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# THE IMPACT OF EMOTIONAL RATINGS ON RISK BEHAVIOR

by

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## ABSTRACT

Risk behavior influences everyday life. Therefore, it is important to know its determinants. Previous research has shown that experimentally induced positive emotions lead to riskier behavior, an effect that is stronger among persons with high impulsivity. What is unknown is the influence of explicit emotional ratings on emotions and, thereby, on risk behavior. I tested the effect of emotional ratings – assessed via ratings of Asian characters – on subsequent risk behavior in a gambling task using a computer experiment. Moreover, I calculated the moderator effect of impulsivity. The results show that, for both field and laboratory tests, positive ratings lead to riskier behavior while negative ratings lead to less risky behavior, moderated by impulsivity for persons tested in the field. These findings suggest that explicit emotional ratings affect emotions and, thus, influence how risky a person will behave. The effect of impulsivity is discussed in the context of social facilitation theory.

*Key words:* emotion, valence, emotional rating, affect manipulation, impulsivity, risk behavior, gambling, social facilitation theory

# 1 INTRODUCTION

Human emotions have evolved over thousands of years. They provide contextual information and, thus, influence many psychological processes (Izard, 2010). One of them is the process of decision making which is not a fully rational process; rather it is affected by emotions (Rothermund & Eder, 2011).

During evolution and nowadays it has been and is still often necessary to come to a decision without certainty or in contexts lacking of sufficient information. In such situations, humans may have to decide between certain and risky options in which they rely on several heuristics to simplify the situation (De Martino, Kumaran, Seymour, & Dolan, 2006). One possible solution is taking into account information given by current emotions, which can be used to alter behavior in a way that is making it more adaptive than other possible behavior patterns (Loewenstein & Lerner, 2003). Such heuristics are useful in some circumstances, but they can also lead to biases which have negative implications for decisions and behavior (Slovic, 1987).

Considering the number of decisions one has to make every day, it is plausible that there are many uncertain situations in which risk-taking becomes necessary for mastering challenges during one's individual development (Haase & Silbereisen, 2011). This is one point where emotions become relevant.

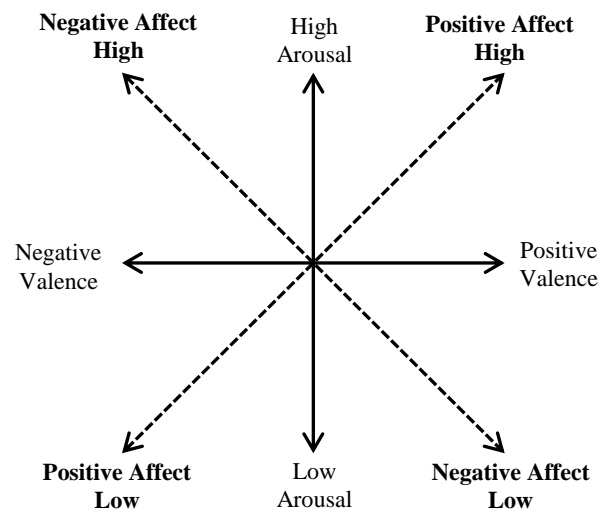
## 1.1 WHAT ARE EMOTIONS?

Before thinking about the way emotions influence risk behavior, one needs to consider the question of what emotions actually are. The answer to this question is more difficult than it appears at first sight. Researchers differ in their view of emotions because there is no clear definition of the term "emotion" (Cunningham & Kirkland, 2012; Russell, 2003). The one thing they agree in is that emotions consist of several components, namely cognitive, behavioral, physiological, and experiential components (Winkielman, Knutson, Paulus, & Trujillo, 2007).

Another way of handling emotions is via their functions, as done by Izard (2010). His list contains various fields, such as attention, motivation, behavior regulation, and communication, and shows how multifaceted emotional influences and processes are. One function of emotions is especially important in the context of decision making: They have an impact on associations between context and response through increasing or decreasing the salience or value of an event. Aside from the functions of emotions, however, the construct "emotion" is still not very clear (Izard, 2010; Russell, 2003).

One feasible way of conceiving emotions is by splitting them into their basic dimensions of valence and arousal. The valence of an emotion is its degree of pleasantness, whereas arousal is

the amount of activation caused by the emotion (Rothermund & Eder, 2011; Russell, 2003; Suri, Sheppes, & Gross, 2012; Winkielman et al., 2007). Valence and arousal can be illustrated graphically in a two-dimensional coordinate-system (see Figure 1). This model can explain most of the self-reported variance in ratings of emotions (Rothermund & Eder, 2011; Suri et al., 2012), considering all possible emotions from neutral (which is presented by the center of the coordinate-system), across moderate emotions up to extreme emotions (which is in the periphery of the coordinate-system; Russell, 2003).



*Figure 1: Valence and arousal describe emotions (based on Rothermund & Eder, 2011, p. 169)*

Because of the uncertain definition of the construct emotion, Izard (2010) suggests making clear which aspects of emotions are being examined in any particular study. In this study, I examined the valence of emotions – in other words, how positively or negatively someone feels about something – and its impact on decisions. Thereby, the terms “emotion” and “affect” are used as synonyms.

A second possible way of describing emotions is by dividing them on the basis of the object they are connected with. Schlösser, Dunning, and Fetchenhauer (2013) distinguish between anticipated emotions, which are directed on the consequence of a decision, and immediate emotions, which are directed on what is felt in the special moment one is experiencing. Anticipated emotions, on the one hand, are important when talking about decision making because they are connected to the selection between alternative options. People are supposed to choose the option that will cause most positive emotions and least negative emotions (Loewenstein & Lerner, 2003). Immediate emotions, on the other hand, have an impact on decisions, too, by changing processes of recall, attention, and interpretation (Ciarrochi & Forgas, 2000). The effects of immediate and anticipated emotions on risk behavior will be described in more detail later on.

## 1.2 HOW EMOTIONS INFLUENCE DECISIONS

As indicated before, emotions have an impact on decision making. Hence, decisions do not rely solely on objective information (Forgas, 1995; Gasper & Clore, 2000; Russell, 2003). Even more, there seems to be hardly any cognitive process that is not affected by emotional states (Blanchette & Richards, 2010). Particularly, emotions can improve the quality of decisions, and

people with emotional deficits often make worse decisions than people without such deficits; but emotions can lead to biased judgments, too, when they are used as a shortcut in the decision making process (Loewenstein & Lerner, 2003). Thus, emotions can generally lead to better or worse decisions and these connections are important. Among these decisions, risky decisions and subsequent risky behavior are an especially noteworthy research topic.

In previous studies, different effects of emotions on decisions have been investigated. Emotions can act as primes for cognition in the way that they selectively influence the recall of information. When in a positive emotional state, it is easier to recall positive information. Moreover, positive details get more attention, learning of positive things is easier, and interpretations of ambiguous information are biased in a positive way (Ciarrochi & Forgas, 2000). Additionally, the perception of an object depends on the emotional state. People in a positive emotional state perceive an object in a more pleasant way than people in a negative emotional state would do. This usage of emotions as a shortcut to judgment is described in the affect-as-information model (Winkielman et al., 2007).

