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As emotions could best be expressed in mother tongue, the following section of this dissertation will – in contrast to the rest of this dissertation's umbrella – be written in (high) German:

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2 Preface

The core of this dissertation are three publications which are already published or under review in international and peer-reviewed scientific journals. As a consequence, this umbrella is in some parts similar to the content of the publications. However, especially in the theoretical and empirical framework as well as in the general discussion, this umbrella is more detailed than the information provided in the publications, whereas the main studies themselves are described more precisely in the publications than in this umbrella. For reasons of readability, a summary of the publications is part of this dissertation's main text (chapter 4), while the publications themselves (except the references which are embedded in the literature of the main text) can be found in the Appendix.

The following publications have been submitted for this cumulative dissertation:

- Seiler, K., Schweizer, G., & Seiler, R. (2018). Do the effects of nonverbal behaviour on team outcome confidence in team sports depend on the availability of additional performance information? *Psychology of Sport and Exercise*, 36, 29-40. doi:10.1016/j.psychsport.2017.12.007
- Seiler, K., Schweizer, G., & Seiler, R. (2018). *Influences of stereotypes on the relation between nonverbal behavior and team confidence in soccer*. Unpublished manuscript.
- Seiler, K., Schweizer, G., & Seiler, R. (2018). *Influences of nonverbal behaviour on outcome expectations and performance variables in a real-world football penalty scenario*. Unpublished manuscript.

3 Abstract

The aim of this dissertation was to investigate the interpersonal effects of nonverbal behaviour (NVB), i. e., dominance and submissiveness, in the sports performance setting. More precisely, the focus of this dissertation was to figure out how strongly NVB influences team outcome confidence, outcome expectations and objective performance among perceivers (teammates and opponents) both in laboratory settings and in the field.

Previous experimental, laboratory research had consistently shown large effects sizes for the influence of NVB on several subjective outcome variables such as efficacy beliefs and ratings of a player's quality. However, in these studies, only NVB as factor influencing the person perception process had been integrated although person perception theories assume more than one factor to be relevant during the person perception process. Consequently, in a threepart and a twopart experimental, laboratory study, it was tested whether the influence of NVB remains large when additional performance-related information as another factor influencing the person perception process was available. Further, research so far had exclusively been conducted in laboratory settings in which only subjective ratings but no objective behavioural outcomes were assessed. Therefore, a real-world football penalty shootout was established in which penalty takers had to rate their outcome expectations and the goalkeepers' capabilities when shooting against a dominant and a submissive goalkeeper, but also the penalty takers' objective performance, as well as the accuracy and speed of the penalties were measured. Previous to these main studies, an explorative questionnaire study had been conducted examining whether athletes exerting team sports rate NVB and its influence on teammates and opponents to be relevant in team sports.

The results of the explorative questionnaire indicated that athletes strongly perceive NVB during games and rate the influence of NVB on teammates and opponents to be high. Concerning the experimental, laboratory studies, the results showed that the effect sizes for the NVB-effect remain large, independent of whether performance-related information is externally provided or internally available through the activation of gender stereotypes on the football abilities of women and men. Regarding the results of the penalty shootout, the results were partly in line with previous laboratory research as dominant goalkeepers were perceived as more capable than submissive goalkeepers but no significant results were found concerning the influence of NVB on outcome expectations and performance. This dissertation's results advance the understanding on the importance of NVB in the sports performance setting and allow a deeper insight in the transferability of laboratory results to the field. Further research is needed focusing on the influence of NVB on performance during sports competitions and on factors influencing the effects of NVB, such as personality characteristics or situational constraints. From a practical perspective, the results of this dissertation could be useful to implement training programs fostering athletes' self-presentation techniques and to enhance coaches' and staffs' awareness for the importance of NVB in (talent) selection processes.

4 Introduction

„Neben den beiden Punkten ist der Albiceleste (...) auch viel Zuversicht verloren gegangen. Das war die Botschaft, die Messis Körpersprache in die Welt sendete“ [“Besides the two points, the Albiceleste (...) has lost lots of confidence. This was the message, Messi sent to the world”] (Theweleit, 2018).

„Kein Aufbäumen, keine Aggressivität, eine desaströse Körpersprache“ [“No rearing up, no aggressivity, a disastrous body language”] (RTL, 2018).

Mario Basler: „Dem seine [Mesut Özils] Körpersprache ist die eines toten Frosches“ [“His body language resembles a dead frog”] (Brügelmann, 2018).

„Besonders erschreckend wirkte im Stadion die Körpersprache einiger hoch dekorierte Spieler“ [“In the stadium, especially frightening appeared the body language of some highly decorated players”] (Reiss, 2018).

These quotes in the media during the World Championships (WC) in football in 2018 are only a few of several statements during the WC 2018 and in the sports setting in general which pay highly attention on body language itself and on its consequences for upcoming competitions. Thus, body language respective nonverbal behaviour (NVB) seems to be of high relevance in the sports performance setting as it is recognized by observers and interpreted as an indicator of actual (team) performance. Consequently, NVB seems to exert a strong influence on observers. This importance of NVB as communication tool is supported by studies revealing that between 65 and 95% of information is transported through nonverbal channels (Matsumoto, Frank, & Hwang, 2013, for a review). Especially in the competitive sports setting, in which verbal communication is often rarely possible, communication through nonverbal channels is highly relevant (Moesch, Kenttä, Bäckström, & Mattson, 2015).

