emotional state of another person, while judging one's own emotional state. According to Hoffmann et al. (2016) this *emotional altercentricity bias* is as a form of *emotional contagion*, which is the automatic tendency to be influenced by the affective state of another individual (Singer & Lamm, 2009).

Attachment

(written by: Anna Pilz BSc)

Background: Theory of Attachment in Childhood

Primarily, theory of attachment was developed by John Bowlby (1973, 1980, 1982) and enhanced by Mary Ainsworth and her colleagues (Ainsworth, Blehar, Waters & Wall, 1978) to gain insight about the immense amount of distress, that young children experienced following a separation from their parents (Fraley, 2010). After Bowlby noticed, that not only children, but also infants of other mammalian species show extreme behaviors (desperately searching, crying, holding on to parents) to retrieve proximity to a caregiver after separation, or to prevent the separation in the first place, he supposed that these behaviors were selected by evolution and therefore act in a particular adaptive way (Fraley, 2010). Bowlby called these special behaviors *attachment behaviors*, which serve the function of regaining contact to a caregiver or an *attachment figure* in times of danger, to reestablish a sense of security. This *attachment system*, probably evolved, because children, who were able to maintain a certain closeness to their caregivers and were therefore better protected, were more likely to survive (Fraley, 2010). The *attachment system* works around one essential question: “Is the caregiver nearby and responsive?” If the answer to this question is “yes”, the infant will feel secure and loved and will most likely explore the world around it. If the question is answered with “no”, the child will experience distress and start engaging in attachment behaviors until physical or psychological proximity to the caregiver is restored (Fraley & Shaver, 2000).

Ainsworth (1978) added additionally, that the *attachment system* is rather constantly active and not only in times of danger, by providing the infant a secure haven from where it can explore the world around it. The early interactions between child and parent and the reliability of the parent as a source of security for the infant, will shape the quality of attachment (Ainsworth et al., 1978). Bowlby (1982) already noticed individual differences between children in regulating their attachment behaviors, but until Mary Ainsworth and her colleagues (1978) began to study child-parent separations with a newly developed procedure called “Strange Situation”, there was no formal distinction between these observed differences. During this procedure, approximately 1 year old children and their caregivers are going through series of separations and reunions, while the child’s behavior during these stressful conditions is systematically observed (Bartholomew, 1990). Based on these observed attachment behaviors, which varied in children, Ainsworth et al.

(1978) identified 3 attachment patterns or types. Most infants (about 60%) belong to the *securely attached* group. These children showed signs of distress, when separated from their caregivers, but actively seek the caregiver's proximity after reunion and are easily calmed as well. The second attachment pattern is called *anxious-resistant*. These children (about 20%) show conflicting behaviors towards their parents and are not easily comforted after separation. The last attachment pattern described by Ainsworth and her colleagues (1978) is the *avoidant* type (about 20%). Avoidant children show less signs of distress during separation from their parents, but what seems even more interesting, they also avoid seeking contact after reunion. They often shift their attention actively to inanimate objects, like toys, on the floor. This may be interpreted as a displacement behavior (Bartholomew, 1990). Additionally to Ainsworth' (1978) original three types of attachment, a fourth pattern, the *disorganized* style has been proposed. This pattern is described as a mix of anxious-resistant and avoidant behaviors and is connected with abuse and neglect (Main & Solomon, 1990 as cited in Bartholomew & Horowitz, 1991).

Ainsworth et al. (1978) also demonstrated that these observed individual differences in attachment patterns depend on the kind of experiences a child made, when interacting with the parents at home during this first year of life. *Securely attached* children had caring mothers, who showed warmth and responsiveness to their child's needs. Mothers of *anxious-resistant* infants on the other hand, were in general insensitive to their child's needs and behaved inconsistent, when interacting with children. Avoidant children had rejecting mothers, who didn't engage in physical contact and showed hostile behavior towards their children (Bartholomew, 1990).

Bowlby (1973) states that children build so called *inner working models*, based on their early caregiving experiences. These mental representations hold beliefs about *the self* and *the others* (social world) of the child and will influence the child's style of social interactions throughout its whole life. A *securely attached* infant for example, will most likely believe that others are supportive and will be there for it when needed, because this is what prior experiences with others (in this case the caregivers) showed it. Furthermore, this child will also later see himself as a loveable person, because others (in early experiences the caregivers) showed him love in the past and therefore the child will assume, that "the self is judged to be the sort of person towards whom anyone, the attachment figure in particular, is likely to respond in a helpful way" (Bowlby, 1973, p.204). According to Bowlby (1980), these mental processes become more and more au-

omatic during the child's development and are therefore very stable throughout different social interactions over lifetime.

Adult Attachment Theory

Bowlby proposed his theories of attachment to describe the emotional relationship between children and their parents (Fraley & Shaver, 2000). Nevertheless, he stated that attachment is a crucial process in human lives and it shapes interpersonal relationships and interactions "from the cradle to the grave" (Bowlby, 1982, p. 208). Although Bowlby already pointed out the importance of the attachment processes during adulthood, Hazan and Shaver (1987) were the first researchers who proposed, that romantic love can be seen as an attachment process as well. At this time, the scientific world was missing a theoretical framework to address the phenomenon of romantic love and adult romantic relationships (Fraley & Shaver, 2000). Hazan & Shaver (1987) addressed this problem by explaining love itself, as well as observed individual differences in romantic love, by conceptualizing it as an attachment process.

They based their theory on some central assumptions, of which the three most important ones are outlined below (Hazan & Shaver, 1987; Fraley & Shaver, 2000).

First, the bond between adults in a romantic relationship operates through the same system as the bond between children and parents, the attachment behavioral system (Fraley & Shaver, 2000). This first assumption is based on the various shared features, which have been observed between romantic relationships and infant-parent relationships. For example, feeling safe when the other is close, like a "safe base", a feeling of insecurity, when the other is not around, engaging in "baby talk" and sharing experiences with one another (Fraley & Shaver, 2000).

Second, the three attachment patterns observed in infants (Ainsworth, 1978), secure, anxious-resistant and avoidant, existed in a similar way in adult romantic relationships. Therefore Hazan & Shaver (1987) took over the three patterns of caregiver-children relationships and adapted them for romantic relationships (Fraley & Shaver, 2000). Short descriptions for each type were proposed (Hazan & Shaver, 1987), which will be described in more detail later.

Third, the *inner working models of attachment*, which are created during childhood, influence and shape later adult romantic relationships (Hazan & Shaver, 1987). When humans form new relationships, they use prior experiences of older relationships to predict behavior and interpret intentions of others. These *working models* are assumed to remain mostly constant over time, because people tend to focus on information, which fits into an existing model, rather than inte-

grating new information, which is not consistent with their prior experiences (Fraley & Shaver, 2010). Adult attachment behaviors and patterns may therefore be at least partial reflections of early infant-parent experiences (Fraley, 2010).

Three category model of adult attachment:

Hazan and Shaver (1987) described the three styles, in a so called three category model of adult attachment as following:

“Secure – I find it relatively easy to get close to other and I am comfortable depending on them and having then depend on me. I don’t often worry about being abandoned or about someone getting to close to me

Anxious/Ambivalent – I find that others are reluctant to get as close as I would like. I often worry that my partner doesn’t really love me or won’t want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away.

Avoidant – I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous, when anyone gets to close, and often, love partners want me to be more intimate than I feel comfortable being. “
(Hazan & Shaver, 1987, p.515)

By using this *three category model*, Hazan and Shaver (1987) found, that 60% of adults rated themselves as securely attached, while 20% classified themselves as anxious/ambivalent and 20 % as avoidant. Therefore the distribution of the three attachment patterns in adulthood is similar to the one in childhood (Fraley, 2010).

Two-dimensional / 4 category model of adult attachment:

As already mentioned above, Bowlby (1973) pointed out the importance of inner working models for the attachment process. These models hold different beliefs about the self and other, which contribute how an individual thinks about himself and the people around him. Kim Bartholomew (1990) was the first researcher, who included these models of self and other into a theory of adult attachment. According to her model of adult attachment, the concept of the self, as well as the concept of the other, are viewed either positive or negative. In the case of the model of the self, this means seeing oneself as loveable and worthy of attention (positive) or seeing oneself as unworthy of love (negative). Similarly, for the concept of others, viewing other people as kind and trustworthy (positive) or rejecting and uncaring (negative) (Bartholomew, 1990). In her new created approach to adult attachment, Bartholomew (1990) uses two dimensions to describe self and other concepts: *avoidance*, which conceptualizes the model of the

other and *dependence*, which is related to the concept of the self. The working model of the self in combination with the working model of the other results in one of four proposed attachment styles (Bartholomew, 1990).

| | | MODEL OF SELF (Dependence) | |
|-------------------------------|--------------------|-------------------------------|--------------------|
| | | Positive (Low) | Negative (High) |
| MODEL OF OTHER (Avoidance) | Positive (Low) | SECURE | PREOCCUPIED |
| | Negative (High) | DISMISSING | FEARFUL |

Figure 2: The Four Category Model of Adult Attachment, Bartholomew (1990)

According to Bartholomew (1990), the degree of *dependence* (high or low) of a person explains the degree of self-esteem (self-confident without needing constant confirmation of others vs. is very dependent on confirmation of other people), while *avoidance* explains whether or not a person is comfortable with closeness to others.

The four resulting patterns of attachment are called, *secure*, *preoccupied*, *dismissing* and *fearful*. While the *secure* and the *preoccupied* pattern can be compared to Hazan and Shaver's (1987) *secure* and *anxious/ambivalent* style of attachment, Bartholomew (1990) added a fourth type of attachment to distinct between two different patterns of avoidant attachment style. Both types of avoidant adults suffered from uncaring and rejecting caregivers during their childhood. The *fearful* avoidant type concluded from this early rejection, that other people are uncaring (low avoidance) and further that oneself is not worthy of love (low dependence). The *dismissing* avoidant type on the other hand also concluded, that others are unavailable and uncaring, but at the same time found a way to maintain a positive self-image, despite the experienced rejection by his caregivers. *Dismissing* individuals learned to distance themselves from others (attachment figures) and develop a concept of self, which is not dependent on the love and affection of attachment figures (Bartholomew, 1990). Over time, these defense mechanisms become automated and adult *dismissing* individuals evaluate close relationships as unimportant and appreci-

ate their independence. Therefore, *fearful* as well as *dismissing* adults avoid close relationships, but out of different reasons (Bartholomew, 1990).

Two-dimensional model of adult attachment:

In 1998, Brennan, Clark & Shaver conducted a large study, where all known self-report measures of adult attachment were assessed via factor analysis. Sixty sub-scale scores were factor-analyzed and two essential dimensions underlying all of them were examined: *anxiety* and *avoidance*. These two dimensions are comparable to the ones proposed by Bartholomew (1990), but with using the term anxiety instead of dependence (Brennan, Clark & Shaver, 1998). Subjects were grouped into four clusters, depending on their scores on the two dimensions, resulting in the four patterns of attachment of Bartholomew (1990). Nevertheless, Brennan and her colleagues (1998) pointed out, that a dimensional measurement of attachment with the two scales *avoidance* and *anxiety* should be preferred over a category model, because it leads to more precise results

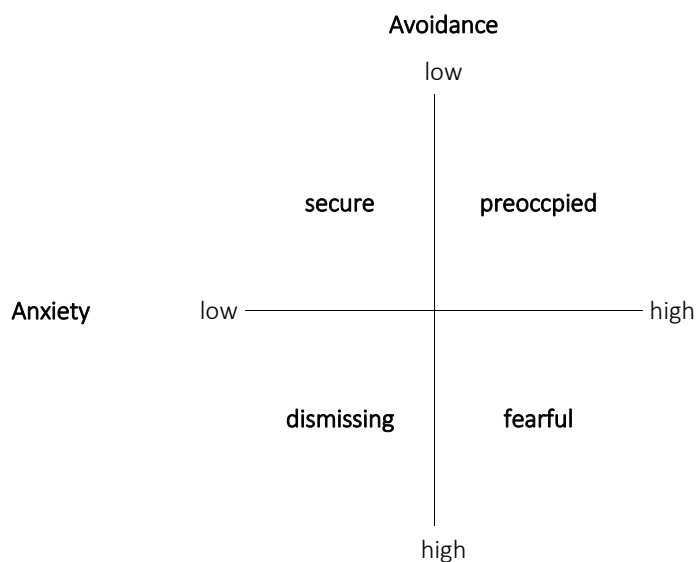


Figure 3: The Two Dimensional Model of Adult Attachment (Brennan et al., 2007)

Continuity of Attachment from Childhood to Adulthood

Bowlby (1982) stated, that *inner working models of attachment* stay relatively constant over a lifetime of a person. As already mentioned above, this stability of *working models* occurs, because of the human tendency to seek information, which is consistent with their current models, rather than integrating new information and adopt their models (Fraley & Shaver, 2000). Therefore, according to Fraley (2010), it is possible, that a person, who had secure attachments to caregivers as a child, will also have securely attached love relationships as an adult. The concept of childhood attachment experiences, influencing adulthood attachment patterns in romantic love is not very controversial. But there is some controversy among the scientific community on the question in which way and to what degree adult attachment is influenced by childhood attachment (Fraley, 2010).

There are two ways to address the question of continuity of attachment over time. The first question is, how consistent attachment security or insecurity is over time in general. The second question is, how stable these attachment patterns are over different kinds of relationships (f.e. parents, love partners) (Fraley, 2010).

Waters, Merrick, Treboux, Crowell and Albersheim (2000) conducted a longitudinal study on stability of attachment. After participating Ainsworth's "Strange Situation" (1978) around the age of 1 year, the same subjects were interviewed twenty years later with the Adult Attachment Interview (AAI) (George, Kaplan & Main, 1985), to assess attachment style again and compare it to prior results in childhood. Results showed that 64 % of all participants were classified with the same attachment pattern in young adulthood, than they have been as children. If a dichotomous classification was used (secure vs insecure) even 72 % of all subjects remained stable in their attachments. Negative life events (f.e divorce, loss of a parent, life-threatening illness) had an important impact on change of attachment style. These findings are in line with Bowlby's original attachment theory, stating that attachment representations are mostly consistent over time, while still remaining open for change in case of significant life events (Waters et al., 2000). Fraley (2002) found in a meta-analytic review of existing research on attachment continuity moderate correlations of .25 to .39.

To address the question of similarity of attachment style between different kinds of relationships, Feeney and Noller (1990) conducted a study on the relationship of adult attachment style and attachment history, as well as other variables like self-esteem or love styles, with the goal to

replicate Hazan and Shaver's (1987) findings on this topic. Most of the original results of Hazan and Shaver (1987) were replicated. Securely attached adults reported positive early attachment memories of their caregivers, while the insecure group of subjects reported unsupportiveness from their parents (Feeney & Noller, 1990).

Assessing Adult Attachment

Since the research field of adult attachment was first introduced during the 80s of the last century, there have been two main approaches to measure attachment styles in adulthood (Bartholomew & Shaver, 1998). The first approach was an interviewing technique. The Adult Attachment Interview (AAI, George, Kaplan & Main, 1985) is a semi-structured interview, which assesses adult attachment styles by asking questions about memories of childhood attachment experiences. The other main approach in assessing adult attachment are self-report questionnaires (Bartholomew & Shaver, 1998). The first and very simple self-report measure was developed by Hazan and Shaver (1987). People have to rate which one of three short descriptions of relationship styles, based on Mary Ainsworth attachment patterns (1978), fits to their own style the most. The descriptions have already been mentioned above. After that, many other different questionnaires with the purpose of assessing adult attachment have been developed. One of the most widely used ones is the ECR, Experiences in Close Relationships (Brennan et al., 1998) or the revised version of it, the ECR-R, Experiences of Close Relationships- Revised (Fraley, Waller & Brennan, 2000). The ECR-R is a 36 item self-report questionnaire and assesses adult attachment on the two dimensions of *avoidance* and *anxiety*.

Besides measuring adult attachment as a personal *trait* with interviewing techniques or self-report measurements, it is also possible to induce attachment as *state* of mind or a feeling with priming techniques (f.e. Mikulincer et al, 2001; Sutin & Gillath, 2009; Bartz & Lydon, 2004). There are various possibilities to prime attachment. Mikulincer and his colleagues (2001) examined the effects of activation of attachment security on empathic responses to others needs in a series of five studies. In the first study attachment security was primed by instructing the subjects to read an attachment security related story, while in the second study a pictorial priming was used (picture of a supportive person in a stressful situation). In response to some limitations of the studies before, Mikulincer et al. (2001) also used a subliminal priming technique (subliminal presentation of terms, which are associated with secure attachment). In the last study, the researchers

did not only prime attachment security, but also avoidance and anxiety, by asking subjects to think of the relationships with their parents and recall either a secure, avoidant or anxious moment (Mikulincer et al., 2001). Bartz and Lydon (2004) also conducted a study in which they primed different attachment patterns. They asked participants to think of a relationship they have or had, which fits Hazan & Shaver's (1987) descriptions of attachments. In a second study, Hazan & Shaver's (1987) styles were replaced by Bartholomew's (1990) styles of adult attachment.

Therefore adult attachment can be measured as a personality *trait*, with interviewing techniques (AAI, George, Kaplan & Main, 1985) or self-report questionnaires (ECR-R, Fraley, Waller & Brennan, 2000) or induced as a state of mind by using priming techniques (f.e. Mikulincer et al, 2001; Bartz & Lydon, 2004).

Attachment & Empathy

Mary Ainsworth (1978), as well as John Bowlby (1982) both agreed, that attachment style has a crucial impact on every human emotion. Therefore, there is theoretical support for the connection between empathy and attachment (Britton & Fundeling, 2005). But empirical evidence for this relation is also provided in form of different studies, which examined the relationship of these constructs (f.e. Mikulincer et al., 2001; Britton & Fuendeling, 2005; Trusty, Ng & Watts, 2005; Wayment, 2006).