### *1.2.1 EFFECTS OF IMMEDIATE AND ANTICIPATED EMOTIONS ON RISK BEHAVIOR*

As mentioned above, emotions can be described on the basis of the object they are connected with (Schlösser et al., 2013). On the one hand, immediate emotions cause an influence of affective stimuli on following behavior which is called affective priming and is independent from conscious experience of changes in the emotional state (Winkielman et al., 2007). On the other hand, anticipated emotions are connected to the outcome of a decision and, hence, influence the process of decision making (Loewenstein & Lerner, 2003). Both immediate and anticipated emotions will be explained in more detail below.

Immediate positive emotions (e.g., happiness) lead to lower risk perception (Haase & Silbereisen, 2011) and increase the likelihood of risky behavior (Knutson, Wimmer, Kuhnen, & Winkielman, 2008). This effect is mediated by positive cognitions which are activated by positive emotions (Gasper & Clore, 2000; Haase & Silbereisen, 2011; Winkielman et al., 2007). The mediation can be explained via change in salience. Positive emotions lead attention to potential gains and increase their salience, which is why the likelihood of risky behavior increases (Knutson et al., 2008). Furthermore, positive emotions lead to positive interpretations of ambiguous information and, therefore, increase the likelihood of optimistic evaluations of risk (Winkielman et al., 2007).

In contrast, immediate negative emotions (e.g., fear) decrease the probability of risky behavior (Gasper & Clore, 2000; Winkielman et al., 2007). This effect is, again, mediated by

cognitions. Negative emotions lead attention to potential losses by increasing their salience, for which reason likelihood of risky behavior decreases (Knutson et al., 2008).

Beside the effect of immediate emotions, there is an anticipatory effect of emotions (Knutson et al., 2008; Schlösser et al., 2013). In uncertain situations, emotions are used as a further source of information (Payne, Cheng, Govorun, & Stewart, 2005). In this manner, anticipated emotions have the same effect on risk behavior as immediate emotions: positive emotions increase the likelihood of risky behavior, whereas negative emotions decrease the likelihood of risky behavior (Knutson et al., 2008). This can be explained by emotional benefits and losses. If one option entails more emotional benefits and less costs than other possible options, it is likely that this option will be chosen (Suri et al., 2012). This effect is independent from the source of the emotions. A general positive state, regardless of where it stems from, may change the anticipated emotions and, hence, influence a decision (Haase & Silbereisen, 2011). This is called affective misattribution: An attribution is done, but it is directed at the wrong source (Russell, 2003).

In summary, there are different indications for relations between emotions and decision making in general and decision making under risk in particular. These relations can be explained via direct influences (e.g., perception of objects) or indirect influences (e.g., change of recall processes) and emotions can differ in the object they are connected with (as described by immediate and anticipated emotions).

### *1.2.2 AFFECT MANIPULATION*

Studies investigating the influence of emotions on decisions often use affect manipulation to control and systematically change the current emotional state of the participants. Usually, this is done via video clips, pictures, and/or sounds (Ciarrochi & Forgas, 2000; Ellard, Farchione, & Barlow, 2012; Haase & Silbereisen, 2011; Winkielman et al., 2007). The perception of these emotional stimuli has an impact on the emotional state of a person, which has an effect on subsequent behavior (Ellard et al., 2012; Winkielman et al., 2007). Ciarrochi and Forgas (2000), for example, used a video for affect manipulation consisting of 10-min video sequences which they took from comedy series for a positive condition and from a film about death for a sad condition. The participants watched one of the two videos before an evaluation of values of consumer items. Ciarrochi and Forgas (2000) were able to show that the video clips changed the participants' emotional state either in a positive or in a negative way (induced by the film of the positive or sad condition, respectively).

How this changing of the emotional state happens exactly is not yet known precisely. There are different possible variables based on genetics, biological mechanisms like the activity of

immune cells or hormone changes, and external stimuli like the ones mentioned above (Russell, 2003). But what is known is that these changes of the emotional state can happen unconscious and without knowing the cause for the change (Russell, 2003; Winkielman et al., 2007). Furthermore, the participants do not need to pay attention to the emotional stimulus' content to achieve a change of the emotional state (Winkielman et al., 2007).

To test the effect of the affect manipulation, the participants can be asked to rate Asian characters (which have no meaning to most Europeans) on a positive – negative scale. If the manipulation was successful, the characters will be rated more positively after positive affect manipulation (e.g., pictures of happy babies or laughing people) compared to ratings after negative affect manipulation (e.g., pictures of snakes or violence). This effect was described by Payne et al. (2005). They presented their participants a positive or a negative picture from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2008) for 75 ms, and then the screen was blank for 125 ms, followed by an Asian character which was visible for 100 ms. The task for the participants was to judge the Asian character as pleasant or unpleasant. As expected, the picture presented right before the Asian character influenced its judgment.

While using this method to test the effectiveness of affect manipulation in previous studies in our lab, a sequence effect was observed. If a character was rated positively in one trial, the likelihood of a positive rating in the next trial was increased. The same pattern was found for negative ratings, which indicates that the rating in one trial has an effect on the rating in the next trial. This could be interpreted in the way that explicit emotional ratings are themselves emotional stimuli and have an effect similar to the one of other emotional stimuli (e.g., pictures, video clips, or sounds). According to this assumption, explicit emotional ratings should have the same impact on risk behavior as other emotional stimuli which are usually used to change the emotional state.

### 1.3 EMOTIONS, DECISION MAKING, AND IMPULSIVITY

Another important issue when talking about emotions and decision making are differences between persons – or in other words: the personality. The personality is an important feature of an individual and has an indirect impact both on the quality and on the extent of emotional influences on decisions (Forgas, 1995; Ulleberg & Rundmo, 2003). One basic personality factor is impulsivity (Whiteside & Lynam, 2001) which is responsible for behavior control and, thus, important for interaction with the environment (Kovaleva, Beierlein, Kemper, & Rammstedt, 2012). It is a heterogeneous construct which can be described via four dimensions: urgency, lack of premeditation, lack of perseverance, and sensation-seeking (Kovaleva et al., 2012; Whiteside & Lynam, 2001).



Urgency describes behavior which is performed without thinking or without having enough information for a proper decision. Instead it is frequently based on negative affect and rash. Lack of premeditation contributes to the difficulty in controlling strong impulses; behavior cannot be delayed and is not carefully planned. With a lack of perseverance, people prefer immediate and possibly greater rewards and they have difficulties to stay focused and to complete a difficult or boring task. Finally, people with high sensation-seeking scores strive towards exciting experiences and adventures and enjoy dangerous activities (Kovaleva et al., 2012; Whiteside & Lynam, 2001).

Previous research has indicated that impulsivity, as a cognitive aspect of risk behavior, is a factor which moderates the effect of emotions on risk perception. Haase and Silbereisen (2011) showed that the induction of positive affect via a video clip consisting of pictures from the IAPS (Lang et al., 2008) combined with instrumental music leads to less risk perception than the induction of neutral affect. But this effect depends on the participants' impulsivity. Risk perception is influenced by positive affect only if the participants score high on impulsivity. There is no effect of positive affect on risk perception for participants with low impulsivity (Haase & Silbereisen, 2011). However, both groups have equal risk perceptions after inducing neutral affect. This suggests that impulsivity and emotions interact and influence risk perception together. Presuming that lower risk perception should lead to higher risk behavior (Drače & Ric, 2012), impulsivity might have a moderating role between affect manipulation and risk behavior, too.