While research on nonverbal, emotional expressions in other disciplines than sport psychology has started with Darwin's pioneering work *The Expression of the Emotions in Man and Animals* in 1872 and has since then gained more and more research interest, it was not before the early 2000ers that the role of NVB in the sports setting caught researchers' attention. Since then, several studies have consistently shown that NVB strongly influences impressions, emotions, and efficacy beliefs among perceivers, and, as a consequence, might have an impact on performance (Buscombe, Greenlees, Holder, Thelwell, & Rimmer, 2006; Fransen, Vanbeselaere, de Cuyper, vande Broek, & Boen, 2015; Fransen et al., 2012; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtko, & Memmert, 2012; Furley, Moll, & Memmert, 2015; Furley, & Schweizer, 2014; Greenlees, Bradley, Holder, & Thelwell, 2005; Greenlees, Buscombe, Thelwell, Holder, & Rimmer, 2005; Jones, & Harwood, 2008; Manley, Greenlees, Graydon, Thelwell, Filby, & Smith, 2008; Moesch, & Apitzsch, 2012; Ronglan, 2007).

However, research so far has first neglected to consider further factors besides NVB which might be relevant during the person perception process and thus, might also have an influence on perception, according to person perception theories (Freeman & Ambady, 2011; Kunda, & Thagard, 1996; Warr, & Knapper, 1968). Second, these

studies were exclusively conducted in artificial, laboratory settings and only subjective outcome variables were assessed. Thus, it was the aim of this dissertation to test in a first step whether the influence of NVB remains large when besides NVB other performance-related information influencing the person perception process is available. The focus of the second step was to examine whether the effects of NVB could not only be found in a laboratory setting but also be transferred to a real-world scenario in which both subjective ratings and objective behavioural outcomes of NVB are measured.

In the following, first, the theoretical and empirical framework of NVB and person perception with focus on the sports setting will be described. Based on the reviewed literature, deficits of existing research will be addressed and the dissertation's research questions will be derived. Afterwards, this dissertation's research, thus, the studies leading to the three scientific publications as well as one exploratory study, will be summarized and embedded in the dissertation's general framework. Finally, the results of the empirical part will be discussed and an outlook for future research will be given.

5 Theoretical and Empirical Framework

The following chapter gives an overview on the relevant literature in the research areas of NVB and person perception with focus on the sports performance setting. After defining NVB, relevant theories on NVB and person perception will be outlined before describing empirical studies on NVB in the sports performance setting.

5.1 Definition and general framework of NVB

Nonverbal communication can be defined as any form of communication of information that is not transported through words (Riggio, & Riggio, 2012). It includes visual cues, e. g., facial expressions of emotions, eye gaze and eye movements, movements of the head and the body, gestures, posture, and gait, as well as auditory nonverbal cues such as tone and speed of voice, touch, and proxemics. These nonverbal cues from different sensory organs can occur simultaneously (Riggio, & Riggio, 2012). Importantly, nonverbal communication also encompasses nonverbal cues such as olfactory cues, hairstyle, facial hair, use of cosmetics, clothing, and general attractiveness, but these aspects are no nonverbal behaviours in the narrow sense (Hess, 2016). Moreover, NVB can occur unconsciously, spontaneously and automatically, and then mainly transports internal states, as supposed by Darwin's (1872) original evolutionary perspective on NVB. However, referring to more recent research (see DePaulo, 1992; Matsumoto et al., 2013), it can also be intentional and conscious, meaning that humans are able to explicitly control or "fake" their NVB to represent themselves in a particular way. One example for such a deliberately controlled and explicitly expressed form of NVB is the "thumbs-up" gesture as a clear indicator of success (Moesch, Kenttä, Bäckström, et al., 2015; Moesch, Kenttä, Bäckström, & Mattsson, 2016), whereas standing expansive or not (Furley, & Schweizer, 2013, 2016b) is an example for the unintentional and automatic expression of success and failure. Focusing on the unintentional expression of NVB as it is also the scope of this dissertation, typical forms of unintentional nonverbal expressions of emotions are pride and shame, and dominance and submissiveness. Evolutionary rooted and based on Ekman's (1992, 2016) basic emotions approach, prototypical and probably culturally independent expressions for these above mentioned expressions exist and studies suggest that they both serve as status signals (Tracy, & Robins, 2007; Mehta, Jones, & Josephs, 2008). More precisely, similar to our primates, who used dominance and pride to show superiority when winning a fight, and contrarily submissiveness and shame after losing a fight, pride and dominance are nowadays still interpreted as signs of high status whereas shame and submissiveness are signs of low status (Tracy, & Matsumoto, 2008; in the sports setting: Furley, & Schweizer, 2013, 2016a:).

Of particular relevance for this dissertation, typical displays of dominance involve (i) walking and standing with an erect posture (shoulders back and chest out), (ii) spreading the limbs from the torso to occupy more space, and (iii) holding the head up (chin parallel to the ground) so that the eyes directly look to the front for prolonged

periods of time. Following Darwin's (1872) antithesis-approach, submissive NVB consists nearly of the opposite behaviour and includes adopting a slouched posture with (i) the head and chin pointing down and shoulders hanging to the front, (ii) limbs touching the torso to minimize the occupied space, and (iii) eyes looking down or briefly glancing to the front (Weinberg, 1988). These displays of NVB are commonly applied as instructions to manipulate dominant and submissive NVB in experimental studies in the sports setting (e. g., Furley, & Dicks, 2012; Greenlees, Bradley, et al., 2005). Typical expressions of pride and shame (Tracy, & Robins, 2007) are similar to those of dominance and submissiveness.