People with secure attachments mostly had supportive parents, which were responsive and sensitive to their infant's needs. This parenting style leads to positive early caregiving experiences (Khodabakhsh, 2012). In order to be able to react sensitively to one's child's needs, parents have to be, at least to some degree, empathic. Children, who are raised in an empathic environment, will develop a sense of trust and therefore are more likely to grow into empathic adults themselves (Khodabakhsh, 2012). Consequently, the theory behind most studies, which examine the connection between attachment and empathy, is that to be able to provide a secure base for others, one has to be able to recognize the needs and feelings of the other person (be empathic). Ergo, people with secure attachments should be more capable of empathy, than insecure (high on avoidance or anxiety) attached individuals (Britton & Fuendeling, 2005; Mikulincer et al., 2001).

There are several studies, which examined this connection and supported the hypothesis (f.e. Mikulincer et al., 2001; Khodabakhsh, 2012; Wayment, 2006). As already mentioned above, Mikulincer and his colleagues (2001) primed attachment security, using a variety of priming techniques in subjects and compared reports of empathy and personal distress with other subjects, who received a neutral, a positive affect or an attachment insecurity priming. Only when attachment security was primed, empathic reactions increased and personal distress decreased (Mikulincer, 2001). Khodabakhsh (2012) found a positive connection of secure attachment pattern and empathy in nursing students, while a negative relationship between insecure attachments (without differentiating between avoidant and anxious) and empathy was reported. On the one hand, there is theoretical and empirical evidence (see section above) for the hypothesis, that securely attached individuals are less engaged in their own needs and emotions and are therefore able to be more sensitive to other's needs (Trusty, Ng & Watts, 2005). Insecurely attached individuals are assumed to be less empathic, than securely attached persons (Mikulincer et al., 2001; Trusty, Ng & Watts, 2005). This proves to be true for attachment related *avoidance* (f.e. Mikulincer et al., 2010; Wayment, 2006), but findings on attachment related *anxiety* are inconsistent (Trusty, Ng & Watts, 2005). A study, conducted by Trusty, Ng & Watts (2005), which examined the relationship of adult attachment and empathy in counseling students, found different results, than what would have been expected from a theoretical perspective of attachment theory (Britton & Fuendeling, 2005). In this study, highest levels of empathy were predicted by low avoidance but high anxiety, not as expected by low avoidance and low anxiety (secure attachment) (Trusty, Ng & Watts, 2005). A possible explanation for this interesting result is, that people, which are high in attachment anxiety are very preoccupied with relationships and social interactions. They show high levels of sociability and interpersonal warmth, as well as an intense focus on the emotions of others, which is resulting in higher empathy (Trusty, Ng & Watts, 2005). This study showed, that attachment related *avoidance* and *anxiety* function together in influencing empathy. This statement per se is in line with attachment theory (Bartholomew & Horowitz, 1991), but in this study the two dimensions didn't function together as expected (low anxiety and low avoidance predicts highest levels of empathy), but in a different way (low avoidance and high anxiety predicts highest levels of empathy). People with high attachment anxiety (anxious/ambivalent or preoccupied pattern of attachment) are probably more focused on emotions of others, because of their constant anxiety of rejection and are

therefore more sensitive to other's needs and consequently more empathic (Trusty, Ng & Watts). Wayment (2006) examined the relationship between attachment style, empathy and helping behavior after 9/11 terror attacks. A relationship between *avoidance* and an empathy was found (lower scores of avoidance predicted greater empathy for the bereaved of the victims), but no correlation between *anxiety* and empathy was reported. These results show, that the connection between attachment related anxiety and empathy is probably more complex, than expected.

To summarize, some of the empirical data on the relationship between empathy and adult attachment is consistent with theory of attachment (Mikulincer et al., 2001; Khodabakhsh, 2012) which states, that highest levels of empathy should be observed in securely attached individuals (low in avoidance and low in anxiety) (Bartholomew & Horowitz, 1991; Bartholomew & Shaver, 1998). But there is also some research, which challenges these results, by finding highest rates of empathy in individuals with low avoidance and high anxiety (preoccupied or anxious/ambivalent style) (Trusty, Ng & Watts, 2005).

Emotion Regulation

(written by: Bernhard Köpf BSc)

During the last decades, emotion regulation research became a rapidly growing field. According to a Google scholar search of Gross (2015), hardly any publication was using the term emotion regulation in 1990. The number of publications then increased every year, whereby about 12.000 studies used the term in 2013. A Google Scholar search for “emotion regulation”, including all studies published during 2016, found about 20.000 results. Thereby emotion regulation became an important topic in clinical psychology, supporting specifications of emotional problems as well as providing methods for clinical interventions regarding emotional problems (e.g. Sheppes, Suri & Gross, 2015).

To explain the nature of emotion regulation it must first be defined and distinguished from other constructs as affects, moods and stress response. Gross (2015) subsumes the terms moods, stress responses and emotions under the heading of affects. Gross (2015) differentiates emotion from moods and stress responses mainly on the point that emotions are positive or negative reactions to specific events that further evoke behavioral response tendencies referring to these events. On the contrary stress responses refer to negative unspecified reactions to overstraining situational demands. Whereas moods are more vague, last longer but are less intense than emotions and are described as sustained emotional climate of a person (Gross, 2015).

According to the explanation of Gross (2015), the alteration of emotions, stress responses and moods, then refer to emotion regulation, coping and mood regulation. Thus emotion regulation is indicated by the activation of a goal to influence which emotion shall arise, when it will arise and how it is experienced or expressed (Gross, 2015). Basing on this definition of emotion regulation Gross (1998a, 2001) developed the process model of emotion regulation.

The Process Model of Emotion Regulation

The *Process Model of Emotion Regulation* is a prominent theory throughout emotion regulation research. According to this model (Gross, 1998a), a repeated evaluation of emotional cues is done, which leads to certain behavioral, experiential and physiological response tendencies. Those response tendencies can be modulated in different ways. Gross (2001) differs between

emotion regulation strategies to that effect when they appear on the timeline of an emotion generative process. According to this, with antecedent-focused emotion regulation strategies the input to the system is manipulated, what encompasses all cognitive and behavioral processes one can apply before an emotional response tendency fully arises. Otherwise response-focused emotion regulation strategies means that the output of the system is manipulated what encompasses all strategies one applies to modulate an emotional response that has already appeared (Gross, 1998a).

Gross (1998b, 2001) describes five ways emotions can be influenced on five points on the timeline of the emotion regulation process: situation selection, situation modification, attentional deployment, cognitive change and response modification (Fig 4). The first way to regulate emotions is situation selection, what means the conscious choice of what potential emotion triggering situation someone exposes himself. On a next step, with situation modification, one can act in a way, to control the emotional impact of a situation. Attentional deployment means controlling what aspects of a situation are perceived. With cognitive change one selects what of all possible meanings are attached to the aspect of the situation. The meaning a person chooses, will further determine which response tendencies will arise. These four points represent the antecedent-focused emotion regulation strategies in the model of Gross (2001). After experiencing an emotional response, one can control his feelings with the response-focused emotion regulation strategy response modulation, what includes all approaches to change the emotional response after it has appeared (Gross 2001).

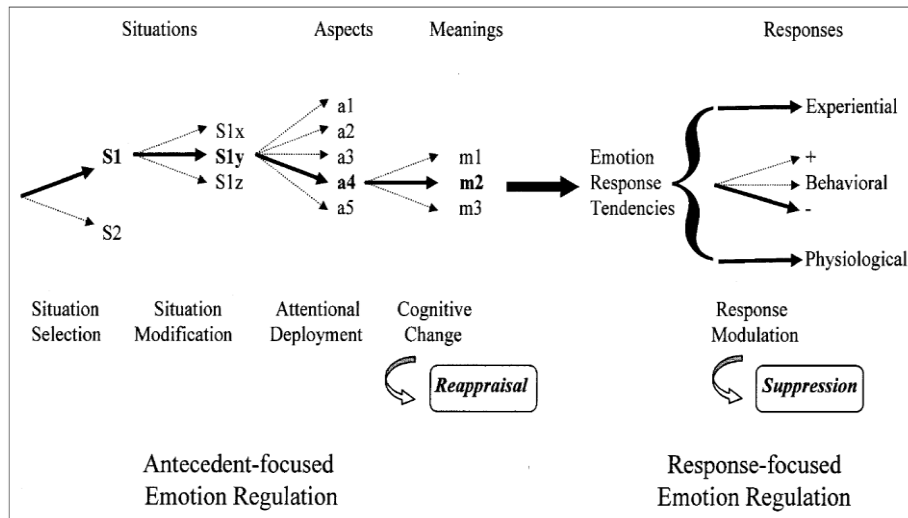


Figure 4: The Process Model of Emotion Regulation: According to the process model of emotion regulation (Gross, 1998b, 2001) emotions can be regulated at five points in the emotion generative process: situation selection, situation modification, attentional deployment, modification of responses. While the first four emotion regulation strategies represent antecedent-focused strategies, response modulation represents response-focused emotion regulation strategies. (Gross, 2001).

Thereby the described emotion generative process doesn't follow a rigid path. Emotion regulation is done simultaneously and dynamically at multiple points in the process and response tendencies also modify situations and change attention and thoughts (Gross, 1998b). This and more points are considered in the latest extended process model of emotion regulation (Gross, 2015) what is described later. The different stages provide several ways to influence our emotions. A brief overview is given next.

Situation Selection

The very first way to manipulate our emotions, is to control what emotion triggering situations, people, places or objects one exposes himself (Gross 1998b). To apply situation selection, one have to be able to choose between several situations. Additionally to that, this strategy requires knowledge about situations in the past, their features and expectable emotional triggers as well as self-knowledge to decide what situations to seek and which to avoid (Gross, 1998b). While situation selection can be a very adaptive way to regulate our emotions and is also used in several psychological interventions (Gross 1998b) it may also be maladaptive when it leads to decisions that provides short-term benefits at the expense of long-term benefits, e.g. when positive situations are avoided because of anxiety (Gross, 1998b).

Situation Modification

Once a person is in a certain situation, one can modulate his emotions by actively change the situation and its emotional impact (Gross, 1998b). This means an alteration of the features of the external environment of the acting person. As situation modification may create a new situation, its distinction from situation selection is not always clear (Gross, 1998b). It's also bounded to emotion expression, what can dramatically modulate social interactions and therefore can also be used to modulate the situation (Gross, 1998b).

Attentional Deployment

Attentional deployment means the decision, what aspect of the situation a person is focusing on. On the time line of the process model it's the first emotion regulation strategy that alters the internal state of a person (Gross, 2001). Gross (1998b) groups attentional deployment under the headings of distraction, concentration and rumination. Rumination means focusing attention on feelings and their consequences and can increase the severity of emotional psychological symptoms (Gross, 1998b). Distraction and concentration are used to keep off our attention or focus on negative or positive emotional triggers. As this may lead to a new (internal) situation Gross (1998b) points out that in certain cases distraction and concentration can be seen as a form of internal situation selection.

Cognitive Change

"Emotion requires that percepts be imbued with meaning and that individuals evaluate their capacity to manage the situation" (Gross, 1998b, p.284). With cognitive change persons select what of all possible meanings they attach to the aspect of the situation what will determine which experiential, behavioral or physical response tendencies will arise (Gross, 2001). According to Gross (1998b) cognitive change encompasses psychological defenses as denial and intellectualization, social comparison, cognitive reframing and cognitive reappraisal.

Response Modulation

This type of emotion regulation strategies are applied very late in the emotion generative process, namely after emotional responses have already arose (Gross 1998b, 2001). Response modulation means that we directly influence our current physiological, experiential, or behavioral

responding (Gross, 1998b). This encompasses e.g. substance-use, but also adaptive regulatory strategies as biofeedback techniques (Gross, 2014). Suppression is another prominent emotion regulation strategy what refers to the inhibition of emotion-expressive behavior (Gross, 2014).

Cognitive Reappraisal and Suppression

Cognitive reappraisal and suppression are two well studied emotion regulation strategies. Cognitive reappraisal refers to the cognitive transformation of the meaning or the self-relevance of an internal or external situation in order to change its emotional impact (Gross, 2015). Suppression refers to inhibiting ongoing negative or positive emotion-expressive behavior (Gross, 2014).

Although people use all emotion regulation strategies in different situations, an individual can tend to use a strategy more often. In case of reappraisal and suppression such a tendency can be inquired by the Emotion Regulation Questionnaire – ERQ (Gross & John, 2003).

As different emotion regulation strategies are applied on different points along a time line throughout an emotion generative process, they have different consequences on the emotion regulation outcome. The outcomes of reappraisal and suppression are well represented topics in the present research, what provides a bundle of results regarding emotion-experience, memory, social functions and more.

It has been shown that suppression can lead to lower positive emotion experience, but fails to decrease negative emotion experience (Brans, Koval, Verduyn, Lim & Kuppens, 2013).

In contrast cognitive reappraisal can be used versatile to regulate emotions. So reappraisal is effective in both decreasing and increasing (or rather misleading to) negative emotions in general (Kim & Haman, 2012; Ray, McRae, Ochsner & Gross, 2010), as well as it can be used to both increasing (Brans et al., 2013) and decreasing (Lieberman, Inangaki, Tabibnia & Crocket, 2011) positive emotions. The fact that cognitive reappraisal has shown to be effective in any direction of emotion regulation, emphasizes that the individual meaning attributed to an event is crucial for what we feel. Although other emotion regulation strategies may be successful in a certain situation, the personal meaning of the situation maintains and re-exposure to the event may elicit the same undesired emotion again. Whereas altering the personal meaning of the event can change

the emotional impact of the event in general and in case of re-exposure to the event the regulated emotional outcome remains (Thiruchselvam, Blechert, Sheppes, Rydstrom & Gross, 2011).

Memory Outcomes

When people are regulating their emotions, they don't only influence their current state, but also the way the event is memorized (Hayes et al., 2010). Thus different emotion regulation strategies lead to different long-term memory outcomes regarding both the event and memory in general.

Suppression requires monitoring and self-correction throughout an emotional event, what costs a lot of cognitive resources and leads to worse performance in memory tests (Richards & Gross, 2000, 2006) or executive functions (Johns, Inzlicht & Schmader, 2008). Furthermore in a study of Gross (2001) people who reported higher use of suppression reported worse memory in daily life than people with lower suppression scores and performed worse by reporting events of their personal life.

Results for reappraisal are more ambiguous. Reappraisal compared to suppression and simple watching, led to better performances in memory tests after 2 weeks in a mixed-gender sample (Hayes et al., 2010), while in other studies this memory advantage effect for reappraisal (compared to no regulation) only appeared in men (Kim & Hamann, 2012) or wasn't found after one year in a female sample (Erk, von Kalckreuth & Walter, 2010).

Interpersonal Outcomes:

As emotions serve important social functions, emotion regulation has social consequences that differ by the way an individual is regulating emotions. Many social processes are basing on information about the other's emotions. When an individual suppresses it's feelings, it deprives this information to interacting partners and social processes may peter out (Srivastava, Tamir, McGonigal, John & Gross, 2009).

Furthermore suppression use can have negative consequences for interpersonal relationships. During social interaction, suppressing ones feelings can disrupt communication and reduces the likelihood of the development of a friendship or the quality of a consisting friendship (Butler et

al., 2003). An interlocutor who expresses only few emotion is physically activating. Several studies have shown a higher blood pressure of interlocutors of suppressors, what is an indicator for less experienced social support (Butler et al., 2003, Ben-Naim, Hirschberger, Ein-Dor & Mikulincer, 2013, Gross, 2001). Furthermore people who tend to suppress their feelings get back lower social support, have less closeness to others and experience lower social satisfaction (Srivastava et al., 2009).

Although reappraisers share emotions with others more often, they don't gain more social support (Gross & John, 2003). However reappraisal is associated with more close relationships and more liking by peers (Gross & John, 2003). Maybe the ability to reappraise the (social) environment serve a social skill that may have positive impacts on relationships. For example people gave less negative moral judgments to people in social dilemmas, when they reappraised the situation (Feinberg, Willer, Antonenko & John, 2012). Similarly high reappraisers reported from more prosocial behavior (Lockwood et al., 2014).

According to the above mentioned results one might say that during social interaction reappraisal should be preferred towards suppression. But Gross (2014) points out that social consequences of emotion regulation are context dependent and should therefore not be generalized. There might be also confounding factors. E.g. Mauss et al. (2011) refers that the coherence of one's emotional experience and his expressions might be an underlying mechanism for the social function of emotion expression.

The Extended process model of Emotion Regulation

The process model of emotion regulation is kindly regarded throughout the scientific community and led to a high number of studies basing on this model what provides a loads of knowledge about this topic. After nearly 20 years since the process model was established, Gross (2015) combined the findings of the last years and extended the process model of emotion regulation.

The basic assumption of the extended process model of emotion regulation (Gross, 2015) is that emotion needs a valuation of a situation as good, bad or indifferent. Therefore there is a high number of different valuation systems, that refer to different types of inputs, differ in time, plas-

ticity, and actions they evoke, but are also sharing some core features (Gross, 2015). Gross (2015) describes the basis of valuation processes as circle that begins with the “world” (W), the environment of the valuation system what can be the physical environment as well as mental states or even other valuation systems. The world evokes perceptions (P), that are further valued (V) as positive or negative. In result of this valuation one sets actions (A) that alter the state of the world and the cycle starts again and continues as long as the world comply with its goal state. (Figure 5)

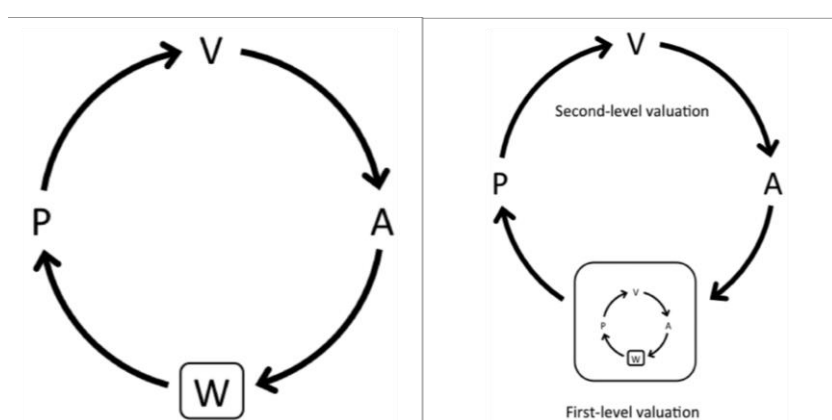


Figure 5: The extended Process Model of Emotion Regulation: Basics. According to the extended process model of emotion regulation (Gross, 2015), the basis of the emotion generative process is a repeated circular evaluation of situation as good, bad or indifferent. This circle starts with an evaluation of the subjects world (W), its perceptions (P) that are valued (V) and further provoke actions (A) that aim to alter the world. Thereby a valuation system can also alter another valuation system. In this case the altered valuation system represents the first-level valuation system, while the system that influences the other system represents the second-level valuation system.