## 1.4 HYPOTHESES

In this study, I investigate a new factor which seems to be important in the field of emotions and decision making: the influence of explicit emotional ratings on decision making. I assume that explicit emotional ratings induce emotions which can influence decisions made directly after the rating of an image (on a positive – negative scale). Based on the results of previous research, I have two hypotheses.

Firstly, I want to replicate previous results of the impact of emotions on decision behavior using this new method of affect manipulation – namely explicit emotional ratings – instead of the common methods like video clips, pictures, and sounds. I assume that positive ratings have a similar impact on subsequent risk decisions as other positive emotional stimuli, namely an enhancement of risk behavior. A negative rating, on the other hand, should be similar to other negative emotional stimuli and, therefore, decrease subsequent risk behavior.

*Hypothesis 1: Persons will show riskier behavior after positive image rating than after negative image rating.*

Secondly, I want to strengthen my findings by transferring the moderator effect of impulsivity described by Haase and Silbereisen (2011) to the affect manipulation via explicit emotional ratings. If I am able to replicate their result pattern, this indicates similar processes underlying the affect manipulations via emotional ratings and via video clips consisting of pictures and sounds, which would support the assumption that emotional ratings act like other emotional stimuli. Based on the results presented by Haase and Silbereisen (2011), I expect that risk behavior of persons scoring high on an impulsivity scale should be influenced stronger by affect manipulation than persons scoring low on the same scale.

*Hypothesis 2: The effect of positive ratings on risk behavior will be stronger among persons with higher impulsivity.*

To proof the hypotheses, I conducted a computer experiment which consisted of two main parts. The first part comprised two alternating tasks to test the influence of explicit emotional ratings on risky behavior, while in the second part a questionnaire was conducted to obtain information about impulsivity and, additionally, socio-demographic data was collected. The experiment was conducted in the field (experiment 1) and in a laboratory (experiment 2). In the following, the details of the experiments and procedures will be described in detail.

## 2 EXPERIMENT 1: FIELD CONDITION

The data for experiment 1 had been collected in the field. For this purpose, persons in the area of the Humboldt-Universität zu Berlin and residents of a dormitory in Berlin were asked to participate in a short computer experiment.

### 2.1 METHODS

#### 2.1.1 PARTICIPANTS

The experiment was conducted with 40 participants. Two participants were excluded from the analyses because they did not vary in their risk behavior, so the hypotheses were tested on the remaining 38 participants (ages 18-38,  $M = 24$ ; 21 women). Most of the participants had a

high school degree (one with Realschulabschluss, 24 with Abitur), while the other thirteen had a university degree.

2.1.2 ASSESSMENT OF BEHAVIORAL DATA

The experiment consisted of two parts. Behavioral data was collected in the first part and the second part consisted of questions about impulsivity and socio-demographic data (see 2.1.3 Assessment of questionnaire data).

At the beginning of the first part, the participants were familiarized with the two tasks which were used to assess their emotional ratings and risk behavior. This learning stage consisted of seven trials for each of the two tasks, in which participants learned the two tasks independently. Data collected in the learning stage was not analyzed statistically. Rather the participants should get to know what they were supposed to do in the actual experiment. Afterwards, 65 mixed trials consisting of both tasks were conducted to collect data for testing the hypotheses. During this mixed set of trials, the participants had to do the tasks in an alternating sequence. The trial time-course is presented in Figure 2.

The procedure was programmed in Matlab (The Mathworks Inc.) with Psychtoolbox version 3 (Brainard, 1997; Pelli, 1997) and was, therefore, fully standardized.

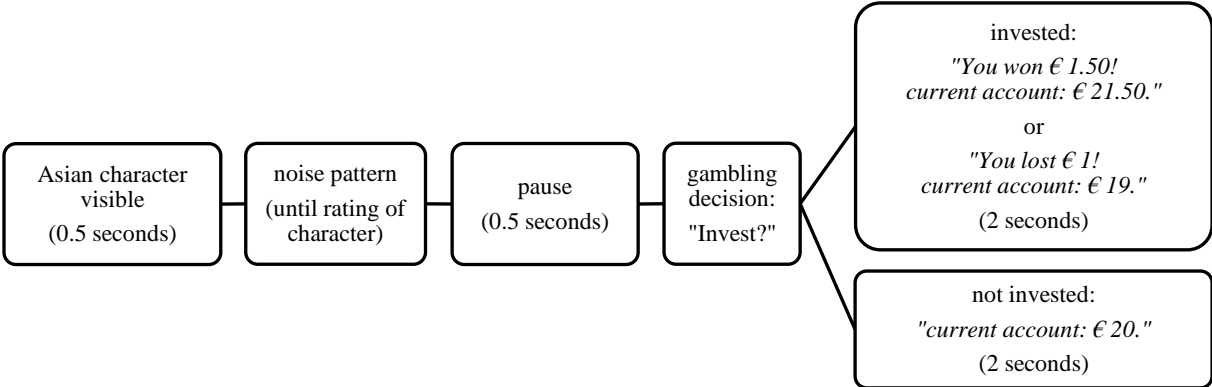


Figure 2: Mixed trial to assess behavioral data (Note: The accounts in the feedback are possible outcomes on the first trial.)

*Emotional ratings.* The first task for the participants was to rate pictures on a positive – negative scale. To ensure that the participants were not familiar with the pictures before the ratings, I used pictures of Asian characters, because I was interested in the effect of the rating itself and not in the effect



Figure 3: Examples of Asian characters

of the content of the picture (see Figure 3 for examples). For each Asian character, the participants had to indicate whether they *liked* or *did not like* the picture by pressing the left or the

right arrow key (the mapping was counterbalanced). The order of the characters was fully randomized for each participant.

This use of Asian characters is different to the one in other studies. The characters are usually used to assess the impact of prior affect manipulation. However, in this study, I used the rating to manipulate emotions, instead of testing previous manipulation via ratings.

The characters were displayed centrally at an average resolution of 250 by 250 pixels and were presented in black against a gray background (RGB: 162, 162, 162). The Asian character was visible for 0.5 seconds. Then, a noise pattern covered the character to ensure that the participants could not see it any longer, so they needed to make their choice intuitively. The noise pattern disappeared after one of the arrow keys was pressed.

*Risk behavior.* The second task for the participants was a gambling decision. They started with a virtual account of € 20 in the first trial (the starting account was the same in the learning stage and mixed trials). After the question “Invest?” became visible on the screen, the participants had to decide whether they wanted to invest € 1 of their money by pressing the “i” key for “*investment*” or the “n” key for “*no investment*”. If they invested € 1 they won € 1.50 in 50 % of the trials (so they got back the invested money, plus € 1.50 extra money; e.g., € 21.50 when they started with € 20), in the other 50 % of the trials they lost the invested money. Afterwards, the participants got feedback about their current account. In subsequent trials, the accounts before investment depended on the gambling results in previous trials. That is, participants had the opportunity to increase their account from trial to trial.