Regarding intentional forms of NVB, coding systems have been developed to categorize nonverbal expressions which occur during (sports) competitions, such as the Handball Post-Shot Behaviour Coding Scheme (H-PSB-CS; Moesch, Kenttä, & Mattson, 2015) to identify specific gestures and touch behaviours, or the Facial Action Coding System (FACS; Ekman, & Friesen, 1978) as a sport-unspecific coding schema. Referring to the H-PSB-CS (Moesch, Kenttä, & Mattson, 2015) as a possibility to measure intentionally displayed NVB, this schema allows the assessment of six post-shot behaviours involving gestures (one fist down, two fists down, one fist up, two fists up, thumbs up, clapping hands) and five post-shot behaviours involving touch (low five, high five, high ten, touch shoulders, double touch) in a naturalistic setting.

Finally, with regard to the question which cues are most important when NVB is interpreted, studies show that for the identification of nonverbal expressions like pride and shame or dominance and submissiveness, it is sufficient to only see facial or body movements, thus, not both kinds of cues are needed (Mertens, Tracy, & Shariff, 2012; with regard to the sports context: Furley, & Schweizer, 2016a).

5.2 Theories on NVB and person perception

Subsequently, theories are described which help to understand the functioning of NVB in the sports setting. NVB can generally have several functions, such as message processing and comprehension, regulation of interaction or of physical states, relational communication, emotional expression, and social influence (Baesler, & Burgoon, 1987). Thus, as NVB does not necessarily express emotions (Fridlund, 1994), several approaches might explain the functions of NVB differently. In the following, the focus is on those theories which relate to NVB as a tool to nonverbally communicate emotional expressions as this function seems to be most important in the sports setting (Moesch, Kenttä, Backström, et al., 2015) in which emotions are primarily communicated through nonverbal cues (Riggio, & Riggio, 2012). Thus, this function is also of particular importance for this dissertation's studies which are all conducted in the sports setting.

5.2.1 Evolutionary perspective on NVB

Darwin's (1872) work *On the Expression of Emotions in Man and Animals* has been the starting point for the research on NVB. In this book, he states that the nonverbal expression of emotions has two functions: First, it enables the organism to internally prepare to respond adaptively to incoming (threatening) stimuli, and second, it is used to communicate critical social information. The basic emotions approach (Ekman, 1992) builds the second important base for the NVB research as, similarly to Darwin, Ekman assumes that some basic emotions, and thus, some forms of NVB such as facial expressions, are innate and universally expressed. However, Ekman extends Darwin's approach by arguing that the two functions did probably not exist in parallel, but that early on in evolution, emotional expressions had predominantly an adaptive function and then evolved to serve communicative functions.

Shariff and Tracy's (2011) two-stage model of emotional expression builds on those two initial works and suggests that in the first stage or the *adaptation* stage, emotional expressions had a physiological function, serving as an internal physiological preparation to respond adaptively to incoming stimuli. Later in evolution, emotional expressions evolved to serve as a communication tool, Shariff and Tracy (2011) call it the *exaptation* stage. Consequently, emotional expressions transformed from being physiological reactions towards the nonverbal communication of social intentions. This *ritualization* process lead both to an exaggerated display of nonverbal expressions so that they are distinctive and have the capacity to function as effective signals, and to the universal human capacity to recognize and reliably interpret emotional expressions. This sensitivity to nonverbal cues is essential for the survival of all species living in groups, because ignoring them can cause threats or can lead to non-recognized opportunities.

Other approaches explain the function of nonverbal expressions in a different way (see Parkinson, 2005, for a review). One that has received much attention in recent research is Barrett's account (2011). She claims against the existence of innate emotional patterns but for a more nuanced understanding of the function of emotional expressions. According to this approach, what has evolved is not the contingency between internal mental states (e. g. fear) and facial expressions (e. g. a startled wide-eye expression) transporting emotional information to others (e. g. danger) but "the use of emotion words to structure the perception of emotion in faces (and other body parts)" (Barrett, 2011, p. 403). Thus, nonverbal expressions might not transport emotions but communicate social motives (Fridlund, 1994). As a consequence, nonverbal expressions are correctly interpreted because of the ability to identify a symbol that evolved over times but not because an innate signal is recognized (Barrett, 2011).

Mixed evidence can be found regarding these contradictory attitudes, supporting on the one hand the innate emotional patterns-approach and demonstrating that specific emotional suites are universally recognizable (Tracy, & Matsumoto, 2008). On the other hand, neurophysiological experiments reveal no contingency between

emotions and facial expressions neither in children nor in adults (Cacioppo, Bernston, Larsen, Poehlmann, & Ito, 2000; Russell, Bachorowski, & Fernandez-Dols, 2003). Importantly, concerning this dissertations' research, both accounts make similar predictions as they propose that NVB contains social information, and thus, is used to exchange social information, independent of whether the nonverbal reaction is expressed through internal, innate patterns (Darwin, 1872; Ekman, 1992; Shariff & Tracy, 2011) or to serve social motives (Barrett, 2011; Fridlund, 1994). As empirical evidence further supports this social aspect of NVB by pointing out interpersonal effects of NVB, e. g., effects on emotions, cognitions, and behaviour (Matsumoto et al., 2013), this aspect will not be discussed more detailed.