In everyday life multiple valuation systems are active simultaneously and further interact with each other (Gross, 2015). According to the extended process model of emotion regulation (Gross, 2015) emotion regulation occurs, when an emotion generating (first level) valuation system is the target of another (second-level) valuation system, that evaluates the first-level valuation system and further activates action to modify its state. In this case the emotion generating first-level valuation system represents the “world” of the second-level valuation system (Figure 5). The alteration of the first-level valuation system through the second-level valuation system then represents emotion regulation (Gross, 2015) (Figure 6).

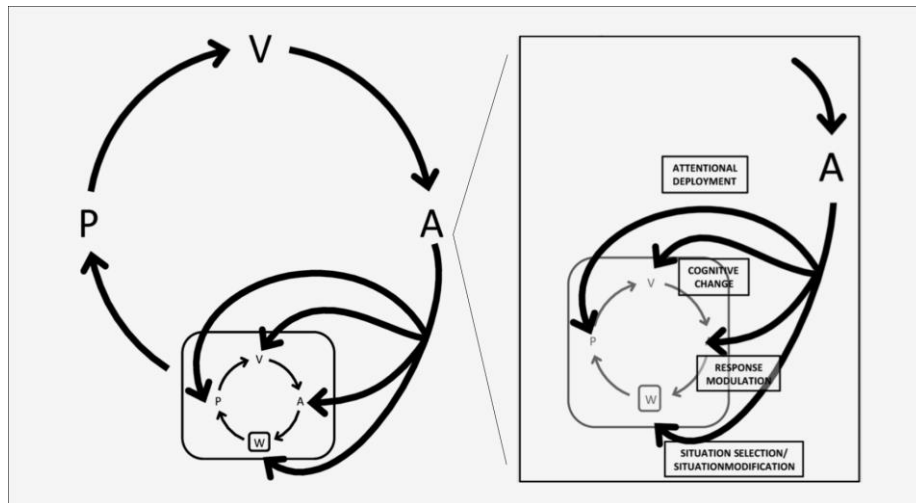


Figure 6: The extended Process Model of Emotion Regulation: Emotion Regulation. According to the extended process model of emotion regulation (Gross, 2015), emotion regulation represent the alteration of a first-level valuation system that represents the World of the second-level valuation system. The second-level valuation system can act altering on each point on the first level valuation system, what refers to the different emotion regulation strategies in the former process model of emotion regulation.

Gross (2015) links this new model with the former process model (Gross, 1998b), as the situation of the former model is a specific version of the world, attention a specific version of perception, appraisal of valuation and response of action. In respect of the (former) process model of emotion regulation, Gross (2015) mentions five ways the second-level system can influence the first-level system; (1) Try to change ones situation/world (situation selection), (2) change relevant aspects of the external world (situation modification), (3) influence what parts of the world are perceived (attentional deployment) (4) alter the cognitive representations of the world (cognitive change) and (5) modify emotion-related actions (response modulation) (Figure 6).

Aim of the study

Aim of the Study: Attachment

(written by: Anna Pilz BSc)

The aim of this study is to examine the relationship of *adult attachment* and the *emotional egocentricity bias (EEB)*, as well as the *emotional altercentricity bias (EAB)*. By priming different patterns of adult attachment, *avoidant*, *anxious/ambivalent* and *secure*, after Hazan and Shaver (1987), a state of attachment security (secure priming) or insecurity (avoidant or anxious/ambivalent priming) is induced in healthy female participants. The effects of this priming procedure on the emotional egocentricity and altercentricity bias is assessed by using the Touch Paradigm (Silani et al., 2013), which is going to be discussed in detail later. To further evaluate the connection of adult attachment and both of the biases, the dimensions of attachment related *avoidance* and *anxiety* is going to be assessed as well, by using the *Bochumer Bindungsfragebogen - BoBi* (Neumann, Rohmann & Bierhoff, 2007), which is the German version of the *ERQ-R* (Fraley, Waller & Brennan, 2000).

In prior research (e.g. Mikulincer et al., 2001; Trusty, Ng & Watts, 2005; Wayment, 2006) a connection between empathy and attachment has already been revealed. These findings are inconsistent concerning the direction of the relationship of adult attachment and empathy. While most studies found, that low levels of attachment related *anxiety* and *avoidance* (=secure attachment style) reported high levels of empathy (e.g. Mikulincer et al., 2001), in another study low levels of *avoidance* and high levels of *anxiety* (=anxious/ambivalent attachment style) predicted highest scores of empathy (Trusty, Ng & Watts, 2005). As already stated previously, the differentiation of one's own emotional or mental state and the one of another person is crucial for everyday empathic judgments (Hoffmann et al., 2016). Therefore, it was hypothesized that different styles of adult attachment lead to different results in emotional egocentricity and altercentricity bias.

Anxious/ambivalent attached adults are very preoccupied with emotions of others (Trusty, Ng & Watts, 2005), while adults with an avoidant attachment style focus more on themselves and not on others (Bartholomew, 1990). This general focus on the self or on others could lead to different rates in EEB and EAB. Securely attached adults on the other hand tend to have healthier and

happier relationships, which requires an amount of accuracy in emotional judgements in order to predict needs of others correctly (Mikulincer et al., 2001). Therefore results on the Touch Paradigm (Silani et al., 2013) of participants in the secure priming group could be influenced by this described connection of attachment security and empathy.

Aim of the Study: Emotion Regulation

(written by Bernhard Köpf BSc)

The second aim of the study was to examine a relationship between the emotional egocentricity bias as well as the emotional altercentricity bias and emotion regulation. Therefore EEB and EAB scores were collected through the Touch Task (Silani et al., 2013) are related to self-reports of the use of the two emotion regulation strategies suppression and reappraisal, examined by the ERQ-D (Abler & Kessler, 2009).

Emotion Regulation plays a role in the experience of empathy (Decety & Lamm, 2009) and as EAB and EEB represent judgments of emotional outcomes either in oneself or the other, this might be influenced by different ways of regulating those emotional outcomes.

The influence of cognitive appraisal on empathic other judgments has already been documented (Lamm, Batson & Decety, 2007). On the other hand, in a prior master's thesis no relationship between reappraisal and EEB was found (Scharl, 2015). In the thesis of Scharl (2015), reappraisal was provoked by a priming. Differently the present study examines tendencies to use emotion regulation strategies in daily life and relates the results to both EEB and EAB. As in the present study subject's emotional judgment responses are manipulated by an attachment priming, the relationship between the two constructs are examined over the whole sample and for each attachment priming group separately.

Hypotheses

Attachment

(written by: Anna Pilz BSc)

1. There is a group difference between the three *adult attachment priming groups* (avoidant, secure and anxious) in *emotional egocentricity bias* scores.
2. There is a group difference between the three *adult attachment priming groups* (avoidant, secure and anxious) in *emotional altercentricity bias* scores.
3. There is a relationship between attachment related *avoidance* and the *emotional egocentricity bias*.
4. There is a relationship between attachment related *avoidance* and the *emotional altercentricity bias*.
5. There is a relationship between attachment related *anxiety* and the *emotional egocentricity bias*.
6. There is a relationship between attachment related *anxiety* and the *emotional altercentricity bias*.

Emotion Regulation

(written by: Bernhard Köpf BSc)

1. There is a relationship between emotional egocentricity bias and the ERQ-D Scale Suppression
2. There is a relationship between emotional egocentricity bias and the ERQ-D Scale Reappraisal
3. There is a relationship between emotional altercentricity bias and the ERQ-D Scale Suppression
4. There is a relationship between emotional altercentricity bias and the ERQ-D Scale Reappraisal

Methods

Sample

(written by: Bernhard Köpf BSc)

The present study's target group were women older than 18 years. To call them for participating to the study, an information sheet was created, that provided first information about the content of the study, the location where it took place, exclusion criteria and the contact data of the experimenters (see appendix). The information sheet was spread via social media, on the University of Vienna and the mailing list of an association. Some participants volunteered from word-of-mouth advertising by former participants. All interested people, were contacted by phone in advance, to clear all open questions and to ensure that they are suitable for the study. Further, an appointment was made for a pairwise session, that all took place from March to May 2016.

Known confounding factors to the EEB were considered in advance. On the one hand, as there are age effects (Riva et al., 2016), subjects were equally assigned to the three priming groups. On the other hand, as there are gender differences (Tomova et al., 2014), only females were recruited for the study. Furthermore three additional exclusion criteria were stated. First, as the stimuli of the touch task consist of pictures of animals, people with animal phobias were not invited to the study. Second, as they might see through the aim of the study, people with psychological educational background (e.g. psychologists, psychotherapists, students of psychology up to three semesters) were also excluded from participation. Third, people who have received a psychiatric diagnosis at any time in the past, were also excluded from participating in the study.

In sum 64 subjects participated in the present study. Due to age differences in the priming groups, the four oldest subjects of the secure group had to be excluded. Finally, N=60 subjects were included to the study.

To describe the sample, following sociodemographic data was collected during the study: age, highest educational attainment, current employment, relationship status and the duration of (a) the current partnership or if single at the moment, (b) the last partnership.

The descriptive statistics of age are shown in Table 1. The mean age in the whole sample was 28.9 (SD=10.40), the median age was 24. The age of all participants reached from 18 to 59. The medians of the three priming groups are: avoidant attachment priming group Med= 24, secure priming group Med= 25.5, anxious attachment priming group Med= 24.0 and were similar since Kruskal-Wallis test is not significant ($\chi^2(2)=2.74$, $p > .05$). As 75 % of the subjects were younger than 30 years, young adults are overrepresented in the sample.

Table 1: Descriptive Statistics of Age over the three priming groups

| <i>Priming Group</i> | <i>Mean</i> | <i>Median</i> | <i>Range (min: max)</i> |
|----------------------|-------------|---------------|-----------------------------|
| all N=60 | 28.90 | 24.0 | 41 (18:59) |
| avoidant | 27.05 | 24.0 | 30 (22:52) |
| secure | 30.80 | 25.5 | 38 (21:59) |
| anxious | 28.85 | 24.0 | 40 (18:58) |

Table 2 shows a comparison of the frequencies of the highest educational attainment in the sample and through the female population in Austria (2014). Through the sample, subjects with lower educational attainment (compulsory school, apprenticeship, vocational middle school) are strongly underrepresented, while subjects with higher educational attainment (examination, university degree) are strongly overrepresented.

Table 2: Highest Educational Attainment in the Sample compared with the Female Population of Austria

| <i>Highest educational attainment</i> | <i>Sample n</i> | <i>Population¹ %</i> | |
|---------------------------------------|---------------------|-------------------------------------|------|
| Compulsory School ² | 3 | 5 | 22.7 |
| Apprenticeship | 1 | 1.7 | 26.9 |
| Vocational middle school | 6 | 10 | 17.9 |
| Examination | 22 | 36.7 | 15.1 |
| University degree ³ | 24 | 40 | 13.4 |
| Others | 3 | 5 | 3.9 |
| Missing | 1 | 1.7 | |

¹ Source: Statistic Austria. (2014)

² encompasses also people without any educational attainment.

³ encompasses all academic degrees up to bachelor's degree.

Table 3 shows the frequencies of subject's current employment and relationship status. N=29 (48.3 %) of the subjects are in education. n=24 (40 %) of the subjects are employed, n=7 (11.7 %) are neither employed nor in education. For this item, people were asked to choose one option. Participants that are both in education and employed, were asked to choose, what they see as their "main role". Regarding relationship status, n=32 (53.4 %) of the subjects are in any relationship (unmarried or married), n=28 (46.6 %) are single or divorced.

Table 3: Frequencies of current employment and relationship status in the sample

| <i>Current Employment</i> | <i>n</i> | <i>%</i> |
|----------------------------------|----------|----------|
| Employed | 24 | 40 |
| Unemployed | 7 | 11.7 |
| In education | 29 | 48.3 |
| <i>Relationship Status</i> | | |
| Single | 23 | 38.3 |
| In a relationship, unmarried | 28 | 46.7 |
| Married / registered partnership | 4 | 6.7 |
| Divorced | 5 | 8.3 |
| Widowed | 0 | 0 |

Touch Task – Measuring the Emotional Egocentricity and Altercentricity Bias

(written by: Anna Pilz BSc)

The *Touch Paradigm*, created by Silani and her colleagues (2013), is an experimental design, which originally aimed at evaluating the emotional egocentricity bias, but the emotional altercentricity bias can be captured by using it as well. The biases are defined by using a combination of visual and tactile stimuli, which are rated by two participants at the same time and in the same room.

In the study subject of this thesis, the two subjects sat back to back to each other in the same room on two different tables, to prevent seeing each other during the experiment. They placed their left hand under a construction with the back of the hand lying on the table. This construction was built to prevent participants from seeing the tactile stimuli, with which they've been stimulated during the experimental sessions. On the table in front of each subject, a touchscreen was placed, which they should operate by using their right hand in order to rate the pleasant-

ness or unpleasantness of the stimuli. As already mentioned, the Touch Task (Silani et al., 2013) uses a combination of visual and tactile stimuli. The visual stimuli are pictures of pleasant (e.g. puppy, rose, cotton) or unpleasant (e.g. maggots, centipede, eel) objects, which are presented to the subjects over the touchscreen in front of them. Simultaneously to the presentation of the pictures, participants receive a tactile stimulation as well. While watching the picture for 3 seconds, the left hand of the subjects (the one under the construction) is stroked with a material, which resembles what the presented object feels like. For example, if a picture of a liver was presented, participants were touched with a “slimy”, to resemble how being touched by a real liver would feel and intensify the experience. Right after each visual-tactile stimulation, participants had to rate the pleasantness or unpleasantness of this experience on a scale, presented on the touchscreen. They had to tap with their right hand on the rating scale on the touchscreen within 3 seconds of response time. This short time of response was applied to guarantee spontaneous and intuitive answers.

In total, subjects participated in three sessions of the Touch Paradigm. In the first session, the “single self” session, one single picture was displayed on the screen to the participants and the only task was to rate the visual-tactile stimulation, which they had just experienced, according to their own emotions. This first session consisted of 30 trials with 28 different stimuli. 9 out of this 28 stimuli were negative or unpleasant ones (e.g. spider, centipede), 9 were neutral ones (e.g. branch, stone) and 10 were positive or pleasant ones (e.g. puppy, rose). The “single self” session was conducted, to make participants familiar with the procedure, as well as the stimuli and to be sure that no prior differences in evaluation of the stimuli existed in the three priming groups.

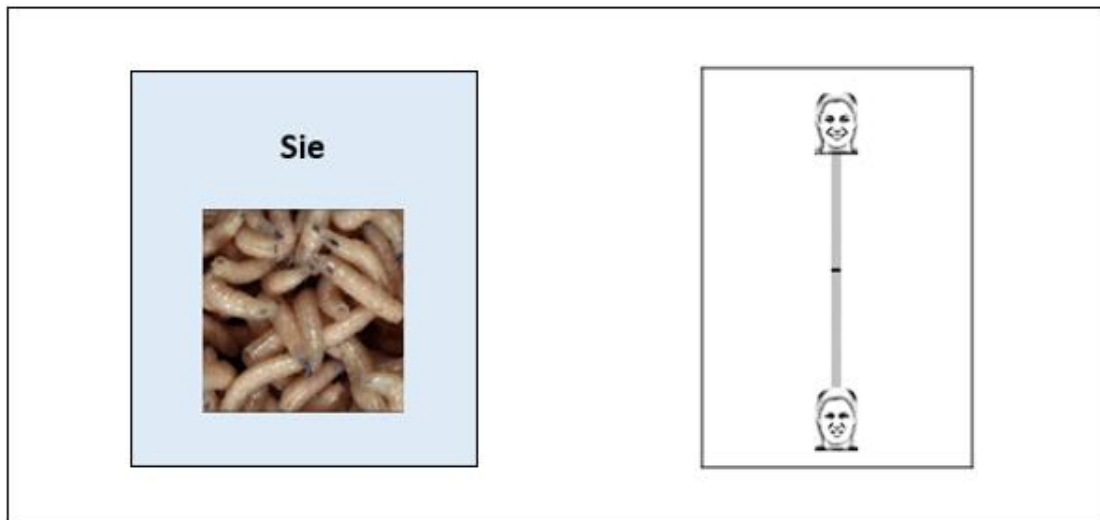


Figure 7: Touch Paradigm to measure the Emotional Egocentricity Bias – “Single Self” Session (Silani et al., 2013): One picture of a pleasant or unpleasant object was displayed on a touchscreen to the participants (left picture), while simultaneously the left hand of the participants was stroked with an object, that resembled the feeling of the object in the picture. After this 3 second visual-tactile stimulation, participants had a 3 second response time to rate the experience on a rating scale, also presented on the touchscreen (right picture).

The second and the third session of the paradigm were so called “double sessions”, divided in “Double self” and “Double other”. In both of the double sessions, two pictures were presented at the same time to the participants. One of the pictures displayed the stimulus, with which the subject itself was touched, while the other picture displayed which stimulus the other person in the room (the second participant) was stimulated with (or at least participants thought, that the other person was touched by it). Depending on instructions before, one participant had the task to rate how the other person might feel after stimulation with the displayed stimulus (“double-other” condition), at the same the second participant rated her own experience, but while still seeing both pictures (her own and the one of the other person) displayed on the screen (“double-self” condition). After 40 trials in total, with 20 positive/pleasant and 20 negative/unpleasant stimuli for each person, the conditions were switched and the person, who rated the experience of the other participant at first, was instructed to rate her own experience, while the subject who rated her own experience at first, had to rate the one of the other person during the next 40 trials. The experiences, both of self and other, were rated on the same rating scale, as in the “single-self” session. The “double self” condition was used to assess the emotional altercentricity bias, while the “double other” condition examined the emotional egocentricity bias.