### 2.1.3 ASSESSMENT OF QUESTIONNAIRE DATA

In addition to providing behavioral data, participants had to complete the impulsivity questionnaire “Skala Impulsives-Verhalten-8 (I-8)” by Kovaleva et al. (2012), which contains of eight statements that are aimed at measuring a person’s impulsivity (e.g., “Sometimes I do things impulsively that I shouldn't do.”, “I am willing to take risks.”). The participants had to indicate whether these statements applied to them using a 5-point Likert-scale (from 1 - “*doesn't apply at all*”, to 5 - “*applies completely*”; see Appendix). The mean score was calculated as an indicator of the overall impulsivity for each participant.

Additionally, socio-demographic data (age, sex, education, and familiarity with Asian characters, amongst others) was requested at the end of the experiment.

### 2.1.4 PROCEDURE

The experiment was conducted in field. Therefore, people in the cafeteria at the campus Adlershof, in a coffee shop in the area of the Humboldt-Universität zu Berlin, and in a café of a

student dormitory in Berlin were asked to take part in a short computer experiment, lasting about 15 minutes. After agreement, the participants were seated in front of a computer and instructed that the experiment would be explained via text on the computer. The experimenter was present during the experiment to answer questions if necessary.

After the experiment, the experimenter thanked for participation and answered questions about the aims of the study.

## 2.2 RESULTS

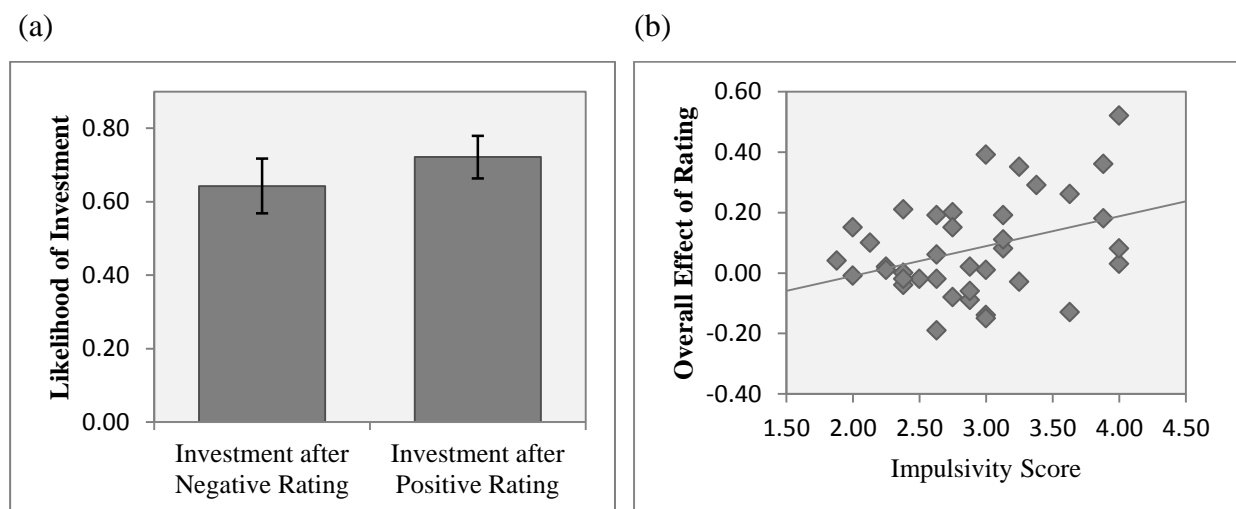
To test the hypotheses, the assessed data was analyzed using SPSS 17.0.

### 2.2.1 EFFECT OF EXPLICIT EMOTIONAL RATINGS ON RISK BEHAVIOR

Firstly, I calculated the likelihood of investing during the gambling task after positive and negative image ratings for each participant ( $M_{\text{negative}} = 0.64$ ,  $SD_{\text{negative}} = 0.23$ ;  $M_{\text{positive}} = 0.72$ ,  $SD_{\text{positive}} = 0.18$ ). The values were entered in an analysis of variance (ANOVA) with repeated measurements. This analysis revealed that the likelihood of investment is higher after a positive rating than after a negative rating ( $F(1,37) = 8.9$ ,  $p < .01$ ), as illustrated in Figure 4a.

### 2.2.2 IMPULSIVITY AS MODERATOR

Secondly, I tested the moderator effect of impulsivity. To do this, I calculated the overall effect of rating on likelihood of investment by subtracting likelihood after negative rating from likelihood after positive rating. This rating effect was then regressed on the impulsivity score (as illustrated in Figure 4b). The linear model revealed a significant effect of the impulsivity score on the rating effect, showing that the effect of positive rating on risk behavior is stronger among persons who score higher on impulsivity ( $R^2 = .130$ ,  $p < .05$ ).



**Figure 4: Results of the field condition. (a) Likelihood of investment after positive and negative rating (error bars: 95 % confidence interval); (b) moderator effect of impulsivity on the rating effect.**

## 2.3 DISCUSSION

Similarly to previous research from our laboratory, I found an effect of explicit emotional ratings on risk behavior. The likelihood of investment is higher after a positive rating than after a negative rating. What is new about this finding is the explicit emotional rating acting as an emotional stimulus. In previous research, pictures or sounds were used as emotional stimuli (e.g., Haase & Silbereisen, 2011). My finding suggests that explicit emotional ratings can be used to induce affect, too, because they have the same impact on following risk behavior as other emotional stimuli.

This assumption is supported by the finding concerning the moderator effect of impulsivity. I found that persons with higher impulsivity show a higher relation between positive ratings and risky behavior. This result is consistent with the results presented by Haase and Silbereisen (2011), who found that impulsive persons show a higher (negative) relation between positive emotions and risk perception. I was able to transfer the moderator effect that was found in an experiment using pictures and sounds as emotional stimuli to my experiment using explicit emotional ratings as emotional stimuli.

Nevertheless, this experiment was conducted in the field, so there were various possible variables that could confound the results. The data was assessed in different contexts, the surrounding sounds were different and sometimes relatively loud, and some participants were sitting next to a friend, so they could feel observed or under time pressure because of the waiting friend.

## 3 EXPERIMENT 2: LABORATORY CONDITION

To control confounding variables, a second experiment was conducted in a laboratory at the Humboldt-Universität zu Berlin.

### 3.1 METHODS

#### 3.1.1 PARTICIPANTS

The second experiment was conducted with 44 participants. They were recruited via a data file of the department of psychology. Four participants were excluded from the analyses because they did not vary in their risk behavior, so the hypotheses were tested on the remaining 40 participants (ages 17-63,  $M = 26$ ; 29 women). Most of the participants had a high school degree (three with Realschulabschluss, 22 with Abitur), while the other fifteen had a university degree.

### 3.1.2 ASSESSMENT OF BEHAVIORAL AND QUESTIONNAIRE DATA

The assessment of the behavioral and questionnaire data was exactly the same as in the first experiment.

### 3.1.3 PROCEDURE

The participants enrolled for an experiment which they knew would last about 15 minutes. After they arrived at the laboratory, they were led to an experimental cubicle by the experimenter and seated in front of a computer. The participants were instructed by the experimenter that the experiment would be explained via text on the computer, and then the experimenter started the experiment and left the room.