5.2.2 *The emotions as social information model*

The fact that nonverbal expressions transport social information is also one crucial message in van Kleefs *Information as Social Information-model (EASI-model*; van Kleef, 2009) that originates in a social-functional perspective on emotion (Frijda, 1986; Parkinson, 1996). This model highlights a recent perspective on emotions by pointing out that emotions do not only have *intrapersonal* effects, e. g., affecting one's own cognitions, motivations and behaviour, but to have an *interpersonal* influence (Forgas, 1995). According to this model, two processes influence observers' perceptions of emotional expressions: inferential processes and affective reactions. Inferential processes explain how observers use emotional expressions to draw inferences about an expresser's feelings, attitudes and behavioural intentions. These inferences in turn influence the behaviour of the observer. Further, observing emotional expressions can elicit affective reactions within the observer. Emotions can spread either directly through emotional contagion (Hatfield, Cacioppo, & Rapson, 1994) or through the formation of impressions and social intentions that align with the emotional expressions. These affective reactions in turn again influence the observer's behaviour. For example, observing a dominant athlete leads to the inference that this athlete has won an important match and this inferential process provokes affective reactions such as intimidation. Additionally, the model assumes that the direction in which the observer's behaviour is influenced is determined by social-relational factors, i. e., whether the context of a situation is competitive or cooperative. This is of high relevance for the sports performance setting as competitive situations and cooperative situations change fast or can occur simultaneously, for example when being on the one hand a teammate, but on the other hand being confronted with the opponent team. Due to its emphasis on the influence of NVB not only on perceivers' cognitions but also on behaviour as one outcome variable in this dissertation's studies, this model is highly relevant.

5.2.3 *Emotional contagion*

Some studies (see table 1, for an overview, chap. 5.3.2.2) refer to emotional contagion respective Psychological Momentum (PM) as a theoretical framework to explain the interpersonal effects of NVB as watching nonverbal emotional expressions might elicit similar emotions among teammates. Additionally, also the EASI-model suggests that emotions can be transported from one person to another by the process of emotional contagion. Emotional contagion can be defined as “(...) tendency to automatically mimic and synchronize facial expressions, vocalizations, postures and movements with those of another person and consequently, to converge emotionally” (Hatfield et al., 1994, p.153-154). Thus, perceivers tend to automatically imitate emotional states, and this imitation influences the own emotions through the process of body feedback. Emotional contagion seems to happen quite often in (working) groups (Barsade, 2002), and is associated with the development of positive or negative PM in teams (Moesch, & Apitzsch, 2012) which in turn is associated with NVB (Adler, & Adler, 1978). Consequently, the process of emotional contagion might be one explanation for the interpersonal effects of NVB. This idea is supported by the research on PM which has shown that affective responses fostering PM are often nonverbally expressed (e. g., Jones, & Harwood, 2008; Moesch, & Apitzsch, 2012).

5.2.4 *Theories on impression formation and person perception*

Several theories on person perception describe how different perceptual cues are integrated to form first impressions of others, and subsequently, how these impressions affect cognitions, emotions, and behaviour (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968). These theories support the evolutionary perspective that the human ability to perceive and interpret nonverbal cues is of high ecological utility because it allows an adaptive behaviour in social encounters. Importantly, in contrast to the above mentioned theories, these theories do not focus primarily on nonverbal, emotional expressions as factors influencing the person perception process but emphasize that in social interactions, other perceptual cues besides NVB influence impression formation and subsequent interpersonal outcomes.

Schematic model of person perception (Warr, & Knapper, 1968)

The authors suggest three sources being relevant to form an impression of a target person. Stored stimulus person information (i. e., memories about a player's competencies), present stimulus person information (i. e., NVB), and present context information (e. g., observing sports clothes in a gym or in a job interview). As consequences of the person perception process, Warr and Knapper (1968) propose three interdependent responses: Affective (i. e., emotions such as fear elicited by a very aggressive player), attributive (i. e., judgements about the quality of a player resulted from the former interaction), and expectancy responses. Thus, information that is received during a social interaction is used to form expectancies about the progress of the interaction, e. g., confidence in the team's performance. The sources of information, the consequences of the interaction, the input selector and the processing

centre in which information is integrated and evaluated are all influenced by the current motivational state and constitute the overall person perception process.

Continuum model of impression formation (Fiske, & Neuberg, 1990)

This model distinguishes between category-based or schema-driven top-down and attribute-based or data-driven bottom-up processes when forming an impression of a person. It states that different informational cues such as physical features (e. g., skin colour, clothing, other nonverbal expression), written category labels (e. g., age, sex, social class), and further information characterizing a person differently contribute to the perception process. More precisely, people automatically use cues that are immediately accessible in a social encounter to categorize a person and, built on this information, a mental *person schema*, such as the schema of a good penalty taker, is activated. After this initial, schema-driven, categorization often through physical features such as NVB, category-related cognitions are formed, at least if the target seems to be of personal relevance, and, if enough attentional resources are available. Attention is then drawn to attribute-based, more individuated target attributes such as personal characteristics. Dependent on the consistency of different available information, thus, dependent on the degree with which the attribute-based perception process matches with the initial schema-driven categorization, several re-categorisation processes are initiated until an overall evaluation is produced. Consequently, if schema-based information is consistent enough, it is possible that the perception process is stopped before attribute-based information is proceeded. As in the other models described above, it is hypothesized that this categorization process elicits several cognitive, affective and behavioural outcomes within the perceiver.