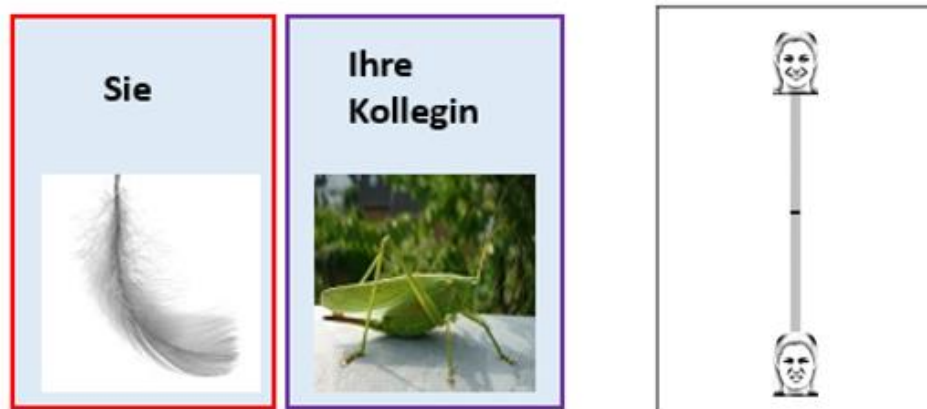


Figure 8: Touch Paradigm to measure the Emotional Egocentricity Bias – “Double – Condition” (Silani et al., 2013): Two pictures were displayed to the participants simultaneously. One picture with the headline “you” (red frame) displayed the stimulus oneself was receiving, while the other picture with the headline “your colleague” (blue frame) displayed the stimulus the other person was receiving (at least participants thought, that the other person was stimulated by that object). After 3 seconds of stimulation, participants had to rate the experience on the presented rating scale (right picture in figure), which was also displayed for 3 seconds. Depending on instructions before, participants whether rated the pleasantness or unpleasantness of their own experience (“double-self condition”) or the experience of the other person (“double-other condition”).

In the “double conditions”, trials were either congruent or incongruent in their valence. In a congruent trial, both pictures showed objects of the same valence (and therefore participants were touched by objects of the same valence), meaning both are positive/pleasant or both are negative/unpleasant (e.g Participant 1: picture of a baby cat, stroked with a fluffy fake fur; Participant 2: picture of a baby sheep, stroked by sheep wool). While in an incongruent trial the visual-tactile stimuli were different in their valence, one person was touched by a pleasant stimuli, while the other received stimulation by an unpleasant object (Subject 1: picture of a spider, stroked with a toy spider; Subject 2: picture of a chick, stroked by a fluffy toy chick) In total of 40 trials, 10 out of the 20 pleasant stimulations were congruent trials and 10 were incongruent, same states for the unpleasant stimulations. A list of all used visual, as well as tactile stimuli is presented in Table 4. The ratings of the participants on the rating scale were transformed into scores ranging from -10 to + 10, with 0 as a neutral rating score.

This newly created experimental design consists of three factors, “valence” (pleasant vs. unpleasant), “target” (self vs. other judgement) and “congruency” (congruent vs. incongruent stimulation of subject 1 and subject 2), which build a three-factorial design.

Table 4: List of Stimuli: Pictures, Materials and Valence. There were 10 different pleasant stimuli, 9 different unpleasant stimuli and 9 different neutral Stimuli. The unpleasant and pleasant set of stimuli was used during all trials (single self, double other, double self), while the neutral stimuli were only used during single-self session. The used materials were selected to create most possible resemblance to the original object displayed in the pictures.

| Stimulus / Picture | Material | Valence |
|---------------------------|------------------------------|----------------|
| Rose | Satin Bow | Pleasant |
| Cat | Fluffy fake fur | Pleasant |
| Chick | Fluffy toy chick | Pleasant |
| Cotton | Cotton | Pleasant |
| Bunny | Soft Socks | Pleasant |
| Soft Brush | Make-up brush | Pleasant |
| Cotton plant | Cotton | Pleasant |
| Swan | Feather | Pleasant |
| Puppy | Fluffy fake fur | Pleasant |
| Baby sheep | Sheep wool | Pleasant |
| Centipede | Piece of toy snake with legs | Unpleasant |
| Spider | Toy spider | Unpleasant |
| Catfish | Balloon with water | Unpleasant |
| Stinkbug | Toy bug | Unpleasant |
| Slug | Slimy | Unpleasant |
| Maggots | Toy rubber ball with "hair" | Unpleasant |
| Liver | Slimy | Unpleasant |
| Mushroom | Slimy | Unpleasant |
| Eel | Toy snake | Unpleasant |
| Stone | Stone | Neutral |
| Branch | Branch | Neutral |
| Box | Piece of Carton | Neutral |
| Hard brush | Shoe brush | Neutral |
| Pen | Pen | Neutral |
| Walnut | Walnut | Neutral |
| Elk | Horns | Neutral |
| Peanut | Peanut | Neutral |
| Turtle | Coconut shell | Neutral |

Priming different Styles of Adult Attachment

(written by: Anna Pilz BSc)

In this study, the different styles of adult attachment, secure, anxious/ambivalent and avoidant, after Hazan and Shaver (1987), were primed by using a visualization task, which was adopted from Bartz and Lydon (2004). For the study described in this thesis, the authors chose to use the term “anxious” for the third priming group instead of “anxious/ambivalent”, but still refer to Hazan and Shaver’s (1987) types of attachment.

All participants received the priming stimulus over headphones by listening to a prior recorded text. This was done to ensure identical instructions for all participants over all three groups. To mask the original purpose of the priming procedure, participants were told the task assessed their “emotional memory”. Before listening to one of the three descriptions of Hazan and Shaver’s (1987) patterns of adult attachment, participants were asked to think of a current or past relationship, which fits the criteria described later. Whether it was a close friend, a family member or a partner in a love relationship didn’t matter, important was, that the relationship was at least similar to the respective attachment pattern. Participants were further instructed, that if they are not able to think of one particular relationship or person, that fits the description, it is also possible to think about more than one person at the time, to get into the feeling of this kind of relationship. The whole priming procedure (as the whole study) was conducted in German. The German version, as well as the English translation is stated below.

Original version (German): *“Liebe Versuchsteilnehmer, im folgenden Abschnitt soll es darum gehen Ihr emotionales Gedächtnis zu testen. Bitte folgen Sie dafür einfach den Anweisungen, die Sie gleich hören werden.*

Bitte denken Sie nun an eine vergangene oder aktuelle Beziehung, welche den nachfolgend beschriebenen Kriterien ungefähr entspricht. Nehmen Sie sich dafür ruhig Zeit und versuchen Sie sich die Person, mit welcher Sie diese Beziehung haben oder gehabt haben, genau vorzustellen. Diese Person kann ein Lebenspartner, ein guter Freund oder gute Freundin oder ein Familienmitglied sein. Wichtig ist, dass die Beziehung den gleich beschriebenen Kriterien ungefähr entspricht“

English version: *“Dear participant, the following task will test your emotional memory. Please just follow the following instructions. We would like to ask you to think about a past or current relationship, which fits the criteria described later. Take your time to do that and try to picture the person, with whom you had that kind of relationship, very precisely. This person can be a close friend, a family member or a romantic partner. Important is, that the relationship and the person you think of, fits the criteria, described later”*

After this instruction part, subjects of each of the three priming groups listened to the respective description of adult attachment style after Hazan & Shaver (1987). These descriptions were adopted from Bartz & Lydon (2004) and have only been translated into German. The exact words of the descriptions were as following:

Secure

Original version (German): *“Denken Sie nun an eine Beziehung, in welcher es relativ einfach für Sie war der anderen Person nahe zu kommen und in der Sie sich dabei wohl gefühlt haben sich auf die andere Person zu verlassen. In dieser Beziehung haben Sie sich nicht oft Sorgen gemacht von der anderen Person verlassen zu werden und Sie haben sich auch nicht darum gesorgt, dass Ihnen die andere Person zu nahe kommen könnte“*

English version: *“Please think about a relationship you have had in which you have found it was relatively easy to get close to the other person and you felt comfortable depending on the other person. In this relationship you didn’t often worry about being abandoned by the other person and you didn’t worry about the other person getting too close to you” (Bartz & Lydon, 2004, p. 1394)*

Avoidant

Original version (German): *“Denken Sie nun an eine Beziehung, in welcher Sie sich auf die eine oder andere Art unwohl gefühlt haben der anderen Person zu nahe zu kommen. In dieser Beziehung fanden Sie es schwer, der anderen Person komplett zu vertrauen und sich auf die andere Person zu verlassen. In dieser Beziehung fühlten Sie sich nervös wenn die andere Person versucht hat Ihnen zu nahe zu kommen und Sie spürten, dass die andere Person intimer oder näher mit Ihnen sein wollte als es Ihnen angenehm war“*

English version: *“Please think about a relationship you have had in which you have found that you were somewhat uncomfortable being too close to the other person. In this relationship, you found it was difficult to trust the other person completely and it was difficult to allow yourself to depend on the other person. In this relationship you felt yourself getting nervous when the other person tried to get too close to you and you felt that the other person wanted to be more intimate than you felt comfortable being” (Bartz & Lydon, 2004, p.1394)*

Anxious

Original version (German): *“Denken Sie nun an eine Beziehung, in welcher Sie gespürt haben, dass die andere Person Ihnen nicht so nahe sein wollte, wie Sie es sich gewünscht hätten. In dieser Beziehung sorgten Sie sich, dass die andere Person Sie nicht wirklich gern hatte oder geliebt hat und sie machten sich Sorgen, dass die Person nicht bei Ihnen bleiben möchte. In dieser Beziehung wünschten Sie sich, der anderen Person sehr nahe zu kommen, hatten aber gleichzeitig Angst, dass dies die andere Person abschrecken könnte“*

English version: *“Please think about a relationship you have had in which you have felt like the other person was reluctant to get as close as you would have liked. In this relationship you worried that the other person didn’t really like you, or love you, and you worried that they wouldn’t*

want to stay with you. In this relationship you wanted to get very close to the other person but you worried that this would scare the other person away” (Bartz & Lydon, p.1394)

After listening to one of these three descriptions, participants were asked to take time to visualize a clear and vibrant image of the person, with whom they had that kind of relationship, in their minds, as to deepen the induced state of attachment security or insecurity. This deeper feeling of primed attachment style was provoked through a variety of questions, which the participants should ask themselves about the person and the relationship, they were instructed to think about. These questions were also adopted from Bartz and Lydon’s (2004) priming technique and translated into German for this study. The questions were the following:

Original version (German): *“Nehmen Sie sich nun einen Moment Zeit um ein gutes geistiges Bild dieser Person zu bekommen. Wie sieht die Person aus? Wie ist es mit der Person zusammen zu sein? Vielleicht können Sie sich an einen bestimmten Moment erinnern, als Sie mit der Person zusammen waren. Was würde sie oder er zu Ihnen sagen? Was würden Sie antworten? Wie fühlen Sie sich wenn Sie mit dieser Person zusammen sind? Wie würden Sie sich fühlen wenn sie oder er jetzt hier wäre?”*

English version: *“Now, take a moment and try to get a visual image in your mind of this person. What does this person look like? What is it like being with this person? You may want to remember a time you were actually with this person. What would he or she say to you? What would you say in return? How do you feel when you are with this person? How would you feel if they were here with you now?” (Bartz & Lydon, 2004, p. 1393)*

After the priming procedure, which took depending on attachment style, between 4 and 5 minutes, participants answered two evaluation questions:

Original version (German):

1. “Waren Sie in der Lage an eine Person zu denken, zu der Sie diese Art von Beziehung gehabt haben?”

☐ Ja ☐ Nein

2. “Fanden Sie es schwierig sich im Kopf ein gutes Bild von der Person zu machen? „

☐ Ja ☐ Nein

English version:

1. “Have you been able to think of a person, to whom you had this kind of relationship?”

☐ Yes ☐ No

2. „Did you find it difficult to get a good image of this person in your mind?“

☐ Yes ☐ No

The first evaluation question was scored with 1 point for yes and 0 points for no, while the second question was scored with 0 points for yes and 1 point for no. Only if a participant would have scored 0 points in total on the evaluation questions, she would have been excluded, which was not the case. The effectiveness of the priming task was furthermore evaluated by using the German version of the PANAS (Krohne, Egloff, Kohlmann & Tausch, 1996), which will be described later.

Positive and Negative Affect Schedule – PANAS

(written by: Anna Pilz BSc)

The Positive and Negative Affect Schedule (PANAS) (Watson, Clark & Tellegen, 1988) is a mood scale, which measures positive as well as negative affect as a self-report questionnaire. There are two dominant factors, which are always present in affective structure analysis, positive and negative affect (or pleasantness and unpleasantness). One might falsely assume, that these dimensions are the exact opposite from each other, but they are rather two highly distinctive factors, which are orthogonal to each other (Watson et al., 1988). Positive affect describes the degree of activity, enthusiasm and alertness a person is feeling at a certain time. Therefore high scores of positive affect imply, that an individual feels energetic, concentrated and pleasantly aroused, while low scores of positive affect imply feeling sad or lethargic. Negative affect on the other hand describes a more general feeling of unpleasantness and distress. This unpleasant mood can be expressed by a variety of emotions, for example anger, fear, guilt, nervousness or disgust. Low levels of negative affect therefore imply feeling calm and relaxed (Watson et al., 1988).

According to Watson, Clark and Tellegen (1988), existing mood scales back in the 1980s were lacking reliability, as well as validity, therefore to fill the need for a short and efficient scale to measure positive, as well as negative affect, they created the PANAS. The PANAS consists of 20 items, 10 out of the 20 measure positive affect, while the other 10 items measure negative affect. These 20 items were chosen out of 60 original terms through principle component analysis, to guarantee, that all the terms measuring positive affect load mainly on that factor and show almost none loading on the factor of negative affect and vice versa. The 10 final items of positive

affect of the PANAS are: *interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive* and *active*. The 10 items measuring negative affect are: *distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery* and *afraid*. These 20 items have to be rated on a 5-point scale, the 5 points are labeled as following: *very slightly or not at all (1), a little (2), moderately (3), quite a bit (4)* and *extremely (5)*. The PANAS can be used for different research purposes. Either participants are asked to answer the questions, concerning how intensely they felt these emotions during the last time (e.g past few days, past week or months), to measure a more general mood level of a person. But the PANAS can also be used, to measure a current mood and especially mood changes, caused by other variables, by asking the participants how they feel in this certain moment (e.g today, in this moment). In this study the PANAS was used for the latter to measure changes of mood and emotions after the priming procedure. This was done to evaluate the effect of the attachment priming task.

Watson and his colleagues (1988) also conducted a validation study to prove the high reliability and validity of the PANAS, compared to other mood scales. The validity and reliability of the PANAS was assessed by using 6 different temporal instructions, each of them tested by using very large samples (*at the moment (n=660), today (n=657), past few days (n=1002), past few weeks (n=586), past year (n= 649), in general (n=663)*). The internal consistency reliabilities, indicated by Cronbach's alpha, ranged from .86 to .90 for the positive affect scale and from .84 to .87 for the negative affect scale over the different tested time periods. The test-retest reliability was examined with an 8 week interval and ranged from .47 to .68 for positive affect and from .39 to .71 for negative affect. As expected, the retest reliability tended to be higher for longer time periods (e.g past year, in general).

Krohne, Egloff, Kohlmann & Tausch (1996) adapted a German version of the PANAS and tested its reliability and validity. The internal consistency reliability, as well as the test-retest reliability was assessed for habitual affect (*How do you feel in general*) with 480 participants and for current affect (*How do you feel at the moment*) with 349 participants. Cronbach's alpha scores for current affect were .85 for positive affect and .86 for negative affect (n=349). For habitual affect, positive affect displayed a Cronbach's alpha of .84 and for negative affect .86 (n=480). The test-retest reliability was assessed with a one week interval. For both negative as well as positive affect a .19 retest reliability was examined for current affect. The positive scale of habitual affect showed a .66 retest reliability, while the negative affect scale showed .54 of retest reliability.

As stated above, the German version of the PANAS (Krohne et al., 1996) was used in this study to examine the effects of the attachment priming procedure. Therefore, participants completed the PANAS 3 times in total during the study. Significant changes in positive and/or negative affect after the priming task compared to levels before priming were interpreted, as a successful priming procedure. This will be described in detail in the results section.

Example items of the German version of the PANAS (Krohne et al., 1996) are displayed below.

The first item is part of the positive affect scale, while the second item measures negative affect.

| | ganz wenig oder gar nicht | ein bisschen | einigermaßen | erheblich | äußerst |
|--------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. aktiv | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. bekümmert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Procedure

(written by: Bernhard Köpf BSc)

Before they were invited to the experiment all participants were contacted by phone first. Thereby first information about the experiment and the location was given. Further, it was clarified if they would meet any exclusion criterion. If they were suitable for the experiment, an appointment for a session was made. The first 20 participants were allocated to the avoidant attachment priming group, the next 20 participants were allocated to the anxious attachment priming group, while the last 20 participants were allocated to the secure attachment priming group.

The experiment was implemented between March and May 2016. The female participants were invited pairwise to the Faculty of Psychology of the University of Vienna, that is located at Liebiggasse 5, 1010 Vienna. The sessions were performed by the two authors of this thesis, Anna Pilz and Bernhard Köpf. After meeting both participants at the gates of the faculty, they were guided to the experiment room, the so called “Formann-Room” (Room Nr.: 51) in the department of clinical psychology.

The standardized instruction of the two participants took place together at an extra table in the experiment room and was alternately from sessions to session conducted by one of the experimenters. The instruction followed the following structure: (1) First an overview of the study was given. Thereby the participants were informed about the procedure and duration of the study. (2) They were informed about the usage of the data: that it was collected anonymously, that it is going to be used for the master's thesis, but may also be used by other professionals within the Faculty of Psychology. (3) They were informed about their right to abort the experiment and withdraw their participation at any time. (4) It was again clarified, if they meet any exclusion criteria. (5) Participants were instructed in detail to the particular tasks. (6) They were asked for remaining questions, (7) If all questions were clarified, subjects were asked to subscribe the informed consent. (8) Finally they were asked to stop communicating to each other from now on. (9) As stimuli were used in several sessions, all participants were asked to disinfect their hands. After that they were placed back-to-back on the two tables and the experiment started.