After finishing the experiment, the participants left the experimental cubicle, were thanked by the experimenter and got either € 4 for participation or credits for a university course (only for psychology students). The participants had the opportunity to ask questions about the study after the experiment.

## 3.2 RESULTS

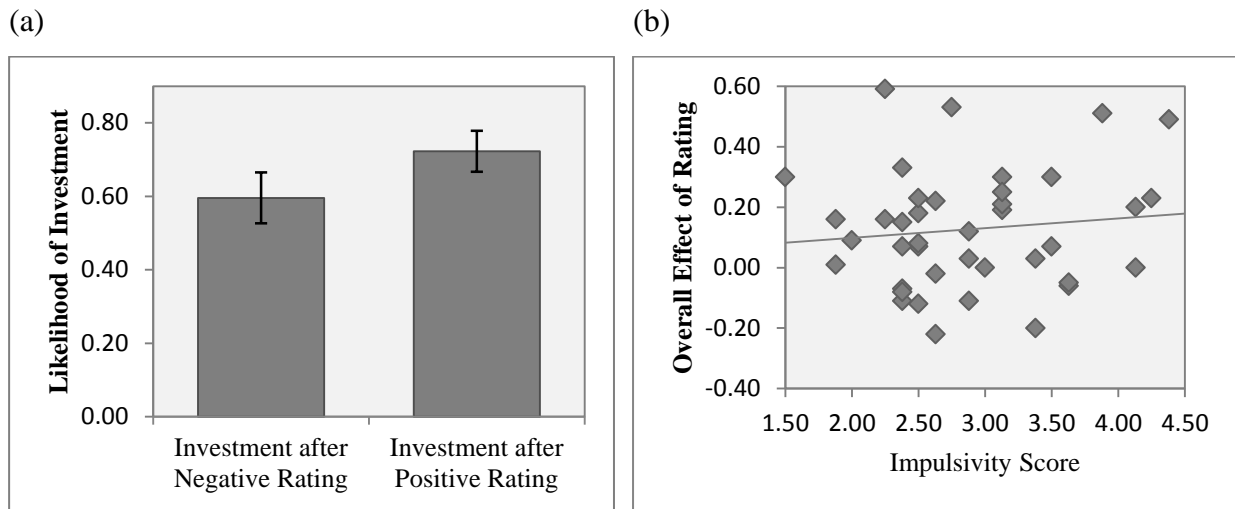
To test the hypotheses, the behavioral and questionnaire data was analyzed using SPSS 17.0. The procedures for analyzing were the same as in the first experiment.

### 3.2.1 EFFECT OF EXPLICIT EMOTIONAL RATINGS ON RISK BEHAVIOR

Firstly, the likelihood of investment during the gambling task after positive and negative ratings were calculated for each participant ( $M_{\text{negative}} = 0.60$ ,  $SD_{\text{negative}} = 0.22$ ;  $M_{\text{positive}} = 0.72$ ,  $SD_{\text{positive}} = 0.17$ ). The values were entered in an analysis of variance (ANOVA) with repeated measurements, which revealed that the likelihood of investment is higher after a positive rating than after a negative rating ( $F(1,39) = 16.6$ ,  $p < .001$ ). The significant difference between the likelihoods after negative and positive ratings is illustrated in Figure 5a.

### 3.2.2 IMPULSIVITY AS MODERATOR

Secondly, the moderator effect of impulsivity was tested. To do this, the overall effect of rating on likelihood of investment was calculated by subtracting likelihood after negative rating from likelihood after positive rating. This rating effect was then regressed on the impulsivity score (as illustrated in Figure 5b). Contrary to the result in the first experiment, the linear model did not reveal a significant effect of impulsivity score on rating effect ( $R^2 = .013$ ,  $p = .48$ ).



**Figure 5: Results of the laboratory condition. (a) Likelihood of investment after positive and negative rating (error bars: 95 % confidence interval); (b) moderator effect of impulsivity on the rating effect.**

### 3.3 DISCUSSION

As in the first experiment, I found an effect of explicit emotional ratings on risk behavior. The likelihood of investment is higher after a positive rating than after a negative rating. This finding confirms my result from the first experiment and, therefore, strengthens the assumption that explicit emotional ratings function as affect manipulation.

The result concerning the moderator effect of impulsivity, however, could not be replicated in the second experiment. This militates against a possible transfer from the results presented by Haase and Silbereisen (2011) to my experiment using explicit emotional ratings instead of pictures and sounds as emotional stimuli. Possible explanations for the different results in the first and the second experiment are presented in the general discussion.

## 4 GENERAL DISCUSSION

Previous research investigated the impact of emotions on decision making (Izard, 2010) and found that positive emotions lead to lower risk perception and higher risk behavior, whereas negative emotions decrease the likelihood of risk behavior (Haase & Silbereisen, 2011). In such studies, different ways of affect manipulation like video clips, pictures, and/or sounds are used (e.g., Ellard et al., 2012). Furthermore, impulsivity influences behavior control (Kovaleva et al., 2012) and Haase and Silbereisen (2011) found that impulsivity moderates the effect of emotional stimuli on risk perception.

The aim of the two experiments in this study was to show that explicit emotional ratings can act as emotional stimuli in the same way as video clips, pictures, and sounds. This was done in two ways: On the one hand, the direct effect of emotional ratings on decision making was



tested, on the other hand, I tried to replicate the moderator effect of impulsivity reported by Haase and Silbereisen (2011) to confirm the effect of emotional ratings on decision making.

The results of the two experiments showed that emotional ratings of Asian character have a significant impact on subsequent risk behavior in a virtual gambling task. This effect was found in the field condition as well as in the laboratory condition. In addition, impulsivity – measured via an impulsivity scale (see Appendix) – moderated the effect of emotional ratings on risk behavior in the field condition, but it did not in the laboratory condition.

In the following, the effect of emotional ratings on risk behavior and the moderator effect of impulsivity will be discussed separately.

#### 4.1 EXPLICIT EMOTIONAL RATINGS ACTING AS EMOTIONAL STIMULI

In my two experiments, I was able to show that emotional ratings have a similar effect on risk behavior as conventional emotional stimuli do. The likelihood of investment after positive ratings was higher than the likelihood of investment after negative ratings.

This effect can be explained through the appraisal theory of emotions. Evaluation of an event is essential for the occurrence of emotions (Rothermund & Eder, 2011). This process is unconscious in most instances, but it can be conscious, too. The appraisal theory proposes a possibility to change emotions intentionally (called reappraisal) by evaluating an event in a new way. Hence, explicit emotional ratings could influence emotions through the cognitive aspects of emotions (Rothermund & Eder, 2011).

But in the study presented here there were participants, too, who's likelihood of investment after positive ratings was lower than their likelihood of investment after negative ratings – this effect is opposite to the one commonly found. It might be explained by a reversal of the effects of emotional states. Ciarrochi and Forgas (2000) investigated openness to feeling as a personality factor moderating the effect of the emotional state on evaluations of consumer items. They found that participants with high scores in a questionnaire assessing openness to feeling showed a typical effect of emotional state. They evaluated the items more positively when in a positive emotional state. But persons with low scores in the questionnaire evaluated the items more negatively when in a positive emotional state, which is the exact opposite to the reaction of participants with high scores in the questionnaire. This same effect might have occurred in the two experiments presented here, being responsible for the reversal of the rating effect for some participants. Therefore, openness to feelings should be assessed as a moderator in future studies.