Dynamic interactive theory of person construal (Freeman, & Ambady, 2011)

This theory is the most recent of the theories on person perception and combines traditional research on social cognition which mostly focuses on high-level cognitive processes, and research on person construal which is more characterized by understanding lower-level perceptual processes. While the continuum model of impression formation assumes a hierarchy of the person perception process, Freeman and Ambady (2011) suggest that higher-level cognitive states (so-called top-down processes) and lower-level perceptual processing (so-called bottom-up processes) dynamically interact during the perception process. Top-down processes (such as experiences, knowledge, or stereotype activation) and bottom-up processes (including sensory information received from face, body, and voice cues) stimulate each other and together form the person perception process. In contrast to Fiske and Neuberg (1990), Freeman and Ambady (2011) make no definite assumption whether one process is initiated before the other one as they suggest that the different informational nodes are mutually activated.

Summarizing the theories on impression formation and person perception, it can be concluded that all these models have in common three aspects: First, NVB is an

important cue which is early perceived in social interactions and which can activate a certain *person schema*. Second, not only NVB but also other perceptual cues are integrated in the perception process and thus, influence impressions, cognitions, emotions, and behaviour (Kunda, & Thagard, 1996). Third, according to Kunda and Thagard (1996), the different perceptual cues which are differently labelled in the respective theories, can generally be classified into stereotypes (social categories such as gender, age, race, and profession), thus internal information, and individuating information (e. g., behaviour, personality, and family circumstances). Importantly, concerning this dissertation's research, all these theories predict that besides NVB, further informational cues – might them be internal or external – influence the person perception process.

5.3 Research on NVB in the sports setting

Research on NVB in the sports performance setting provides support for the effects of NVB on perceivers' emotions and perceptions. Following Furley and Schweizer's (in press) classification, the studies can be categorized as dealing either with NVB as a predictor or a consequence of sports performance. The following review on research on NVB in the sports setting picks up this proposition, but expands it by splitting the category of NVB as a predictor of performance in two categories, namely NVB as a predictor of subjective outcome variables and NVB as a predictor of objective outcome variables. This categorization helps to clarify that much more evidence exists with regard to NVB as a predictor of subjective outcome variables than to NVB as a predictor of objective outcome variables. Table 1 (chap. 5.3.2.2) gives an overview on the research on NVB in the sports setting by using the NVB as predictor-versus as consequence-classification, but by further categorizing the studies according to their theoretical background, their methodological approach, the stimulus material used, the sports in which they were conducted and to the form of NVB. The studies' results are explicitly not integrated in this overview as the most important result of all these studies is that NVB is highly relevant in the sports performance setting, and that a strong association exists between NVB and perceivers' impressions, cognitions, emotions, and behaviour.

5.3.1 NVB as a consequence of sports performance

In accordance with evolutionary accounts on NVB, the previous research suggests that perceivers have the ability to recognize and interpret NVB during sports events and to draw conclusions about whether an athlete is winning or losing, solely based on nonverbal cues (Furley, & Schweizer, 2013; 2016a). Thus, Furley and Schweizer (2013) examining the evolutionary background of nonverbal expressions demonstrated that not only among primates but also in the sports setting, nonverbal expressions are used to communicate winning or losing in a competition and that these nonverbal signals of leading and trailing athletes influence cognitions within observers. Based on these findings, Furley and Schweizer (2016a) used the *thin slices*-approach (i. e., presenting short displays of NVB; Weisbuch, & Ambady, 2010) to

figure out how much and which kind (body- vs. head-related) of information observers need to identify athletes as leading or trailing. The results suggested that perceivers need only very little information that is briefly presented (500 ms are sufficient) to discriminate between leading and trailing athletes. Further, no differences in the ratings were found depending on whether perceivers saw only head-related, only body-related, or head- and body-related cues. From a methodological perspective, these studies are conducted in a laboratory setting using naturalistic video material from real sports competitions in different kinds of sports and levels. In these studies, obvious gestures of winning or losing such as the thumbs-up gesture, high fiving and raising the fist, are excluded to measure whether participants are able to perceive and interpret mainly unintentional NVB. In other studies (Moesch, Kenttä, Backström, et al., 2015; Moesch et al., 2016), these obvious indicators of win and loss are the main focus. Using the H-PSB-CS (Moesch, Kenttä, & Mattson, 2015), handball matches were systematically observed to examine the association between scoring and touch and gesture behaviours. Moesch, Kenttä, Backström, et al. (2015) demonstrated that both touch and gestures are regularly expressed as a reaction to scoring, and that winning compared to losing teams tend to show these behaviours in a more stable way, thus independent of the time-point or the score in the match. Additionally, Moesch et al. (2016) in the first part of their analysis revealed that performance preceding the period in which the NVB was measured predicts the amount of gestures in the following period of the game in a way that the better the team performed in the preceding period, the more gestures after scoring could be observed.

5.3.2 NVB as a predictor of sports performance

The category of NVB as a predictor of performance can be divided in two categories, namely NVB as a predictor of subjective outcome variables and NVB as a predictor of objective outcome variables.