Before each step of the study, the participants again received a particular instruction for the following task. Each session started with the Positive And Negative Affect Schedule - PANAS (german version) (Krohne et al., 1996). When both participants completed the first PANAS (Krohne et al., 1996), a test-trial of the touch task was conducted, to become familiar with the touch task. That was followed by a single-self trial of the touch task, whereby subjects were exposed to one single stimuli that had to be rated. After the single-self trial a second PANAS (Krohne et al., 1996) was given. The next step in the procedure was the priming procedure, which was presented to the participants as an "imagination task", directly followed by a third PANAS (Krohne et al, 1996) with two additional evaluation questions. After that, the two double-self / double-other sessions were conducted. Finally, subjects had to fill out the sociodemographic questionnaire, the Bochumer Bindungsfragebogen - BoBi (Neumann et al., 2007) and the german version of the Emotion Regulation Questionnaire (ERQ-D) (Abler & Kessler, 2009). After both participants completed the experiment, a debriefing was provided. The participants were fully enlightened to the aim of the study and had the possibility to give feedback and to discuss their experiences.

Analysis

(written by: Bernhard Köpf BSc)

Data was collected using the software Matlab 8.1.0.604 (The MathWorks Inc., 2013) and processed using SPSS 23.0.0.0. (IBM Corp., 2015). The touch task to examine emotional egocentricity bias was run via Matlab. The attachment priming task was spoken and recorded by Anna Pilz. All questionnaires were submitted in paper pencil form. To perform the statistical analysis the responses collected via Matlab were converted and further transmitted to SPSS. For all statistical tests a significance level of $p = .05$ was used.

Results

Evaluation of the Priming of Adult Attachment Styles

(written by: Anna Pilz BSc)

As already mentioned above, the priming task was evaluated in terms of its effectiveness via two evaluation questions, as well as by using the mood scale PANAS (Krohne et al., 1996) in three different point of times during the study to compare changes of positive, as well as negative affect. First of all, means for positive affect as well as negative affect were calculated for each participant at each point of time: time 1 (positive: $M=3.13$; $SD=0.72$, negative: $M=1.29$; $SD=0.27$) time 2 (positive: $M=3.23$; $SD=0.77$, negative: $M=1.31$; $SD=0.04$), time 3 (positive: $M=2.81$; $SD=0.90$, negative: $M=1.56$; $SD=0.62$).

To test the effectiveness of the priming procedure, which took place after presenting the PANAS the second and before presenting it the third time to the participants, data was split into the three priming groups avoidant, anxious and secure and a General Linear Model was calculated. The model consisted of two factors: (a) time, with the 3 levels time 1, 2 and 3 and (b) emotion, with two levels, either positive or negative affect.

For the *avoidant* attachment priming group, the main effect of *emotion* was significant ($F(1,19) = 65.99$, $p < .01$, $\eta^2 = .78$). The interaction of *emotion* and *time* was significant as well ($F(1.5,27.7) = 11.42$, $p < .01$, $\eta^2 = .38$), which indicates a significant change of emotions over the three times of measurement in the *avoidant* priming group.

In the *anxious/ambivalent* attachment priming group both main effects, *emotion* ($F(1,19) = 110.35$, $p < .01$, $\eta^2 = .85$), as well as *time* ($F(2,38) = 3.74$, $p < .05$, $\eta^2 = .16$) showed significant results. Also the interaction of *emotion* and *time* was significant ($F(1.4,26.5) = 10.50$, $p < .01$, $\eta^2 = .36$). Therefore in the *anxious/ambivalent* priming group a significant change of emotion over time can be reported.

In the *secure* adult attachment priming group the main effect of emotion showed significant results ($F(1,19) = 84.28$, $p < .01$, $\eta^2 = .82$). There were no significant results for the interaction of *emotion* and *time* ($F(1.3,24.5) = 1.16$, $p > .05$, $\eta^2 = .06$), which indicates that in the *secure* attachment priming group, emotions of participants didn't change significantly over times of measurement. These effects are shown in figure 9.

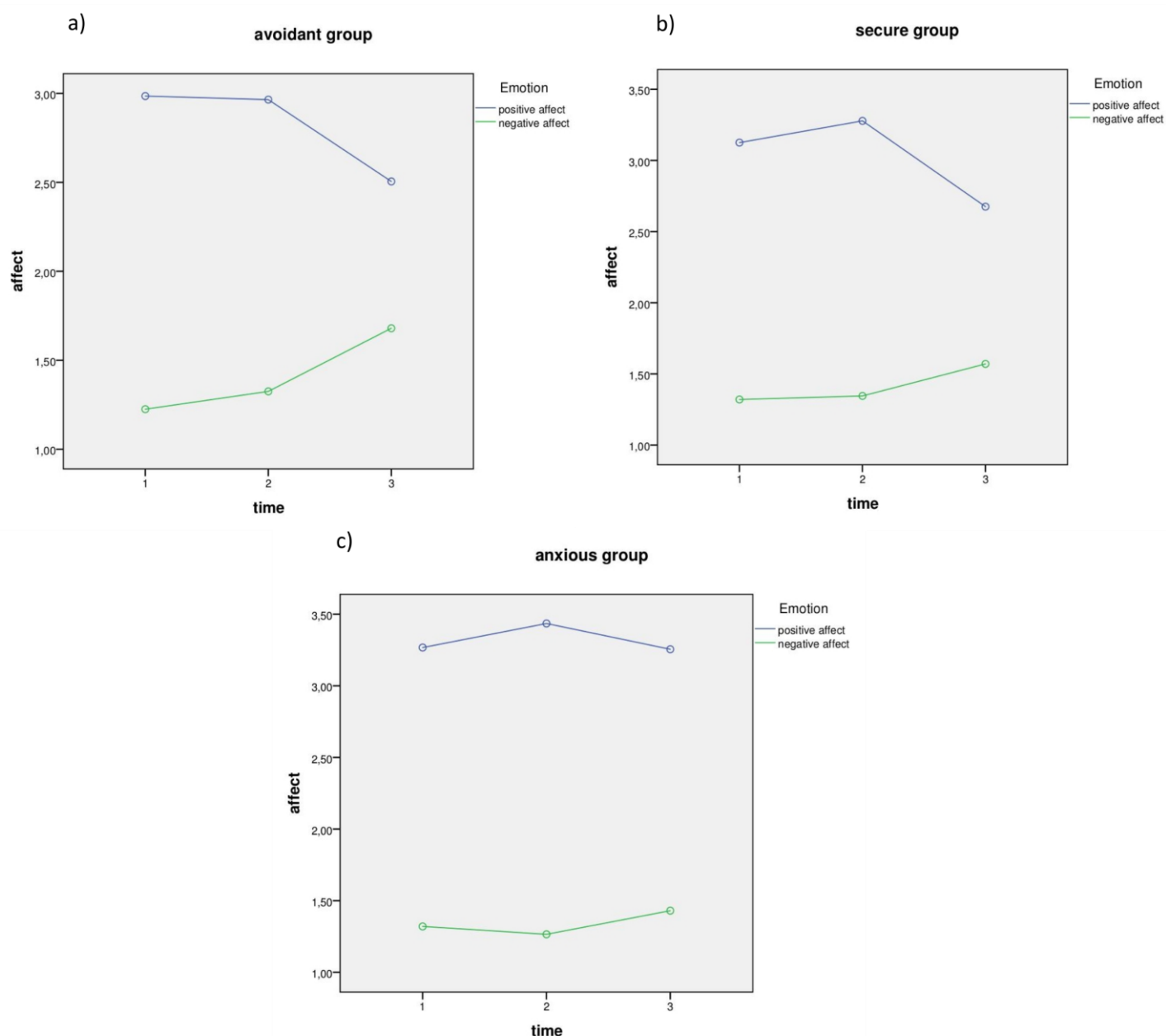


Figure 9: Effects of the priming procedure: The changes of positive as well as negative affect over the 3 times of measurement (time 1, 2 and 3) compared over the three priming groups. The first plot (plot a)), which displays results of the *avoidant* attachment priming group, shows that positive affect (blue line) decreases over the 3 points of time (time 1, 2 and 3), while negative affect (green line) increases. The second plot (plot b)) displays results of the *anxious* attachment priming group. In this group, same as in the other insecure attachment priming group (=avoidant), positive emotions (blue line) decrease, while negative emotions (green line) increase. The third plot (priming 3) in this figure displays results of the *secure* attachment priming group. No significant changes of emotions (both positive and negative) over the three times of measurement were displayed.

After this initial General Linear Model, which displayed significant changes of emotion over time in the avoidant, as well as anxious attachment priming group, two additional General Linear Models were calculated to differentiate between change of positive and negative emotions over time. First, a General Linear Model was calculated only taking *negative affect* of the PANAS scale into account. The model therefore only had one factor: (a) time, with three levels, time 1, 2 and 3.

In the first priming group, the *avoidant* attachment group, the main effect of *time* was significant ($F(2,38) = 9.56, p < .01, \eta^2 = .34$). LSD adjusted, pairwise comparisons showed, that negative emotions were significantly ($p < .01$) higher in time 3 ($M=1.68; SD= 0.68$) than in time 2 ($M=1.33; SD= 0.37$) and in time 1 ($M=1.23, SD= 0.23$).

In the *anxious/ambivalent* attachment priming group, the main effect of *time* was significant as well ($F(2,38) = 4.54, p < .05, \eta^2 = .19$). LSD adjusted, pairwise comparison of the main effect showed, that negative emotions in time 3 ($M=1.57; SD= 0.51$) were significantly ($p < .05$) higher than in time 2 ($M=1.35; SD= 0.49$). Furthermore, negative affect was significantly ($p < .05$) higher in time 3, than in time 1 ($M=1.32; SD= 0.26$).

The main effect of *time* was not significant in the third priming group of *secure* attachment ($F(1.4,27.1) = 0.96, p > .05, \eta^2 = .05$).

Another General Linear Model was calculated to examine the change of *positive affect* over the times of measurement in the three priming groups. This model also consisted of one factor: (a) time, with the three levels time 1, 2 and 3.

In the *avoidant* adult attachment priming group, the main effect of *time* was significant ($F(2,38) = 7.08, p < .01, \eta^2 = .27$). LSD adjusted, pairwise comparisons of the main effect displayed, that positive emotions in time 3 ($M=2.51; SD=0.80$) were significantly ($p < .01$) lower, than in time 2 ($M=2.97; SD=0.81$). Additionally, positive emotions were significantly ($p < .05$) lower in time 3, than in time 1 ($M=2.99; SD=0.71$).

The main effect of *time* was significant in the *anxious/ambivalent* attachment priming group ($F(1.6,30.6) = 9.77, p < .01, \eta^2 = .34$). LSD adjusted, pairwise comparisons showed, that positive affect was significantly ($p < .01$) lower in time 3 ($M=2.68; SD=0.68$), than in time 2 ($M=3.28; SD=0.73$). Pairwise comparisons displayed moreover, that positive emotions were significantly ($p < .05$) lower in time 3, than in time 1 ($M=3.13; SD=0.63$).

In the secure adult attachment priming group, the main effect of *time* was not significant ($F(2,38) = 0.95, p > .05, \eta^2 = .05$).

Group Differences in Confounding Variables

Group Differences in Emotional Change

(written by: Bernhard Köpf BSc)

To examine group differences between the emotional change elicited through the priming tasks, three general linear models were calculated. The first model consists of the two factors (a) Time with the levels 1, 2 and Emotion with the levels 1 for the positive and 2 for the negative PANAS (Krohne et al., 1996) scale and priming group as between-subject factor. Note that unlike the general linear models presented above, in this model time= 1 represents the point of time directly before the priming (what was time= 2, in the models above) while time= 2 represents the point of time directly after the priming (what was time= 3 in the prior models). There is no interaction between emotion, time and priming ($F(2,57)= 1.38, p > .05, \eta^2= .046$). According to this the change in positive and negative Emotions was similar in all three priming groups. A group difference in the Touch Task (Silani et al., 2013) cannot be attributed to group differences in changes of mood instead of changes in an attachment state.

The second general linear model was calculated with the positive emotion scale of the PANAS (Krohne et al., 1996), with the levels time (1, 2) and priming group as between-subject factor. While there is a main effect over time ($F(1,57)=21.63, p < .001$) the interaction between time and priming is not significant ($F(2,57)=1.94, p > .05, \eta^2= .065$). Thus the change of positive mood is similar in all three priming groups. Using LSD, the pairwise comparisons are shown in table 5. While the priming groups don't differ in positive mood at the first point of time (avoidant: $M= 2.97, SD=0.81$; secure: $M= 3.43, SD= 0.71$, anxious: $M= 3.28, SD= 0.73$), in point of time 2 the avoidance ($M= 2.50, SD= 0.80$) and anxious ($M= 2.68, SD= 0.74$) groups have lower ratings of positive mood compared to the secure group ($M= 3.26, SD= 1.05$), but don't differ to each other (table 6).

Combining these results, before the priming the subjects in the three priming groups report from similar positive mood. After the priming, this mood decreased in a similar way, whereby this decrease was only significant in the anxious and avoidance group (see chapter 4.1), resulting in different mood-states then (see figure 9).

Table 5: Group Differences in Positive Mood before (t1) and after (t2) the Priming

| time | priming | secure | anxious |
|------|-----------|-------------------|-------------------|
| 1 | avoidance | .053 | .194 |
| | secure | | .511 |
| 2 | avoidance | .008 ¹ | .533 |
| | secure | | .037 ¹ |

¹ significant at a level of $p = .05$

Table 6: Mean of Positive Ratings in Priming Groups at Different point of time

| time | avoidant | | secure | | anxious | |
|------|----------|------|--------|------|---------|------|
| | M | SD | M | SD | M | SD |
| 1 | 2.97 | 0.81 | 3.43 | 0.71 | 3.28 | 0.73 |
| 2 | 2.50 | 0.80 | 3.26 | 1.05 | 2.68 | 0.74 |

The third general linear model regarding group differences in the priming effect, was calculated with the negative emotion scale of the PANAS (Krohne et al., 1996), with the levels time (1, 2) and priming group as between-subject factor. There is a significant main effect over time in negative mood ($F(1,57) = 13.30$, $p < .05$), but no significant interaction between priming and time ($F(2,57) = 0.678$, $p > .05$). After the priming the Mean ratings of negative mood don't differ between the priming groups. The amount of the increase in negative mood triggered by the priming is similar in all priming groups (Fig 10).

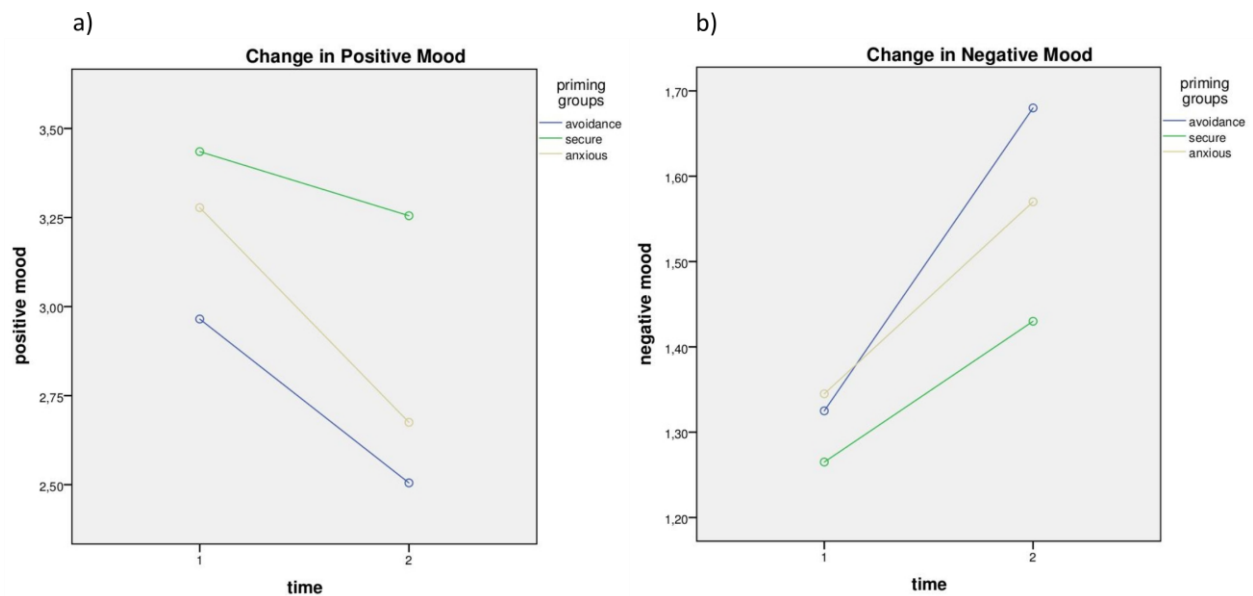


Figure 10: Group Differences in Emotional Change: (a) The effect of the priming is similar in all three groups. After the priming positive mood ratings were lower in the avoidance and anxious group compared to the secure group. (b) The priming increased negative mood ratings similar in all three priming groups.

Concluding, the existing priming effect on mood is of similar strength in all three groups, what supports the hypothesis that the priming procedure has more likely an effect on an attachment-state than only on the mood of the subjects. The change in subject's emotionality is more driven by a decrease of positive emotions than by an increase of negative emotions.

Group Differences in Stimuli-Evaluation

(written by: Anna Pilz BSc)

Prior to examination of the double sessions of the Touch Task (Silani et al., 2013), which produce the emotional egocentricity and altercentricity bias, the single-self sessions of the procedure were examined, to control for possible group differences between the three priming groups in evaluating the stimuli. Therefore a one-way Anova was calculated, with the three dependent variables: pleasant stimuli (p), unpleasant stimuli (u) and neutral stimuli (n) and with the factor priming (avoidant, anxious/ambivalent, secure). This one-way Anova didn't reveal any significant results in the three dependent variables p ($F(2,57) = 0.06$, $p > .05$), u ($F(2,57) = 0.20$, $p > .05$) and n ($F(2,57) = 0.18$, $p > .05$). These results show, that there are no group differences in evaluating the visual tactile stimuli between the three priming groups. Therefore, significant differences in evaluating the stimuli in the following double sessions, can be interpreted as an effect of the priming procedure and are not caused by prior existing group differences.