It might be questioned whether it was the rating itself or something else about the Asian characters that caused the affect manipulation in my experiments. As mentioned above, the

characters have no meaning to most Europeans and I also checked this by asking the participants about their familiarity with Asian characters in the end of the experiment. Only few participants answered that they knew at least some of the characters, but excluding these participants from the analyses did not change the results. Another possible explanation for the affect manipulation could be an internal reason for the rating which might have been done by the participants. Therefore, the participants in the field condition were asked (in an informal interview after the experiment) for strategies they might have used for rating the characters. Only few participants had some kind of strategy, but most of these strategies applied only for some of the characters and could not explain the ratings of the other characters (e.g., three participant rated symmetric characters as positive, another participant liked simple characters; but characters which did not fulfill these criteria were rated positively, too). This is why it is very unlikely that internal reasons are the cause of the affect manipulation.

What cannot be answered with the results of the two experiments presented here is the way how emotional ratings influence risk behavior. As described by Schlösser et al. (2013), both immediate and anticipated emotions can have an impact on subsequent behavior. Emotional ratings could change the immediate emotion as it is done via other affect manipulations like video clip, pictures, and sounds and could, therefore, be used as information for subsequent decisions (Forgas, 1995; Slovic & Peters, 2006). Furthermore, the positive emotion which is caused by a positive rating could be transferred to the expectation of how winning in the gamble would feel like. This transfer might change the anticipation of emotions referring to a positive outcome of the gamble and, thereby, could change the gambling behavior, because positive emotions motivate a person to show behavior which is likely to reproduce the positive emotions (Slovic & Peters, 2006). Both explanations are compatible with the finding that a given situational attribution for the emotion leads to less or even no use of the emotion as information in the judgment process (Gasper & Clore, 2000). While effects of immediate emotions have been studied by psychologists, effects of anticipated emotions have been more in the focus of economic research (Loewenstein, 2000). To discriminate the two possible explanations offered by immediate and anticipated emotions for the effects of emotional ratings on risk behavior, further studies are necessary and psychologists should extend their focus and study immediate as well as anticipated emotions more precisely to understand their processes.

In addition to the question whether emotional ratings work as immediate or anticipated emotions, the question whether the ratings are affective primes or used as information is unanswered, too. These two processes are described as part of the affect infusion model that describes the circumstances in which different effects of emotions (concerning valence,

motivation, and appraisal) occur most likely (Forgas, 1995). According to this theory, affective priming is an indirect way of influence on judgments which acts through the access of related cognitions activated by the emotions, while the affect-as-information principle represents the direct pathway from emotions to decisions. Both processes complement each other.

The affect infusion model can also explain why some studies do not find an effect of emotions on decisions. If participants have to deal with familiar or typical targets, it is very likely that they use direct accesses for processing and, therefore, do not rely on emotions as information or they are biased by affective priming (Forgas, 1995).

#### *4.1.1 DIFFUSE VERSUS CONCRETE EMOTIONS: THE APPRAISAL-TENDENCY FRAMEWORK*

In the two experiments presented here, affect was manipulated by emotional ratings which change emotions in a positive or negative direction. This approach is based on valence; the change of emotion is diffuse and not related to a specific emotion. This is the same approach which was used in many other studies.

But it is also possible to discriminate different positive and negative emotions from each other (Slovic & Peters, 2006). By triggering specific emotions referring to future events, the appraisals of those specific emotions may have different effects on risk behavior compared to diffuse emotions which only differ in their valence (Ciarrochi & Forgas, 2000; Haase & Silbereisen, 2011).

The differentiation of emotions is described in the appraisal-tendency framework (Drače & Ric, 2012; Lerner & Keltner, 2001; Lu, Xie, & Zhang, 2013). This framework is based on appraisals as an important part of emotions which describe emotions more detailed than valence because there is more than one dimension for the description. For example, anger and fear (both emotions with negative valence which have often been studied in connection with risk behavior) differ in the dimensions of certainty and control. While anger is defined by high certainty and individual control, fear is defined by low certainty and situational control (Drače & Ric, 2012; Lerner & Keltner, 2001). That is why expectations for the effect of anger and fear on risk behavior depend on the framework in which the emotions are studied. In a framework based on valence, one would expect the same effect for anger and fear, because both emotions have a negative valence. In the appraisal-tendency framework, however, different effects of anger and fear would be expected due to the differences in the dimensions of certainty and control.

As predicted by the appraisal-tendency framework, several studies found different effects of different emotions on subsequent behavior (Blanchette & Richards, 2010; Lu et al., 2013). Results indicate that anger leads to more optimistic estimation for the future than fear (Lu et al.,

2013) and fear leads to more risk aversive behavior (Blanchette & Richards, 2010). This corresponds with the finding that fear increases and anger decreases risk estimation (Slovic & Peters, 2006). Other studies showed that both anger and happiness lead to more optimistic judgments than sadness and fear (Drače & Ric, 2012; Lerner & Keltner, 2001; Winkielman et al., 2007) and sadness increases risk preference (Blanchette & Richards, 2010). The increase in optimism by anger and happiness did not differ (Winkielman et al., 2007), which suggests that the appraisals of certainty and control – being the same for both anger and happiness – may lead to the increase of optimism (Lerner & Keltner, 2001). Drače and Ric (2012) conclude from their research that the control appraisals mediate the effect of emotions on risk assessment, but that the certainty appraisals do not. They also state that the different results concerning happiness and sadness cannot be explained by control and certainty appraisals, suggesting that there have to be other processes which cause different effects of emotions on behavior beyond these two appraisals.

As these findings show, it might be important to differentiate emotions when studying their effects on risk behavior (Lerner & Keltner, 2001; Lu et al., 2013). Therefore, it might be interesting to investigate whether it is possible to assess what kind of emotion is induced by explicit emotional ratings or whether they are really diffuse. In addition, a parallel between the effects of discrete emotions and the effect of explicit emotional ratings might be helpful to understand the processes underlying the presented effects, which still need more research (Drače & Ric, 2012). Furthermore, the interaction of appraisals, cognition, and valenced feelings is still not clear and has to be studied in future research (Slovic & Peters, 2006).

## 4.2 THE ROLE OF IMPULSIVITY

A further confirmation for my conclusion that explicit emotional ratings act as emotional stimuli is the transfer of the findings of Haase and Silbereisen (2011) to the new method of affect manipulation through emotional ratings in the field condition. Haase and Silbereisen (2011) found that impulsivity influences the relation between emotional stimuli and risk perception in the way that persons with higher impulsivity show lower risk perception after positive stimulation than persons with lower impulsivity, whereas the two groups did not differ after neutral stimulation. I was able to transfer this finding to actual risk behavior in the way that the influence of positive emotional ratings on the increase of risky behavior was stronger among persons with higher impulsivity compared to persons with lower impulsivity. However, this transfer was successful only in the field condition, but it was not in the laboratory condition.