5.3.2.1 NVB as a predictor of subjective outcome variables

With regard to NVB as a predictor of subjective outcome variables, several studies in the sports setting have assessed the effects of NVB on subjective outcome variables such as perceivers' impressions of a player's quality, and on perceivers' emotions, as well as on outcome expectations, efficacy beliefs and (team) confidence (Buscombe et al., 2006; Fransen, Vanbeselaere, et al., 2015; Fransen et al., 2012; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtkke, et al., 2012; Furley et al., 2015; Furley, & Schweizer, 2014; Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005; Jones, & Harwood, 2008; Manley et al., 2008; Moesch, & Aпитзsch, 2012; Ronglan, 2007). Referring to the latter mentioned outcome variables, several studies have revealed a positive relationship between efficacy beliefs, outcome expectations respective (team) confidence and the team's functioning (see Fransen, Mertens, Feltz, & Boen, 2017, for a review) or actual performance (in the laboratory: Bray, 2004; Greenlees, Nunn, Graydon, & Maynard,

1999; in field studies: Feltz, & Lirgg, 1998; Fransen, Decroos, et al., 2015; Myers, Feltz, & Short, 2004; Myers, Payment, & Feltz, 2004).

While these studies on NVB as a predictor of subjective outcome variables differ with regard to their theoretical and methodological approach (see table 1, for an overview, chap. 5.3.2.2), they all have in common that they reveal NVB as an important factor influencing the related outcome variables.

Experimental Studies

In these studies, different forms of NVB, i. e., dominant vs. submissive NVB (Furley, Dicks, & Memmert, 2012), pride vs. shame (Furley et al., 2015), gaze behaviour (Furley, Dicks, Stendtkke, et al., 2012; Greenlees, Leyland, Thelwell, & Filby, 2008), or hastening vs. hiding behaviour (Furley, Dicks, Stendtkke, et al., 2012) as a manipulation of NVB specific for penalty shootouts, are artificially manipulated (except Furley & Schweizer, 2014, who used naturalistic stimulus material). More precisely, video clips are presented to the participants who are instructed to rate the NVB on the respective outcome variables, from a teammate's and/ or an opponent's perspective. To gather as much experimental control as possible, some of these studies use the point light technique (Johansson, 1973) as it allows to keep constant surface features, e. g., clothing or some facial features, and consequently, to solely manipulate nonverbal cues.

Building up on theories on person perception and impression formation (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968), as well as on the EASI-model (van Kleef, 2007), these studies assess interpersonal effects of NVB in different kind of team sports. More precisely, NVB was shown to affect perceptions of a target player on dimensions such as assertiveness, focus, and competitiveness, expected quality and speed of a baseball shot, as well as expectancies of success (Furley, & Dicks, 2012; Greenlees, Bradley, et al., 2005), and confidence in winning (Furley, & Schweizer, 2014). Accordingly, in an artificial penalty shootout, penalty takers showing hastening behaviour were perceived as more negatively, and goalkeepers expected penalties of lower quality and less accuracy when being confronted with a hastening penalty taker (Furley, Dicks, Stendtkke, et al., 2012). Further, in an artificial tennis warm-up phase, players displaying dominant NVB were perceived as more positively than players showing negative NVB (Buscombe et al., 2006), and NVB seems to influence both episodic and dispositional judgements of the opponent (Greenlees, Buscombe, et al., 2005; Greenlees, Bradley, et al., 2005).

Of particular relevance for this dissertation are two studies in this context. First, a study from Furley and colleagues (2015) investigated the interpersonal effects of NVB from both the teammate's and the opponent's perspective in an artificial football penalty shootout. The authors demonstrated that pride and shame as nonverbal emotional expressions influence observers' perceptions of athletes in a way that within teammates, pride enhances positive emotions, cognitions and outcome expectancies, whereas shame fosters negative emotions and cognitions, and reduces expectancy of success beliefs. Contrarily, as an opposing goalkeeper observing a pen-

alty taker who shows expressions of pride, goalkeepers have lower individual performance expectations and expect a penalty of higher quality compared to a penalty taker displaying neutral NVB or expressions of shame. Further, from the goalkeeper's perspective, penalty takers expressing shame elicit more positive emotions and higher individual performance expectations among goalkeepers compared to takers expressing neutral NVB or expressions of pride. Second, Furley, Dicks, and Memmert (2012) manipulating dominance and submissiveness differentiated precisely between different subjective outcome variables in an artificial football penalty shootout. Results demonstrated that goalkeepers perceive a penalty taker showing dominant NVB as more positively, i. e., more focused and more assertive, compared to a submissive penalty taker. Moreover, against a submissive penalty taker, goalkeepers have a higher confidence in saving the ball and expect less powerful shots than against a dominant penalty taker.

Importantly, all these experimental studies have in common that they reveal large effect sizes for the influence of NVB but that they only integrate NVB as factor influencing the person perception process although person perception theories assume more than one factor to be integrated in the person perception process.

Non-experimental studies. According to mainly qualitative studies which are conducted in naturalistic settings in different kind of sports, NVB seems to be one important source of team confidence (Fransen, Vanbeselaere, et al., 2015; Fransen et al., 2012; Manley et al., 2008; Moesch, & Apitzsch, 2012; Ronglan, 2007). First, results from Fransen, Vanbeselaere, et al. (2015) indicated that especially negative communication and expression as well as negative NVB expressed by trainers or athletes seems to hinder the development of team confidence. These factors might be even more important for reduced team confidence than the fact that a team was trailing. Second, Fransen et al. (2012) revealed that not only negative body language but also positive emotional actions are more important for collective efficacy than the actual score. Third, Ronglan (2007) in a participative observational study showed that cheering by teammates and the coach from the bench enhances collective efficacy. Fourth, among 31 informational cues, body language was one of the most important cues athletes used to form an impression of a coach (Manley et al., 2008). Fifth, NVB seems to trigger PM, in a way that positive NVB within the team and negative NVB among opponents (Jones, & Harwood, 2008) enhances positive PM among teammates while negative emotional reactions within the team trigger negative PM among teammates (Moesch, & Apitzsch, 2012).