Group Differences in Questionnaire Scores of BoBi and ERQ-D

(written by: Anna Pilz BSc)

To be sure, that any possible correlations between the emotional egocentricity or altercentricity bias and the scales cognitive reappraisal and suppression of the ERQ-D (Abler & Kessler, 2009), as well as the scales avoidance and anxiety of the BoBi (Neumann et al., 2007) are not produced because of group differences in the three priming groups, the priming groups were tested on these differences. To examine group differences in any of the 4 scales of the two questionnaires, a one way Anova was calculated. The dependent variables were: cognitive reappraisal and suppression of the ERQ-D and attachment related avoidance and anxiety of the BoBi, the factor was priming, with the three groups, avoidant, anxious/ambivalent and secure. The one-way Anova didn't reveal any significant results in the three dependent variables avoidance ($F(2,57) = 0.18, p > .05$), anxiety ($F(2,57) = 0.17, p > .05$), suppression ($F(2,57) = 0.77, p > .05$) and reappraisal ($F(2,57) = 2.87, p > .05$). All results of the Anova, as well as means and standard deviations of each priming group, are presented in table 7.

Table 7: Group Differences between the three priming groups in the scales avoidance and anxiety of the Bochumer Bindungsfragebogen and suppression and reappraisal of the ERQ-D

| | ANOVA | | | Avoidant | | Secure | | Anxious | |
|--------------------|-------|-------|-------------|----------|------|--------|------|---------|------|
| | F | Sign. | Levene Test | M | SD | M | SD | M | SD |
| Avoidance | 0.18 | .834 | .11 | 2.91 | 1.23 | 2.74 | .80 | 2.89 | 0.87 |
| Anxiety | 0.17 | .846 | .34 | 3.63 | .89 | 3.68 | 1.22 | 3.49 | 0.97 |
| Suppression | 0.77 | .468 | .30 | 11.05 | 4.57 | 10.80 | 3.49 | 12.35 | 4.57 |
| Reappraisal | 2.87 | .065 | .24 | 28 | 6.98 | 31.90 | 4.15 | 31.70 | 5.90 |

However, because of the trend ($p = .065$), that was found in the dependent variable of the *reappraisal scale*, a LSD adjusted pairwise comparison was conducted. This post-hoc pairwise comparison revealed, that participants of the *avoidant* attachment priming group had significantly ($p < .05$) lower scores in the *reappraisal* scale ($M=28$; $SD=6.98$), than participants of the *secure* ($M=31.9$; $SD=4.15$) and *anxious* ($M=31.7$; $SD= 5.89$) attachment priming group (Table 8).

Table 8: LSD adjusted pairwise comparisons between the three priming groups in reappraisal.

| | Avoidant | Secure | Anxious |
|--|-------------------|-------------------|-------------------|
| Avoidant | | .038 ¹ | .048 ¹ |
| Secure | .038 ¹ | | .912 |
| Anxious | .048 ¹ | .912 | |
| ¹ significant at a p-level higher as .05. | | | |

Differences between Priming Groups in Emotional Egocentricity Bias and emotional Altercentricity Bias

(written by: Bernhard Köpf BSc)

To examine group differences in both the self and other rating condition, scores for the emotional egocentricity bias (EEB) and the emotional altercentricity bias (EAB) were calculated. The EEB / EAB scores represent the mean differences between congruent and incongruent ratings in the double-other (EEB) and double-self (EAB) trial of the Touch Task (Silani et al., 2013). To calculate group differences in EEB and EAB, an ANOVA was calculated with EEB and EAB as dependent variables and priming group as between factor.

Normal distribution and variance homogeneity in the EEB and EAB variable were checked in advance. The Histogramm and QQ-Plot of EEB shows a deviation from normal distribution. This deviation is further confirmed by indices (Kurtosis, Skewness, IQR/s, (Mean-Median)/s) and a significant Shapiro-Wilk test ($W(60) = 0.78, p < .001$). Thus the assumption of normal distribution is rejected in the EEB variable. Variance homogeneity is assumed, as Levene-Test for EEB is not significant ($F(2,57) = 1.105, p > .05$). Although the condition of normal distribution is violated, ANOVA can be used, since variance homogeneity is met and ANOVA is robust against violations of normal distribution, as long as group sizes are equal and there are more than 20 degrees of freedom (Field, 2009). The Histogramm and QQ-Plot of EAB scores show no deviation from normal distribution. The indices correspond with normal distribution and Shapiro-Wilk test is not significant ($W(60) = 0.96, p > .05$). Thus normal distribution is assumed in EAB. The variances are homogeneous as Levene-Test is not significant ($F(2,57) = 0.83, p > .05$). The conditions for using ANOVA are fully met in the EAB variable.

The differences between the priming groups in EEB and EAB mean scores are shown in Table 9. LSD was used to examine pairwise comparisons (Table 10). While there is no difference in EEB $F(2,57) = 0.02, p > .05$) the priming groups show a significant difference in the EAB scores $F(2,57) = 3.96, p < .05$). The avoidant group ($M = -.18; SD = .65$) has a significant lower Mean in EAB, than the anxious group ($M = 0.35; SD = .41$). There is a trend between the avoidant and the secure group ($M = 0.16; SD = .72$). Secure and anxious group don't differ significantly. There is further a significant linear trend in EAB ($F(1,57) = 7.73, p < .05$). Thus Mean Scores increase from avoidance to secure to anxious group (see figure 11)

Table 9: Differences between priming groups in EEB and EAB Mean scores

| | ANOVA (p-values) | | | Avoidant | | Secure | | Anxious | |
|-----|-------------------|-------------------|-------------|----------|------|--------|------|---------|------|
| | Sign. | Linear Term | Levene Test | M | SD | M | SD | M | SD |
| EAB | .025 ¹ | .007 ¹ | .439 | -0.18 | 0.65 | 0.16 | 0.72 | 0.35 | 0.41 |
| EEB | .985 | .863 | .901 | 0.41 | 1.86 | 0.46 | 1.61 | 0.49 | 1.11 |

¹ significant at a level of $p = .05$

Table 10: LSD-adjusted Pairwise Comparisons between priming groups in EAB

| | Avoidant | Secure |
|----------|-------------------|-------------------|
| Avoidant | | .083 ² |
| Anxious | .007 ¹ | .314 |

¹ Difference is significant at a p-level of .05.
² Trend between groups.

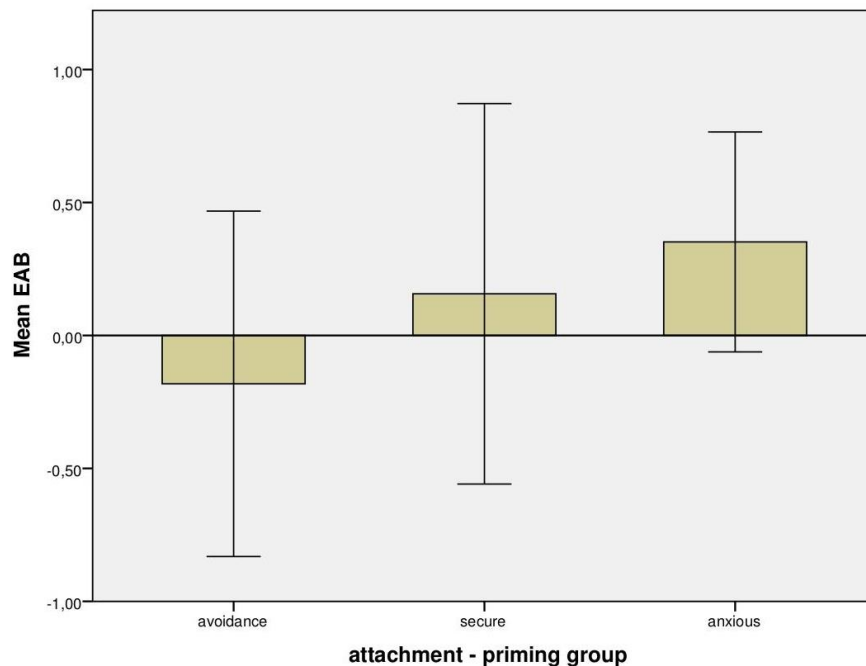


Figure 11: EAB Mean-Scores in the three priming groups:
Avoidant M= -0.18, SD= 0.65; secure M= 0.16, SD= 0.72; anx-
ious M= 0.35, SD= 0.41.

Relationship between Emotional Egocentricity and Altercentricity bias and Attachment related Anxiety and Avoidance

(written by: Anna Pilz BSc)

To examine adult attachment as a trait and not only as a primed state, the scales of attachment related avoidance and anxiety (18 items for each scale) of the Bochumer Bindungsfragebogen (Neumann et al., 2007) were calculated for all participants. For all 60 participants, means for the scales were M=2.84 (SD=0.97) for attachment related avoidance and M=3.60 (SD=1.03) for attachment related anxiety.

To assess the relationship of the scales avoidance and anxiety and the emotional egocentricity bias (EEB), as well as altercentricity bias (EAB), bivariate correlation analysis was calculated for the whole sample (n=60) and for each of the three priming groups (each n=20).

The bivariate correlation analysis after Pearson for the whole sample (n=60) revealed a significant positive correlation between the *emotional egocentricity bias (EEB)* and attachment related avoidance ($r = .29$, $p < .05$).

In the *avoidant* attachment priming group (n=20), bivariate correlation analysis after Pearson, revealed a significant positive correlation between the *emotional altercentricity bias (EAB)* and

attachment related *anxiety* ($r=.48$; $p < .05$). Furthermore, a significant positive correlation between the *emotional egocentricity bias* (EEB) and attachment related avoidance was found ($r=.65$, $p < .01$).

In both of the other priming groups, *anxious/ambivalent* ($n=20$) and *secure* ($n=20$), correlation analysis after Pearson didn't reveal any significant correlations between emotional egocentricity (EEB) or altercentricity bias (EAB) and attachment related anxiety or avoidance.

All results of the correlation analysis after Pearson are presented in table 11.

Table 11: Relationship of the emotional egocentricity and altercentricity bias with attachment related avoidance and anxiety:

| | Anxiety | | | | Avoidance | | | |
|-----|--------------|--------------|--------|---------|--------------|---------------|--------|---------|
| | Whole Sample | avoidant | secure | anxious | Whole Sample | avoidant | secure | anxious |
| EEB | .134 | -.019 | .422 | -.127 | .292* | .647** | -.174 | .100 |
| EAB | .163 | .478* | .163 | -.137 | -.134 | -.048 | -.296 | -.101 |

* significant at a level of $p < .05$
** significant at a level of $p < .01$

Relationship between Emotional Egocentricity and Altercentricity Bias and ERQ-D Suppression and Reappraisal Scales

(written by: Bernhard Köpf BSc)

To examine the relationship between EEB/EAB and the ERQ-D (Abler & Kessler, 2009) Scales Reappraisal and Suppression, Pearson correlations were calculated both over the whole sample and inside each priming group.

Table 12 shows the correlations between EEB, EAB and the ERQ scales suppression and reappraisal (Abler & Kessler, 2009), over the whole sample ($N=60$) and splitted in the three priming groups. There is no significant correlation between EAB scores and ERQ (Abler & Kessler, 2009) scores over the whole sample ($N=60$; EAB: Suppression $r = -.14$; EAB: Reappraisal $r = .21$). As well, there is no significant correlation between EEB and ERQ (Abler & Kessler, 2009) scores over the whole sample ($N=60$; EEB: Suppression: $r = -.13$; EEB: Reappraisal: $r = -.18$). Splitting the sample into the three priming groups, there is a significant medium downhill correlation between EEB

and Reappraisal ($r = -.48$) in the avoidance group ($n=20$), while all other intercorrelations are not significant.

Table 12: Correlations between EEB, EAB and ERQ Suppression and Reappraisal, over all subjects ($N=60$) and splitted in priming groups ($n=20$).

| | Suppression | | | | Reappraisal | | | |
|-----|-------------|----------|--------|---------|-------------|--------------|--------|---------|
| | all | avoidant | secure | anxious | all | avoidant | secure | anxious |
| EEB | -.13 | -.22 | -.33 | .27 | -.18 | -.48* | .14 | -.02 |
| EAB | -.14 | -.07 | -.36 | -.22 | .21 | .17 | .05 | .16 |

* significant at a level of $p = .05$

Discussion

Summary of the Study

(written by: Anna Pilz BSc)

The aim of this study was to examine the influence of different styles of adult attachment on the emotional egocentricity (EEB), as well as altercentricity bias (EAB). This relationship was assessed by priming the three patterns of adult attachment after Hazan & Shaver (1987), *anxious/ambivalent*, *avoidant* and *secure*, in healthy, female participants, while the biases were assessed by using the Touch Paradigm after Silani and colleagues (2013). Furthermore, the relationship between emotion regulation, as well as attachment related anxiety and avoidance with both of the biases was assessed, via self-report questionnaires. Data was collected by using Matlab 8.1.0.604 (The MathWorks Inc., 2013), as well as paper pencil questionnaires and analyzed with SPSS 23.0.0.0. (IBM Corp., 2015). Exclusion criteria for the study, as psychiatric illnesses, special animal phobias or being a psychology student/psychologist, were checked before via telephone. Individuals, who met any of those criteria, weren't invited to the study. In the end, 60 female participants (n=60), between the age of 18 and 59 (M=28.9; SD= 10.40) were randomly assigned to the three priming groups, avoidant (n=20), anxious/ambivalent (n=20) and secure (n=20).

Summary of Results

(written by: Bernhard Köpf BSc)

Regarding group differences in EEB and EAB scores a one-way ANOVA was calculated. There is a significant difference in EAB scores, whereby the anxious group had higher scores than the avoidance group. A linear trend indicates an increase of EAB from avoidance to secure to anxious. EEB scores don't differ between the priming groups.

To evaluate the priming procedures a general linear model with PANAS (Krohne et al., 1996) scores was calculated. While there was no change of positive mood in the secure group, positive emotions decreased after the priming in the anxious as well as in the avoidance group. Negative emotions increased also in the avoidance and anxious group and didn't change in the secure group. There was neither a significant interaction between time and priming groups in positive nor in negative emotions.

Relationships between EEB and EAB Mean-Scores and the BoBi (Neumann et al., 2007) Scales Anxiety and Avoidance were examined. There is a low significant uphill correlation between EEB and Avoidance over the whole sample and a medium uphill correlation between EEB and Avoidance in the avoidant sub-sample. There is further a significant medium uphill correlation between EAB and the Anxiety Scale in the avoidant subsample.

Further relationships between EEB/EAB and ERQ-D (Abler & Kessler, 2009) scales Suppression and Reappraisal were examined. Thereby a correlation between EEB and Reappraisal was found in the avoidance group.

Evaluation of the Priming

(written by: Bernhard Köpf BSc)

According to the data found in the evaluation of the priming, the expected effect of the priming is assumed. After the priming procedure, in the anxious and avoidance groups positive emotions decreased while negative emotions increased. As there was no emotional change in the secure group this group turns out as a baseline or control group. Although anxious and avoidance group also changed in negative emotionality, after the priming group differences in PANAS (Krohne et al., 1996) scores appeared only in positive emotions. Thus documented effects in EAB are more driven by a decrease of positive emotions, than by an increase of negative emotions.

Consider that although a change in mood is documented, a change in the attachment state can't be verified by the existent data. However we assume that the primings provoke attachment states instead of only mood. Although mood changed similarly in the avoidance and anxious group and in the last point of measure PANAS (Krohne et al., 1996) scores don't differ between this two priming groups, different outputs in EAB scores were found. Thus it's argued that this group effect in EAB relies on more than different mood states. As no other group differences in confounding variables were found in the data, we assume that group differences in EAB occurred as result of different attachment states, provoked by the priming procedures. However to clearly verify this assumption, the effect of the present priming procedure on EAB scores, ought to be compared with effects by a mood priming procedure.

Group Differences in Emotional Egocentricity and Altercentricity Bias

(written by: Anna Pilz BSc)

The main goal of this study was to examine, if a relationship between the three styles of adult attachment, avoidant, anxious/ambivalent and secure and the EEB or EAB exists. Like stated above, significant group differences between the three attachment priming groups concerning the **emotional altercentricity bias**, were found in this study. The emotional altercentricity bias was significantly higher in the anxious/ambivalent priming group, than in the avoidant priming group. Between the avoidant and secure priming group, a trend was found, which showed lower rates of altercentricity bias in the avoidant group, compared to the secure attachment priming group. The fact, that the comparison between the avoidant and secure group only produced a trend and no significant results, might be caused by the relatively small sample of 20 participants in each group. By using a bigger sample, this comparison would probably produce significant results as well. Over the three groups, a linear term was found. In this linear connection, the secure attachment group acted as a baseline, while the anxious/ambivalent group showed the highest scores of altercentricity bias and the avoidant attachment group the lowest. This could mean, that the pattern of secure adult attachment is the “norm” and produces medium (or “normal”) levels of altercentricity bias. About 60 % of all people are securely attached (Hazan & Shaver, 1987), which is the majority of the population. Consequently, it seems logical, that the “secure” attached group acts as a baseline or a “norm” in the findings of this study. Individuals with an anxious/ambivalent attachment pattern are very preoccupied with social interactions and relationships (Trusty, Ng & Watts, 2005), they have a negative self-concept and are very concerned about others (Bartholomew, 1990). Individuals with high attachment anxiety are very concerned and sensitive to emotions of others, because of a deep fear of rejection (Trusty, Ng & Watts, 2005). The results of this study support this hypothesis by showing higher rates of emotional altercentricity bias in the anxious/ambivalent priming group. Participants in this priming group were more influenced by the situation of the other person in the room, because of their induced feeling of attachment anxiety and therefore preoccupation with feelings and needs of others. Therefore they adapted a more altercentric view, got distracted by the situation of the other person and judged their own emotions with more bias. The avoidant attachment priming group showed the lowest levels of emotional altercentricity in the linear trend. These results fit into the theoretical framework of adult attachment theory as well. Individuals with avoidant attachments tend to focus more on themselves and not on others. They don't value relationships

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(or at least think they don't value them) very much and have problems with intimacy (Bartholomew, 1990). Therefore it makes sense, that participants of the avoidant attachment priming group showed the lowest levels of altercentricity bias in this linear trend. Subjects of the avoidant attachment priming group were more focused on themselves and their own emotions and therefore less influenced by the situation of the other person in the room. This resulted in lower altercentric judgements and more accurate judgements of their own emotions.