Below, a discussion about impulsivity and other personality factors is given. The different effects of impulsivity in the two conditions will be discussed in detail later on.

Generally, one limitation of both experiments was the measurement of impulsivity as a trait, which was assessed using a brief questionnaire. In future research, it would be better to use a longer questionnaire, which would give the opportunity to investigate the different dimensions of impulsivity (Haase & Silbereisen, 2011). According to Whiteside and Lynam (2001), the dimensions urgency and lack of premeditation could be especially important for impulsive behavior. Urgency describes behavior which is controlled by strong impulses, and persons with a lack of premeditation act suddenly and without thinking about consequences. Beyond this more differentiated assessment of impulsivity, an experimental manipulation of the state of impulsivity might be helpful to reveal causality of the moderator effect of impulsivity between emotions and risk behavior.

Additionally, other personality factors aside from impulsivity could have an impact on emotions and subsequent processes, too. For instance, persons could differ with regard to the amount they focus on arousal or on valence (Suri et al., 2012). This focus might change the impact of arousal and valence on subsequent risk behavior. Another aspect is openness and attention paid to feelings: The more open a person is to one's own feelings and the more attention is paid to them, the more the person is influenced by them (Ciarrochi & Forgas, 2000; Gasper & Clore, 2000).

Furthermore, De Martino et al. (2006) assumed that rationality might be important, too, because the modification of behavior after noticed emotional biases can lead to more appropriate behavior. This is easier for rational persons, because they have better and more precise representations of their own emotions and, therefore, their own emotional biases. Hence, they should be better at adjusting their behavior to a situation (mostly) independent from emotional biases. So, in this case, personality is also important for the relation between emotion and behavior.

Summing up, differences in personality can have an impact on the extent to which persons recognize their own emotions and the way the emotions influence other processes like decision making or adaptation of behavior. That is why it is important to further investigate the influences of different personality aspects on emotional processes.

#### *4.2.1 IMPULSIVITY IN FIELD AND LABORATORY: THE SOCIAL FACILITATION THEORY*

Impulsivity moderated the effect of emotional ratings on risk behavior in the field condition, but it had no effect when participants were tested in the laboratory. There are some points which differed between the two conditions. In the field, the participants were not alone but surrounded by other people (especially friends and the experimenter were sitting right next to the participants), it was noisy and they were possibly under time pressure because their friends

were waiting for them or because they had other appointments afterwards. Contrary, the experimenter in the laboratory condition explained the procedure to the participant and left the room, so that the participant was totally alone while doing the experiment. Additionally, it was very quiet and the participants planned to take part in the experiment, so they might have had less time pressure and maybe took more time to think about their answers in the tasks.

In the following, the social facilitation theory is presented, which may explain the different results concerning the effect of impulsivity in the field and laboratory condition. In this theory the impact of the presence of other persons on the performance is discussed, which was first described by Norman Triplett in his experiments in 1897, before the effect was attributed to general arousal by Robert Zajonc (Zajonc, 1965). General arousal is nonspecific and has no direction toward a certain object (Markus, 1978). It leads to better performance in well-learned and easy reactions and to worse performance both in new and difficult reactions and while learning new responses (Aronson, Wilson, & Akert, 2008; Schmitt, Gilovich, Goore, & Joseph, 1986; Zajonc, 1965). This effect of arousal can be explained via the dominant response, which has a higher probability to be shown than the subordinate response. In well-learned reactions, the dominant response is likely to be the correct response; whereas in new and difficult tasks, the dominant response is more often the false one (Cottrell, Wack, Sekerak, & Rittle, 1968; Schmitt et al., 1986; Zajonc, 1965).

These effects of the presence of other persons in performance appear to be very consistent at first glance (Aronson et al., 2008), but there are some studies, too, that did not find these effects (e.g., Cottrell et al., 1968; Manstead & Semin, 1980). This could be explained by the different possible sources of arousal (Aronson et al., 2008). Firstly, attention which is given to the other person could lead to more arousal because it might be necessary to react to something this person does (this explanation can be applied to experiments with animals, too). Secondly, arousal might arise due to a possible evaluation of oneself which is made by the other person. Thirdly, additional arousal might be necessary because one needs to pay attention to two things at once (this explanation is capable for non-social distraction, too). In the study by Cottrell et al. (1968), the mere presence did not lead to social facilitation, but the presence of spectators or co-actors, which are in the position to evaluate the performance, did lead to social facilitation. However, the results of other studies performed by Markus (1978) and Schmitt et al. (1986) suggest that the mere presence is sufficient for the social facilitation effect. Nevertheless, an additional evaluation might foster this effect of mere presence on performance (Markus, 1978; Schmitt et al., 1986). However, there are situations (e.g., stressful conditions) in which the presence of others may have the opposite effect, namely decrease the arousal level (Zajonc,

1965). What can be concluded is the circumstance that the presence of others can in some situations lead to more arousal which has an impact on performance (Manstead & Semin, 1980).

Although behaviors aside from performance are rarely investigated in the realm of the social facilitation theory (Thomas, Skitka, Christen, & Jurgena, 2002), there is evidence that social facilitation has also an effect on other reactions in the manner that it increases the probability of dominant responses (Aronson et al., 2008; Thomas et al., 2002). Lambert et al. (2003) showed that social facilitation has effects on stereotypes which they interpreted as a form of dominant responses. On the same lines, personality – and accordingly impulsivity – might be affected by social facilitation effects. This could be the explanation for the difference in the impulsivity effect in my study. Due to the presence of other persons and especially the experimenter in the field condition, the participants' arousal was increased and it might have intensified the effect of impulsivity, because impulsivity is a dominant response. Nevertheless, this effect of social facilitation on impulsivity has to be replicated. In particular, the detailed parameters which lead to this effect still have to be examined closely (according to the three possible sources of arousal), and the whole situation which increases the arousal might be even more complex than expected (Zajonc, 1965).

Lambert et al. (2003) also considered the loss of control as a possible explanation for the effect of the presence of other persons on the extent in which stereotypes are shown by the participants. They used double dissociation to show that the increase of stereotypes can be attributed to missing control. The accessibility of stereotypes in form of a dominant response was not affected by the situational context (which would be the explanation for this effect in terms of the social facilitation theory). On the other hand, race of the person who was present while the experiment affected the accessibility of stereotypes, but it had no effect on the control over the stereotypes. Therefore, loss of control should be tested as an explanation for the different effects of impulsivity in the field and laboratory condition, too, which can be done by double dissociation like in the Lambert et al. (2003) study.

In summary, there are different possible explanations for the difference of the impulsivity effect in the field and laboratory condition which should be investigated in future research. Additionally, further features might have an impact, too, like other aspects of the personality, the overall situation, and the task which is used in the experiment (Ciarrochi & Forgas, 2000). More studies are necessary to investigate the influence of pictures and the ratings of pictures on the emotional state and to differentiate effects as a function of features of the person. Additionally, beside the social facilitation effect, the effect of mere time pressure should be

researched to separate it from the social facilitation effect and the other possible influencing factors.