5.3.2.2 NVB as a predictor of objective outcome variables

While several studies exist on subjective outcomes of NVB only few studies directly measure associations between NVB and objective outcome variables. Moesch et al. (2016) showed in the second part of their analysis that when athletes demonstrate many touch behaviours after scoring in periods of good team performance and only few touch behaviours in periods of bad team performance, team performance in a subsequent period of time tends to be better. These results are in line with results

from the study by Kraus, Huang, and Keltner (2010) who demonstrated a positive association between touch behaviour in the beginning of the season and performance at the end of the season. Additionally, Moll, Jordet, and Pepping (2010) examined nonverbal expressions (celebratory responses) during penalty shootouts in the European and World Championships between 1972 and 2008. Showing post-shot celebratory behaviours – especially those including both arms – on one hand increase the probability that the team wins the shootout and on the other hand make it more likely that the next opponent misses his penalty. Further studies conducted on football penalty shootouts and rooted in the research on choking under pressure indicate that – as a consequence of high pressure – athletes show more avoidance behaviour, i. e., they look more away from the goalkeeper and speed up their preparation time (Jordet, 2009a, 2009b; Jordet, & Hartman, 2008). However, as there are no studies experimentally manipulating NVB and measuring the effects of NVB on objective outcome variables, so far causal conclusions are not possible.

Tab. 1. Overview on research on NVB in the sports performance setting

Study	Participants Data (N, women – men relation)	Theoretical Background	NVB as predictor vs. conse- quence	Methodo- logical approach	Stimulus material/ sports	NVB-form	Effect size (η^2_B)
Furley, & Schweizer (2013)	Exp. 1: 40 (20 w, 20 m) Exp. 2: 44 (21 w, 23 m) Exp. 3: 40 (20 w, 20 m)	Evolutionary	Conse- quence	Experi- mental, quantitative	Naturalistic (basketball)	Uninten- tional (leading vs. trailing ath- letes)	Exp. 1: .48 Exp. 2: .19 Exp. 3: .42
Furley, & Schweizer (2016a)	Exp. 1: 40 (20 w, 20 m) Exp. 2: 120 (62 w, 58 m) Exp. 3: 120 (53 w, 67 m)	Evolutionary	Conse- quence	Experi- mental, quantitative	Naturalistic (basketball)	Uninten- tional (leading vs. trailing ath- letes)	Exp. 1: .18 Exp. 2: .18 Exp. 3: .23
Moesch, Kenttä, Backström, et al. (2015)	1416 situations	Evolutionary, person per- ception, emo- tional conta- gion	Conse- quence	Observa- tional, quantitative	Naturalistic (handball)	Intentional (post-scor- ing touch, gestures)	not reported
Moesch et al. (2016)	616 post shot periods	Impression formation, emotional contagion	Conse- quence	Observa- tional, quantitative	Naturalistic (handball)	Intentional (post-scor- ing touch, gestures)	not reported
Buscombe et al. (2006)	40 (excl. male)	Impression formation	Predictor of subjective outcome	Experi- mental, quantitative	Artificial (tennis)	Uninten- tional (posi- tive vs. neg- ative NVB), clothing	.23
Fransen, Vanbese- laere, et al. (2015)	Exp. 1: 43 coaches Exp. 2: 1028 (98% male)	Team confi- dence	Predictor of subjective outcome	Interviews, Qualitative and quantitative	Naturalistic (football, basketball)	Not speci- fied (nega- tive expres- sion, confi- dence NVB)	Exp. 1-5: not reported (for the quantita- tive studies 2,4, and 5)

Study	Participants Data (N, women – men relation)	Theoretical Background	NVB as predictor vs. consequence	Methodological approach	Stimulus material/sports	NVB-form	Effect size (r^2_p)
	Exp. 3: 30 coaches (1 w, 29 m) Exp. 4: 867 (73% male) Exp. 5: 825 (74% male)						
Fransen et al. (2012)		Team confidence	Predictor of subjective outcome	Observational, qualitative	Naturalistic (volleyball)	Not specified (negative NVB, positive emotional actions)	-
Furley, & Dicks (2012)	40 (excl. male)	Evolutionary, Impression formation	Predictor of subjective outcome	Experimental, quantitative	Artificial (baseball)	Unintentional (dominant vs. submissive NVB)	> .17
Furley, Dicks, & Memmert (2012)	22 (excl. male)	Impression formation	Predictor of subjective outcome	Experimental, quantitative	Artificial (football)	Unintentional (dominant vs. submissive NVB)	.61
Furley, Dicks, Stendtkje, et al. (2012)	excl. male Exp. 1a: 20 Exp. 1b: 29 Exp. 2: 12	Person perception, impression formation	Predictor of subjective outcome	Experimental, quantitative	Artificial (football)	Unintentional (hastening vs. hiding; gaze behaviour)	Exp. 1a: > .36 Exp. 1b: > .22 Exp. 2: > .33
Furley et al. (2015)	Excl. male Exp. 1: 15 Exp. 2: 16 Exp. 3: 15 Exp. 4: 24	EASI-model	Predictor of subjective outcome	Experimental, quantitative	Artificial (football)	Unintentional (pride vs. shame)	Exp. 1: > .80 Exp. 2: > .27 Exp. 3: > .43 Exp. 4: > .34
Furley, & Schweizer (2014)	40 (excl. male)	Evolutionary	Predictor of subjective outcome	Experimental, quantitative	Naturalistic (basketball)	Unintentional omitting all obvious NVB-signals	.22
Greenlees, Bradley, et al. (2005)	18 (excl. male)	Person perception	Predictor of subjective outcome	Experimental, quantitative	Artificial (table-tennis)	Unintentional (positive vs. negative)	.87
Greenlees, Buscombe, et al. (2005)	40 (excl. male)	Impression formation	Predictor of subjective outcome	Experimental, quantitative	Artificial (tennis)	Unintentional (positive vs. negative NVB), clothing	> .87