As already mentioned above, the data revealed no significant differences between the three attachment priming groups concerning the **emotional egocentricity bias**. Therefore it seems that different patterns of adult attachment have no influence on the emotional egocentricity bias, at least not in healthy, female participants.

It can be concluded, that different styles of adult attachment seem to have an influence on the emotional altercentricity bias. People get distracted by the situation of the other person, when primed with anxious/ambivalent adult attachment and judge their own emotions in a more biased way, but rate their own emotions more accurately (lower altercentricity bias), when primed with avoidant adult attachment. Primed secure attachment acts as a baseline in these results.

Relationship between EEB/EAB and BoBi Scales

(written by: Anna Pilz BSc)

One of the subhypotheses of this study, tested the relationship of the emotional egocentricity and altercentricity bias with attachment related anxiety and avoidance, by using a self-report questionnaire.

For the whole sample of 60 female participants a significant positive correlation between attachment related avoidance and the emotional egocentricity bias (EEB) was found. This correlation was also found in the avoidant attachment priming group. Furthermore, in the avoidant priming group, attachment related anxiety correlated significantly with the emotional altercentricity bias.

These results fit into theoretical framework on attachment theory, as well as previous results of this study. As already mentioned, individuals with high attachment related anxiety tend to have a preoccupation with emotions of others (Bartholomew, 1990). Therefore a connection between anxiety and the altercentricity bias (EAB) seems logical. People who are preoccupied with emotions of others (high in attachment related anxiety), make more biased judgements of their own emotions (higher altercentricity bias), because they focus more on the other person's feelings,

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than on their own. This connection of the EAB and anxiety also corresponds with the results, found in the analysis of the main hypothesis, where the anxious attachment priming group showed highest scores of EAB in a linear trend compared to the other two priming groups. The correlation of attachment related avoidance and the emotional egocentricity bias (EEB), which was found in the avoidant priming group, as well as in the whole sample, is therefore the exact reverse argument, when thinking of attachment theory. Individuals with an avoidant attachment style evaluate relationships not as very important, have problems with closeness and focus more on themselves, than on others (Bartholomew, 1990). Therefore, individuals, who are high in attachment related avoidance, focus more on themselves and on their own emotions and show more bias when they have to rate emotions of other people, consequently they show higher emotional egocentricity bias rates.

Relationship between EEB/EAB and ERQ-D Scales

(written by: Bernhard Köpf BSc)

The relationship between emotion regulation strategies assessed by the ERQ-D (Abler & Kessler, 2009) (reappraisal, suppression) and EEB/EAB scores was examined by correlations, both over the whole sample and inside the priming groups. Over the whole sample, neither in EEB nor in EAB a correlation with any ERQ-D (Abler & Kessler 2009) scale was found. Splitted in priming subgroups, while EAB scores doesn't relate with the tendency to use suppression and/or reappraisal in any priming group, in EEB a significant medium downhill correlation with reappraisal was found in the avoidance group. While reappraisal and EEB scores are medium related in the avoidance group, this relationship disappears in the secure and anxious group.

Cognitive reappraisal might ease emotional other-judgments, when people don't want to be close to the other. When closeness to the other plays a bigger role (as in the secure and anxious group), other factors might be more important to determine EEB.

However note that a self-reported tendency to reappraise (or suppress) emotions don't mean that subjects were reappraising (or suppressing) their emotions during the touch task.

Limitations and Strengths of the Study

(written by: Bernhard Köpf BSc)

Notably strengths of the present study are the used methods to investigate the addressed psychological phenomena. In existent research the Touch-Task (Silani et al., 2013) proved to be an appropriate paradigm to quantify emotional self-other judgments (see chapter XX). While the touch-task was evaluated and successfully applied in former studies, the priming procedures were not evaluated so far. Favorably the present data supports the suggested priming-effect. Psychology students were excluded from the study what heightens the generalizability of the study. However the sample is not representative regarding age, gender and education wherefore the results are not generalizable.

Future directions for research

(written by: Anna Pilz BSc)

The present study was a first step into gaining more insight about the relationship of adult attachment styles and the emotional egocentricity and altercentricity bias. As Bowlby stated, attachment shapes human interactions “from the cradle to the grave” (Bowlby, 1982, p. 208) and also social egocentricity, as well as altercentricity is present in all of our everyday social interactions. Therefore it is important to investigate the connection between attachment and the altercentricity bias, which has been revealed in this study, further in future research.

As already mentioned, the size of the sample in this study was relatively small, therefore it would be important to replicate the findings with a bigger sample. Furthermore, a replication with male participants would be interesting, to examine if the connection between attachment and the altercentricity bias exists in the same way in men. In this study, participants were primed with an auditory priming procedure, but as already mentioned before, there are many different priming techniques, which can be used to induce a state of attachment security or insecurity (see Miculincer et al., 2001). The present study could also be repeated by using different priming techniques to generalize the findings even more

Another variation of this study would be to use other interpretations of attachment than the one used in this study (Hazan & Shaver, 1987), for example, priming the 4 styles of attachment after Bartholomew (1990).

After taking this first step into more knowledge about the relationship of attachment and emotional altercentricity, future research will provide further information about this topic by using the tools/variations, discussed above.

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Appendices

Abstract English

Abstract German

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Abstract English

The differentiation of one's own emotional state and the one of another person is crucial for everyday social interactions. This differentiation process can be distorted in two contrary ways. If an individual projects its own emotional state onto another person it is called *emotional egocentricity bias*, while if one's own emotional state is influenced by another person's emotions, this distortion is called *emotional altercentricity bias*. The aim of the present study was to examine the relationship of the relatively new research topic of the emotional egocentricity, as well as altercentricity bias with adult attachment styles. Therefore, a priming procedure was used to induce the three different styles of adult attachment, avoidant, anxious/ambivalent and secure, in participants. The egocentricity and altercentricity biases were assessed with a newly invented paradigm, called the touch task. 60 healthy, female participants were randomly assigned to one of the three priming groups. After the auditory priming procedure, participants conducted the touch task. In this experimental design, 2 participants at the time are stimulated with visual-tactile stimuli, which are either pleasant or unpleasant. After stimulation, subjects have to rate the pleasantness or unpleasantness of either their own (altercentricity bias) emotional experience or the experience of the other person (egocentricity bias). Results showed a linear trend between the three patterns of adult attachment and the emotional altercentricity bias, where the secure attachment group acted as a baseline, while the anxious/ambivalent group showed highest scores of altercentricity bias and the avoidant group the lowest. No significant results were found concerning the emotional egocentricity bias and adult attachment styles. This revealed connection of adult attachment patterns and the emotional altercentricity bias fits into background theory of adult attachment. Individuals with avoidant attachments are more focused on themselves, than on others and evaluate relationships as less important, therefore they are less influenced by emotions of others and show less altercentricity bias. Individuals with anxious/ambivalent attachment style on the other hand are very preoccupied with relationships and more focused on others, therefore they show higher scores of the altercentricity bias.

Keywords: emotional altercentricity bias, emotional egocentricity bias, adult attachment, emotion regulation, empathy

Abstract German

Die Differenzierung zwischen dem eigenen emotionalen Befinden und dem einer anderen Person, ist wesentlich für alltägliche soziale Interaktion. Dieser Prozess der Differenzierung kann auf zwei gegensätzliche Weisen gestört werden. Die Projektion des eigenen emotionalen Zustandes auf eine andere Person, nennt sich *emotional egocentricity bias*, wenn allerdings der eigene emotionale Zustand von dem einer anderen Person beeinflusst wird, spricht man von einem *emotional altercentricity bias*. Das Ziel dieser Studie ist es den Zusammenhang zwischen dem relativ jungen Forschungsgebiets des emotional egocentricity bias und altercentricity bias mit Bindung im Erwachsenenalter zu untersuchen. Zu diesem Zweck wurde eine Priming Technik angewandt um die drei Bindungsstile im Erwachsenenalter, vermeidend, ängstlich und sicher, in den Studienteilnehmerinnen zu induzieren. Der egocentricity und altercentricity bias wurde mittels eines neu entwickelten Paradigma, dem „Touch Task“ gemessen. Insgesamt 60 gesunde, weibliche Versuchsteilnehmerinnen wurden randomisiert auf die 3 Priminggruppen aufgeteilt. Anschließend an das auditive Priming, absolvierten die Versuchsteilnehmerinnen den Touch Task. In diesem experimentellen Design werden 2 ProbandInnen gleichzeitig visuell, als auch taktil stimuliert, mit angenehmen oder unangenehmen Stimuli. Direkt nach der visuell-taktilen Stimulation, bewerteten die Versuchsteilnehmerinnen entweder ihre eigenen Emotionen (altercentricity bias) oder die der anderen Person (egocentricity bias) auf einer Skala von positiv/angenehm bis negativ/unangenehm. Die Ergebnisse zeigten einen linearen Trend zwischen den 3 Bindungsstilen im Erwachsenenalter und dem emotional altercentricity bias. Hierbei fungierte die sicher gebundene Gruppe als baseline, während die ängstlich gebundene Priminggruppe die höchsten Werte im altercentricity bias aufwies und die vermeidende die niedrigsten. Es wurde kein signifikanter Zusammenhang zwischen Bindung im Erwachsenenalter und dem emotional egocentricity bias gefunden. Der Zusammenhang zwischen dem altercentricity bias und Bindungsstilen im Erwachsenenalter kann vor dem Hintergrund der Theorie der Bindung im Erwachsenenalter interpretiert werden. Personen mit vermeidendem Bindungsstil sind mehr auf sich selbst, als auf andere fokussiert und bewerten zwischenmenschliche Beziehungen als eher unwichtig, daher war die vermeidende Priminggruppe weniger beeinflusst von Emotionen der anderen Person und zeigte weniger altercentricity bias. Ängstlich gebundene Menschen auf der anderen Seite, beschäftigen sich viel mit sozialen Beziehungen und sind mehr fokussiert auf andere, daher zeigte diese Priminggruppe höhere Werte im emotional altercentricity bias.

Schlagwörter: emotional altercentricity bias, emotional egocentricity bias, Bindung im Erwachsenenalter, Empathie, Emotionsregulation

Cooperation for this Thesis

This Master's thesis was a project, which was developed and conducted as a collaboration of Anna Pilz and Bernhard Köpf. In this study the emotional egocentricity bias, as well as altercentricity bias were measured by using an experimental design (*touch task*, Silani et al., 2013), which required two investigators, because two participants are tested simultaneously. Because of the possible effect of the priming procedure, which could have influenced other measurements taken later by the participants, the thesis was not split into two topics, but created together as one research project. All chapters were divided equally between Anna Pilz and Bernhard Köpf and were labeled with the name of the respective author at the beginning. A list of all chapters with the respective name of the author is stated below.

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Infoblatt

zur Studie

Erforschung der Wahrnehmung von Emotionen bei anderen Personen

Wir laden Sie sehr herzlich ein am Experiment zu unserer Master Arbeit an der Fakultät für Psychologie der Universität Wien teilzunehmen.

Im Laufe der Studie werden Sie gemeinsam mit einer zweiten Person Aufgaben bekommen, bei denen Sie die ihre eigenen Emotionen und/oder die Emotionen ihrer Kollegin einschätzen sollen. Die Studie wird in einem freundlichen und spaßigen Setting. Nähere Informationen über den Anlauf und Inhalt der Studie bekommen Sie vor Beginn der Testung.

Bei der Bearbeitung der Aufgaben werden keine Leistungs-/Intelligenztests oder sonstige Aufgaben mit Leistungsbeurteilung durchgeführt.

Der Zeitaufwand für die Studie beträgt ca. 60-75 Minuten.

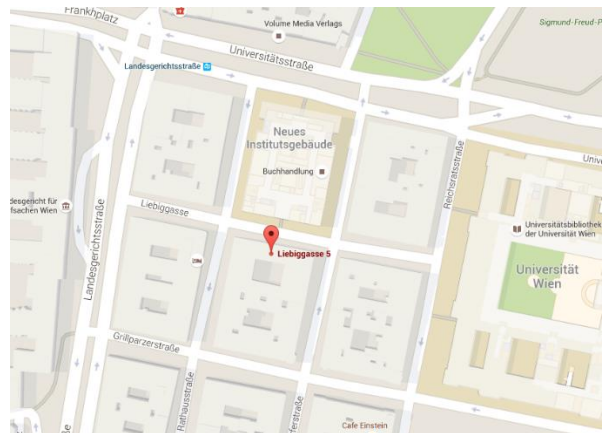
Zur Teilnahme an der Studie bitten wir Sie am ausgemachten Termin zu den Toren der Fakultät für Psychologie zu kommen, wo Sie eineR der beiden StudienleiterInnen empfangen wird.

Adresse: Liebiggasse 5, 1010 Wien.

Direkt hinter dem Neuen Institutsgebäude (NIG) der Uni Wien

Anfahrt mit Öffis: Linie U2 Schottentor,

Straßenbahn: 43, 44: Landesgerichtsstraße



Mit Ihrer Teilnahme leisten Sie einen wertvollen Beitrag zur Wissenschaft. Ohne freiwillige Versuchspersonen kann psychologische Forschung nicht stattfinden.

Trotzdem müssen wir darauf Hinweisen, dass folgende Personen nicht für die Studie geeignet sind:

- Personen die jemals in ihrem Leben an einer psychiatrischen Erkrankung gelitten haben.
- Psychologinnen und Psychologiestudentinnen ab dem 3. Semester
- Personen mit Insekten- und/oder Fischphobien.

Sollte einer dieser Punkte auf Sie zutreffen bitten wir Sie eineN der VersuchsleiterInnen zu kontaktieren.

Kontakt VersuchsleiterInnen:

Anna Pilz BSc: 0664/556 472 9

Bernhard Köpf BSc: 0676/113 102 12

Wir danken für Ihre Interesse und freuen uns auf Ihre Teilnahme!

**ProbandInneninformation und Einwilligungserklärung
zur Teilnahme an der Studie
“Erforschung der Wahrnehmung von Emotionen bei anderen Personen“**

Sehr geehrte TeilnehmerIn!

Wir laden Sie ein an der oben genannten Studie teilzunehmen, die wir im Rahmen unserer Masterarbeit durchführen. Die Aufklärung darüber erfolgt in einem ausführlichen Gespräch.

Ihre Teilnahme an dieser Studie erfolgt freiwillig. Sie können jederzeit ohne Angaben von Gründen von ihrer Teilnahme zurücktreten und aus der Studie ausscheiden. Die Ablehnung der Teilnahme oder ein vorzeitiges Ausscheiden aus dieser Studie hat keine nachteiligen Folgen für Sie.

Eine unverzichtbare Voraussetzung für die Durchführung der Studie ist, dass Sie Ihr Einverständnis zur Teilnahme an dieser Studie schriftlich erklären. Bitte lesen Sie den folgenden Text als Ergänzung zum Informationsgespräch mit dem/der StudienleiterIn sorgfältig durch und zögern Sie nicht Fragen zu stellen.

Bitte unterschreiben Sie die Einwilligungserklärung nur
wenn Sie Art und Ablauf der Studie vollständig verstanden haben,
wenn Sie bereit sind der Teilnahme zu zustimmen und
wenn Sie sich über Ihre Rechte als TeilnehmerIn an dieser Studie im Klaren sind.

Zu dieser Studie, sowie zur ProbandInneninformation und Einwilligungserklärung wurde von der zuständigen Ethikkommission eine befürwortende Stellungnahme abgegeben.

1. Was ist der Zweck der Studie?

In der Studie erforschen wir die Wahrnehmung von Emotionen bei sich selbst und anderen Personen und deren Zusammenhänge mit dem Erleben und Verhalten in romantischen Beziehungen.

2. Wie läuft die Studie ab?

Zunächst werden Sie von uns in einem Gespräch genau über den Ablauf der Studie informiert und von uns gebeten diese Einverständniserklärung zu unterschreiben.

Im nächsten Schritt bitten wir Sie eine „Vorstellungsaufgabe“ zu absolvieren. Sie sollen sich dabei eine bestimmte Person, gedanklich vorstellen. Vor und nach der Vorstellungsaufgabe, ist ein Fragebogen auszufüllen. Folgen Sie bei der Vorstellungsaufgabe einfach den Anweisungen die sie über Kopfhörer hören werden.

Computeraufgabe: Im weiteren Schritt bitten wir Sie eine Computeraufgabe zu absolvieren. Über den genauen Ablauf der Computeraufgabe, werden Sie im Informationsgespräch aufgeklärt.

Im letzten Schritt, bitten wir Sie einige Fragebogen zu Ihrem Erleben und Verhalten in Beziehungen und Emotionen auszufüllen. Folgen Sie dabei den Anweisungen auf dem Fragebogen.

Ablauf der Studie:

| | |
|--|------------|
| 1. Informationsgespräch, Einverständniserklärung | 10 min |
| 2. Fragebogen | 2 min |
| 3. Vorstellungsaufgabe | 5 min |
| 4. Fragebogen | 2 min |
| 5. Computeraufgabe | 20 min |
| 6. Fragebogen | 15 min |
| <hr/> | |
| Gesamtdauer | ca. 60 min |

3. In welcher Weise werden die im Rahmen dieser Studie gesammelten Daten verwendet?

Sofern gesetzlich nicht etwas anderes vorgesehen ist, haben nur die Prüfer und deren Mitarbeiter Zugang zu den vertraulichen Daten, in denen Sie namentlich genannt werden. Diese Personen unterliegen der Schweigepflicht.