### 4.3 UNANSWERED QUESTIONS AND FUTURE DIRECTIONS

As stated before, there are some open questions which should be answered in future studies: Based on the results of my two experiments, the question whether emotional ratings act as immediate or anticipated emotions cannot be answered. Furthermore, it is not clear whether emotional ratings work like affective primes or are used as emotional information for subsequent behavior. Additionally, the relation of emotional ratings to concrete emotions should be studied and the processes underlying the presented effects have to be clarified to understand how explicit emotional ratings affect emotions. Concerning the moderator effect of impulsivity, experimental manipulation of the state might be helpful to understand the process in more detail instead of measuring the trait of impulsivity. In the realm of the social facilitation theory, more research is needed to replicate the effect of impulsivity. Moreover, other personality factors like openness or rationality should be included in the study of effects of emotions on behavior.

Beside the already mentioned points for which further research is needed, there are some more questions open to be answered. Moreover, there are limitations of the experiments which should be cleared in future studies and possible implementations of the presented effects are to be considered.

#### 4.3.1 FURTHER QUESTIONS AND LIMITATIONS

One point that could be questioned is the direction of causality. Is it the rating that causes the emotion or is it the emotion which causes both the rating and the risk behavior? This question might be answered via the criteria of the construct emotion and of the related construct mood. An emotion always needs an object to refer to and has only a brief duration, whereas mood does not need an object and extends over a greater amount of time (Otto, Euler, & Mandl, 2000). So it has to be the rating which influences the emotion, because without a changing object or a changing evaluation of an object, it would seem that no change in emotion can occur. Mood, on the other hand, does not change quickly enough to produce different ratings from one trial to another (where one trial lasts about five seconds).

Another potential influence could be from the investment in one trial on the rating in the next trial. But there was no significant effect that showed such an effect. However, it is possible that there is a third variable that influences both the rating and investment in one trial. Though, this third variable would have to be able to change from one trial to the next (that is within seconds). This possibility is to be researched in future studies.



Furthermore, the results of the two experiments presented above do not answer the question whether explicit emotional ratings have the same dimension of effect as other emotional stimuli. To know the relative effect of emotional ratings in comparison to other emotional stimuli, they have to be studied and compared in the same experiment.

Additionally to the already mentioned limitations, some participants in the field condition said in an informal interview after the experiment that they assumed a connection between their rating and the outcome of the gambling, although they were told that both experiments were independent and that the likelihood of winning was 50% in each trial, which was the truth. To overcome this problem, a pencil-and-paper version of the experiment could be conducted to assure the participants that there is no connection between both tasks.

Considering that both experiments were conducted via computer, the findings cannot be easily generalized to real gambling or other risk behavior (e.g., risky driving, health behavior, or substance use). A next step could be an experiment in which participants have the opportunity to win and lose real money. The results of such an experiment could be generalized to a broader field of situations aside from the laboratory context. And additional studies should investigate the impact of emotional ratings on other risk and non-risk behavior.

Finally, one of the most important questions to ask with respect to emotions and cognitions may be the difference of the two concepts. According to Cunningham and Kirkland (2012), it could be helpful for an understanding of the influences of emotion and cognition on each other to think of emotions as labels for cognitive processes that refer to valence or evaluation, which are typically thought of as emotions. Therefore, emotions might not be different from cognition but one form of cognition. With this approach it could be possible to get a new understanding of the interaction of emotion and cognition. As emotions do not solely influence decision making but other cognitive processes like interpretation, judgment, and reasoning, too (Blanchette & Richards, 2010), this approach might be helpful to investigate these complex processes as well.

In summary, the two experiments presented here were the first to systematically investigate explicit emotional ratings as a new way of affect manipulation. More studies are needed to replicate and strengthen the findings of these experiments.

#### *4.3.2 IMPLEMENTATIONS*

Possible implementations based on the presented effects of explicit emotional ratings as method for affect manipulation may be given in psychopathology and the treatment of mental disorders. For example, one important facet of depression is the establishment of negative cognitive schemata, which induce negative thoughts and, at the same time, are maintained by these negative thoughts (Hautzinger & de Jong-Meyer, 2003). By interrupting this negative

spiral using positive explicit emotional ratings in combination with other interventions could help patients to feel better and have new opportunities to regain their life satisfaction. And the moderator effect of impulsivity, too, can find implementation in the clinical part of psychology, because impulsivity is an important factor in different mental illnesses like impulse-control disorders, borderline and antisocial personality disorders, mania, and dementia, only to name a few (Whiteside & Lynam, 2001).

Summing up, this could be the start of an interesting line of research with consequences for fundamental research and implementation in clinical psychology.

#### 4.4 CONCLUSION

In this study, the effect of explicit emotional ratings on subsequent risk behavior was investigated in the field and in a laboratory. I was able to show that explicit emotional ratings have an impact on risk behavior. This impact is comparable to the impact of other affect manipulations like video clips, pictures, and sounds. Furthermore, this effect is moderated by impulsivity for participants tested in the field in the way that persons with higher impulsivity show a higher relation between emotional ratings and risk behavior than persons with lower impulsivity. These findings indicate that explicit emotional ratings could be used as a new way of affect manipulation in future research.

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## APPENDIX

### SKALA IMPULSIVES-VERHALTEN-8 (I-8): GERMAN VERSION

(Kovaleva et al., 2012)

	trifft gar nicht zu	trifft wenig zu	trifft etwas zu	trifft ziemlich zu	trifft voll und ganz zu
(1) Manchmal tue ich spontan Dinge, die ich besser nicht getan hätte.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(2) Um mich besser zu fühlen, mache ich manchmal Sachen, die ich später bereue.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(3) Ich denke normalerweise genau nach, bevor ich etwas unternehme.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(4) Ich entscheide meist nach sorgfältigem und logischem Überlegen.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(5) Was ich begonnen habe, führe ich auch zu Ende.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(6) Ich teile meine Zeit gut ein, so dass ich Aufgaben rechtzeitig erledigen kann.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(7) Ich bin bereit Risiken einzugehen.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(8) Ich bin gerne bereit, etwas zu wagen.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

### SKALA IMPULSIVES-VERHALTEN-8 (I-8): ENGLISH VERSION

(Kovaleva et al., 2012)

	Doesn't apply at all	Applies a bit	Applies somewhat	Applies mostly	Applies completely
(1) Sometimes I do things impulsively that I shouldn't do.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(2) I sometimes do things to cheer myself up that I later regret.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(3) I usually think carefully before I act.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(4) I usually consider things carefully and logically before I make up my mind.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(5) I always bring to an end what I have started.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(6) I plan my schedule so that I get everything done on time.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(7) I am willing to take risks.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
(8) I am happy to take chances.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

# EIGENSTÄNDIGKEITSERKLÄRUNG

Hiermit erkläre ich, dass die vorliegende Masterarbeit

- eigenständig und nur unter Verwendung der angegebenen Hilfsmittel und Quellen angefertigt wurde;
- erstmalig zu diesem Studienggebiet eingereicht wird;
- unter Beachtung und Kenntnis der Prüfungsordnung (Amtliches Mitteilungsblatt der HU Berlin Nr. 38/2012) erstellt wurde.

22.01.2014   
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Datum und Unterschrift Studentin