Die Weiterverarbeitung der Daten erfolgt ausschließlich zu statistischen Zwecken und Sie werden ausnahmslos darin nicht namentlich genannt. Auch in etwaigen Veröffentlichungen der Daten dieser Studie werden Sie nicht namentlich genannt.

4. Möglichkeit zur Diskussion weiterer Fragen

Für weitere Fragen im Zusammenhang mit dieser Studie stehen wir Ihnen gerne zur Verfügung. Auch Fragen, die Ihre Rechte als Probandin in dieser Studie betreffen, werden Ihnen gerne beantwortet.

Name der Kontaktperson: Anna Pilz, BSc: Tel.: 0664 556 472 9
email: a0952233@univie.ac.at

Name der Kontaktperson: Bernhard Köpf, BSc Tel.: 0699 113 102 12
email: a0903574@univie.ac.at

5. Gibt es Voraussetzungen oder Ausschlusskriterien für die Teilnahme an der Studie?

- ♦ Personen mit Insekten- oder Fischphobien dürfen nicht an der Studie teilnehmen
- ♦ An der Studie dürfen ausschließlich Frauen teilnehmen
- ♦ Psychologen, Psychotherapeuten und Psychologiestudenten ab dem 3. Semester sind von der Teilnahme an der Studie ausgeschlossen.
- ♦ Personen die momentan oder zu irgendeinem Zeitpunkt ihres Lebens an einer psychiatrischen Erkrankung gelitten haben, sind von der Teilnahme an der Studie ausgeschlossen

Einwilligungserklärung

Name des/der ProbandenIn in Druckbuchstaben:

Geb.Datum: Code:

Ich erkläre mich bereit, an der Studie „Erforschung der Wahrnehmung von Emotionen bei anderen Personen“ teilzunehmen.

Ich bin von Herrn/Frau ausführlich und verständlich informiert worden. Ich bin über mögliche Belastungen und Risiken, sowie über Wesen, Bedeutung und Tragweite der Studie, sich für mich daraus ergebenden Anforderungen aufgeklärt worden und bestätige den Anforderungen der Studie zu entsprechen. Ich habe darüber hinaus den Text dieser Probandenaufklärung und Einwilligungserklärung, die insgesamt 3 Seiten umfasst, sorgfältig gelesen. Aufgetretene Fragen wurden mir vom Studienleiter und/oder seinen Mitarbeiter/-innen verständlich und genügend beantwortet. Ich hatte ausreichend Zeit, mich zu entscheiden. Ich habe zur Zeit keine weiteren Fragen mehr.

Ich werde den Anordnungen, die für die Durchführung der Studie erforderlich sind, Folge leisten, behalte mir jedoch das Recht vor, meine freiwillige Mitwirkung jederzeit zu beenden, ohne dass mir daraus Nachteile entstehen.

Ich bin zugleich damit einverstanden, dass meine im Rahmen dieser Studie ermittelten Daten aufgezeichnet werden. Um die Richtigkeit der Datenaufzeichnung zu überprüfen, dürfen Beauftragte des Auftraggebers und der zuständigen Behörden beim Studienleiter Einblick in meine personenbezogenen Daten nehmen.

Beim Umgang mit den Daten werden die Bestimmungen des Datenschutzgesetzes beachtet.

Eine Kopie dieser Probandeninformation und Einwilligungserklärung habe ich erhalten. Das Original verbleibt beim Studienleiter.

.....
(Datum und Unterschrift des Probanden/der Probandin)

.....
(Datum, Name und Unterschrift des verantwortlichen Studienleiters)

(Der/die ProbandIn erhält eine unterschriebene Kopie der ProbandInneninformation und Einwilligungserklärung, das Original verbleibt im Studienordner des Studienleiters.)

Fragebogen 1

Dieser Fragebogen enthält eine Reihe von Wörtern, die unterschiedliche Gefühle und Empfindungen beschreiben. Lesen Sie jedes Wort und tragen dann in die Skala neben jedem Wort die Intensität ein. Sie haben die Möglichkeit, zwischen fünf Abstufungen zu wählen.

Geben Sie bitte an, wie Sie sich **jetzt im Moment** fühlen.

| | ganz wenig o- der gar nicht | ein bisschen | einigermaßen | erheblich | äußerst |
|----------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| aktiv | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| bekümmert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| interessiert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| freudig erregt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| verärgert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| stark | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| schuldig | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| erschrocken | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| feindselig | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| angeregt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| stolz | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| gereizt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| begeistert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| beschämt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| wach | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| nervös | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| entschlossen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| aufmerksam | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| durcheinander | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ängstlich | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Fragebogen 2

Dieser Fragebogen enthält eine Reihe von Wörtern, die unterschiedliche Gefühle und Empfindungen beschreiben. Lesen Sie jedes Wort und tragen dann in die Skala neben jedem Wort die Intensität ein. Sie haben die Möglichkeit, zwischen fünf Abstufungen zu wählen.

Geben Sie bitte an, wie Sie sich **jetzt im Moment** fühlen.

| | ganz wenig o- der gar nicht | ein bisschen | einigermaßen | erheblich | äußerst |
|----------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| aktiv | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| bekümmert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| interessiert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| freudig erregt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| verärgert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| stark | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| schuldig | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| erschrocken | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| feindselig | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| angeregt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| stolz | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| gereizt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| begeistert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| beschämt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| wach | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| nervös | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| entschlossen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| aufmerksam | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| durcheinander | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ängstlich | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Fragebogen 3

Dieser Fragebogen enthält eine Reihe von Wörtern, die unterschiedliche Gefühle und Empfindungen beschreiben. Lesen Sie jedes Wort und tragen dann in die Skala neben jedem Wort die Intensität ein. Sie haben die Möglichkeit, zwischen fünf Abstufungen zu wählen. Sie finden nun außerdem zwei weitere Fragen darüber, wie leicht schwer oder leicht Ihnen die Vorstellungsaufgabe gefallen ist.

1. Waren Sie in der Lage an eine Person zu denken, ☐ Ja ☐ Nein
zu der Sie diese Art von Beziehung gehabt haben?

2. Fanden Sie es schwierig sich im Kopf ein gutes ☐ Ja ☐ Nein
Bild von der Person zu machen?

3. Geben Sie bitte noch einmal an, wie Sie sich **jetzt im Moment**, fühlen.

| | ganz wenig o- der gar nicht | ein bisschen | einigermaßen | erheblich | äußerst |
|----------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| aktiv | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| bekümmert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| interessiert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| freudig erregt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| verärgert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| stark | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| schuldig | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| erschrocken | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| feindselig | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| angeregt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| stolz | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| gereizt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| begeistert | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| beschämt | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| wach | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| nervös | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| entschlossen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| aufmerksam | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| durcheinander | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ängstlich | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Fragebogen 4

Nachdem Sie erfolgreich an unserem Experiment teilgenommen haben, bitten wir Sie nun die folgenden Fragen zu beantworten.

Folgen Sie dabei den Anweisungen, des jeweiligen Fragebogens. Es gibt keine richtigen oder falschen Antworten. Wir bitten Sie alle Fragen vollständig zu beantworten. Wenn Ihnen keine Antwortmöglichkeit als die perfekt richtige erscheint, wählen Sie die am ehesten Zutreffende.

Sie bleiben bei der Beantwortung der Fragen stets anonym. Die von Ihnen angegebenen Daten werden vertraulich behandelt und nicht an Dritte weitergegeben.
Das Ausfüllen des Fragebogens wird ca. 15 Minuten in Anspruch nehmen.

Persönliche Daten

Zunächst bitten wir Sie um Angaben zu Ihrer Person

1. Alter: _____ Jahre

2. Höchste abgeschlossene Ausbildung:

- | | | |
|---|--|---|
| <input type="checkbox"/> Pflichtschule (HS, NMS, Poly) | <input type="checkbox"/> Lehre | <input type="checkbox"/> Meisterprüfung |
| <input type="checkbox"/> Berufsbildende Mittlere Schule | <input type="checkbox"/> Matura / Lehre mit Matura | <input type="checkbox"/> Bachelor |
| <input type="checkbox"/> Diplomstudium/Masterstudium | <input type="checkbox"/> Doktorat/PhD oder höhere akademische Ausbildung | |
| <input type="checkbox"/> Sonstige: _____ | | |

3. Derzeitige Erwerbstätigkeit:

- ☐ Erwerbstätig
☐ nicht Erwerbstätig
☐ in Ausbildung

4. Beziehungsstand:

- | | |
|--|--|
| <input type="checkbox"/> Ledig (weiter zu 5b) | <input type="checkbox"/> in Partnerschaft lebend, unverheiratet (weiter zu 5a) |
| <input type="checkbox"/> Geschieden (weiter zu 5b) | <input type="checkbox"/> Verheiratet / Eingetragene Partnerschaft (weiter zu 5a) |
| <input type="checkbox"/> Verwitwet (weiter zu 5a) | |

5. Beziehungsdauer

5a Dauer der derzeitigen romantischen Beziehung: _____ Jahre

5b Dauer der letzten romantische Beziehung: _____ Jahre

Erleben und Verhalten in Liebesbeziehungen

Im Folgenden finden Sie eine Reihe von Aussagen über das Erleben und Verhalten in Liebesbeziehungen. Bitte schätzen Sie für jede Aussage ein, inwieweit diese auf Sie zutrifft. Hierfür stehen Ihnen eine Skala von 1 (stimmt überhaupt nicht) bis 7 (stimmt voll und ganz) zur Verfügung. Markieren Sie bitte jeweils die Zahl, die den Grad Ihrer Zustimmung wiedergibt. Mit der Formulierung „Partner“ kann sowohl ein Mann als auch eine Frau gemeint sein. Wenn Sie zurzeit keinen Partner haben, versuchen Sie, sich an Ihre letzte Beziehung zu erinnern.

| | | Stimmt überhaupt nicht | | | teils, teils | | Stimmt voll und ganz | |
|----|---|------------------------|---|---|--------------|---|----------------------|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Ich zeige einem Partner nicht gern, wie es tief in mir aussieht | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | Ich mache mir Gedanken darüber, dass ich verlassen werden könnte. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | Ich fühle mich sehr wohl, wenn ich einem Partner nahe bin. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | Ich mache mir sehr viele Gedanken über meine Beziehungen. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | Immer dann, wenn mein Partner mir sehr nahe kommt, ziehe ich mich zurück. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | Ich mache mir Gedanken darüber, dass mein Partner sich nicht so um mich kümmert wie ich mich um ihn. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | Ich fühle mich unwohl, wenn mein Partner mir sehr nahe sein will. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | Ich mache mir sehr oft Gedanken darüber, dass ich meinen Partner verlieren könnte. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | Ich fühle mich nicht wohl dabei, wenn ich mich einem Partner gegenüber öffnen soll. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | Ich wünsche mir oft, dass die Gefühle meines Partners für mich genau so stark wären wie meine Gefühle für ihn | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | Ich möchte meinem Partner nahe sein, halte mich aber trotzdem zurück. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | Ich woll mit einem Partner vollkommenn verschmelzen und das schreckt andere manchmal ab. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | Ich werde nervös, wenn ein Partner mir zu nahe kommt. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | Ich mache mir oft Gedanken über das Alleinsein. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | Ich fühle mich wohl dabei, wenn ich miene innersten Gedanken und Gefühle mit meinem Partner teilen kann. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | Mein Verlangen nach Nähe schreckt andere | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Menschen manchmal ab. | | Stimmt überhaupt nicht | | teils, teils | | Stimmt voll und ganz | | |
|-----------------------|--|------------------------------|---|-----------------|---|-------------------------|---|---|
| 17 | Ich versuche zu vermeiden, meinem Partner zu nahe zu kommen | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | Ich brauche die Bestätigung, dass mein Partner mich liebt. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | Es fällt mir relativ leicht, meinem Partner nahe zu kommen. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | Manchmal merke ich, dass ich meinen Partner dränge, mehr Gefühl und Verbindlichkeit zu zeigen. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21 | Ich habe Schwierigkeiten damit zuzulassen, von einem Partner abhängig zu sein. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22 | Ich mache mir kaum Gedanken darüber, dass ich verlassen werden könnte. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23 | Ich bin einem Partner nicht gern zu nahe | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24 | Wenn ich es nicht schaffe, das Interesse meines Partners auf mich zu ziehen, rege ich mich auf oder werde ärgerlich. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25 | Ich rede mit meinem Partner über fast alles. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26 | Ich finde, mein Partner will nicht so viel Nähe wie ich. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27 | Ich bespreche meine Sorgen und Probleme meisten mit meinem Partner | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28 | Wenn ich keine Beziehung habe, fühle ich mich irgendwie ängstlich und unsicher. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29 | Ich fühle mich wohl, wenn ich von einem Partner abhängig bin. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30 | Es frustriert mich, wenn mein Partner nicht so oft bei mir ist, wie ich es will. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31 | Es fällt mir nicht schwer, einen Partner um Trost, Hilfe oder einen Rat zu bitten | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32 | Es frustriert mich, wenn ich gern einen Partner hätte und niemand da ist. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33 | Es hilft mir, mich an meinen Partner zu wenden, wenn ich es brauche. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34 | Wenn ein Partner eine negative Meinung über mich hat, geht es mir richtig schlecht | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35 | Ich wende mich oft an meinen Partner, zum Beispiel wenn ich Trost und Bestätigung brauche. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36 | Er ärgert mich, wenn mein Partner Zeit ohne mich verbringt. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Regulation von Gefühlen

Wir möchten Ihnen gerne einige Fragen zu Ihren Gefühlen stellen. Uns interessiert, wie Sie Ihre Gefühle unter Kontrolle halten, bzw. regulieren. Zwei Aspekte Ihrer Gefühle interessieren uns dabei besonders. Einerseits ist dies Ihr *emotionales Erleben*, also was Sie innen fühlen. Andererseits geht es um den *emotionalen Ausdruck*, also wie Sie Ihre Gefühle verbal, gestisch oder im Verhalten nach *außen* zeigen.

Obwohl manche der Fragen ziemlich ähnlich klingen, unterscheiden sie sich in wesentlichen Punkten.

Bitte beantworten Sie die Fragen, indem sie folgende Antwortmöglichkeiten benutzen.

| | | | | | | |
|-----------------|---------|---------|---------|---------|---------|------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Stimmt | | | neutral | | | stimmt |
| überhaupt nicht | | | | | | vollkommen |

1. ____ Wenn ich *mehr positive* Gefühle (wie Freude oder Heiterkeit) empfinden möchte, ändere ich, woran ich denke.
2. ____ Ich behalte meine Gefühle für mich.
3. ____ Wenn ich *weniger negative* Gefühle (wie Traurigkeit oder Ärger) empfinden möchte, ändere ich woran ich denke.
4. ____ Wenn ich *positive* Gefühle empfinde, bemühe ich mich, sie *nicht* nach außen zu zeigen.
5. ____ Wenn ich in eine stressige Situation gerate, ändere ich meine Gedanken über die Situation so, dass es mich beruhigt.
6. ____ Ich halte meine Gefühle unter Kontrolle, indem ich sie *nicht* nach außen zeige.
7. ____ Wenn ich *mehr positive* Gefühle empfinden möchte, versuche ich über die Situation anders zu denken.
8. ____ Ich halte meine Gefühle unter Kontrolle, indem ich über meine aktuelle Situation anders nachdenke.
9. ____ Wenn ich *negative* Gefühle empfinde, Sorge ich dafür, sie *nicht* nach außen zu zeigen.
10. ____ Wenn ich *weniger negative* Gefühle empfinden möchte, versuche ich über die Situation anders zu denken.

Curriculum Vitae

Anna Pilz, BSc.

Education

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|-------------------|--|
| Since 10/2014 | University of Vienna, Austria Faculty of Psychology Health, Development, Enhancement and Intervention Degree: Master of Science (MSc) Master's Thesis: <i>Attachment and Biased Emotional Judgements: The Role of Adult Attachment in Emotional Egocentricity and Altercentricity Bias</i> |
| 02/2012 - 07/2012 | Griffith University, Gold Coast Campus, QLD Australia Semester abroad Psychology, Philosophy |
| 10/2010 - 02/2014 | University of Vienna, Austria Faculty of Psychology Extension Curriculum: South Asia, Tibet & Buddhist Studies Degree: Bachelor of Science (BSc) Bachelor Theses: 1. <i>Art enthusiasts and their affinity for extremes – Gender related art preference and the interaction of sensation seeking and transliminality</i> 2. <i>Empathy in Borderline Personality Disorder</i> |

Internships & Study related work-activities

| | |
|-------------------|---|
| 06/2014 – 09/2016 | Boyden Global Executive Search GmbH Research Assistant-Executive Search & Headhunting <i>Part time</i> |
| 07-08/2015 | Landeskrlinikum Wiener Neustadt Clinical psychology department <i>6-weeks Internship</i> |
| 07-08/2011 | WIJUG Family vacations Vacations for lower-income families Activity planning and psychological assistance for lower-income families <i>Internship</i> |

Curriculum Vitae

Bernhard Köpf BSc

Academic Education

Faculty of Psychology, University of Vienna:

| | |
|-------------------|---|
| Since 10/2015 | Master's Study Psychology Focus: Health, Development, Enhancement and Intervention Degree Master of Science (Msc) Master's Thesis: Attachment and Biased Emotional Judgments: The Role of Adult Attachment in Emotional Egocentricity and Altercentricity Bias. |
| 10/2015 | Switch from Diploma- to Master's Study of Psychology with appreciation of Bachelor's Degree (BSc) |
| 10/2009 – 10/2015 | <u>Diploma Study Psychology</u> Forschungspraktikum 1 (Later appreciated as Bachelor's Thesis): Accordance of Magazine's Personality Tests with Tests Built According to Scientific Criteria. Forschungspraktikum 2: The Relationship between Individual Values & Self-Defeating Humour |

Internships and Study-Oriented Activities

| | |
|-----------------|---|
| Since 03/2016 | Attendant at Verein ZASPE – Autistenzentrum Arche Noah: care, advancement & behavior-therapeutical Intervention for adults with autism. |
| 11/2015-02/2016 | Internship: Verein ZASPE - Autistenzentrum Arche Noah. |