Study	Participants Data (N, women – men relation)	Theoretical Background	NVB as predictor vs. consequence	Methodological approach	Stimulus material/ sports	NVB-form	Effect size (η^2_p)
Greenlees et al. (2008)	12 (excl. male)	Gaze behaviour	Predictor of subjective outcome	Experimental, quantitative	Artificial (football)	Unintentional (gaze behaviour), gaze behaviour	> .35
Jones, & Harwood (2008)	10 cases	Emotional contagion/ Psychological Momentum	Predictor of subjective outcome	Observational, qualitative	Naturalistic (football)	Not specified (positive versus negative nonverbal reactions)	-
Manley et al. (2008)	534 (200 w, 334 m)	Impression formation	Predictor of subjective outcome	Quantitative questionnaire	Sports-unspecific	Not specified (NVB)	Not reported
Moesch, & Aпитзsch (2012)	9 (1 w, 8 m)	Emotional contagion/ Psychological Momentum	Predictor of subjective outcome	Observational, qualitative	Naturalistic (handball)	Not specified (positive reactions, negative NVB)	Not reported
Rejeski, & Lowe (1980)	165 (62 w, 103 m)	Attribution theory	Predictor of subjective outcome	Experimental, quantitative	Naturalistic (running)	Unintentional (expressive vs. non-expressive)	Not reported
Ronglan (2007)	2 coaches, 16 w	Collective efficacy	Predictor of subjective outcome	Observational, qualitative	Naturalistic (handball)	Intentional (cheering)	-
Jordet (2009 a, 2009 b)	200 penalties	Choking under pressure	Predictor of objective outcome	Observational, quantitative	Naturalistic (football)	Unintentional (looking away, preparation time)	Not reported
Jordet, & Hartman (2008)	36 penalty shootouts	Choking under pressure	Predictor of objective outcome	Observational, quantitative			-
Kraus et al. (2010)	294 touch behaviors	Social functions of touch	Predictor of objective outcome	Observational, quantitative	Naturalistic (basketball)	Intentional (touch)	Not reported
Moesch et al. (2016)	616 post shot periods	Impression formation, emotional contagion	Predictor of objective outcome	Observational, quantitative	Naturalistic (handball)	Intentional (touch, gestures)	Not reported
Moll et al. (2010)	33 penalty shootouts	Choking under pressure, emotional contagion	Predictor of objective outcome	Observational, quantitative	Naturalistic (Football)	Intentional (post-scoring celebratory behaviour)	Not reported

6 Research Desiderata

The reviewed research on NVB in the sports performance setting has shown that NVB seems to be a substantial factor perceivers use to form first impressions of others, and which affects perceivers' cognitions and emotions, such as perceived (opponents') capabilities, expectancy of success, and confidence (Buscombe et al., 2006; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtko, et al., 2012; Furley et al., 2015; Furley, & Schweizer, 2014; Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005; Jones, & Harwood, 2008; Ronglan, 2007). Effect sizes for the NVB-effect were consistently large in these experimental studies. These results align with evolutionary accounts of NVB (Darwin, 1872; Shariff, & Tracy, 2011), the EASI-model (van Kleef, 2009), and the concept of emotional contagion (Hatfield et al., 1994) as well as with theories on person perception (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968) which all ascribe NVB to have interpersonal effects, i. e., to influence observers. However, person perception theories assume that besides NVB, perceivers do not exclusively use nonverbal cues during the perception process, but integrate further relevant person information. This additionally relevant information is ignored in the previously mentioned experimental studies as they made sure "that no other information could be integrated to influence the participant's ratings and therefore the NVB-effect was most likely exaggerated compared to the actual effects of NVB in the field" (Furley, et al., 2015, p. 18). Thus, the experimental studies serve as a significant starting point for this dissertation's research as causal conclusions can be drawn out of the results. However, it might be possible that the high effect sizes are due to the fact that further relevant performance-related information is ignored. Consequently, giving perceivers more relevant performance information during the person perception process seems to be essential to better understand the influence of NVB in the real world. Referring to the person perception theories (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968) and Kunda and Thagards' classification (1996), performance-related information can both be internal, e. g., transported through the activation of gender stereotypes, or external respective individuated, e. g., when participants is given information on players' ability. This leads to the first main research question:

Do the effects of NVB on team outcome confidence depend on performance-related information?

When examining this interplay between NVB and performance-related information, it is the first aim to figure out whether the two factors exert separate additive effects on team outcome confidence or whether the presence of one of the factors diminishes the influence of the other factor. The second purpose is to test whether external or internal performance information has a stronger influence on team outcome confidence.

Team outcome confidence is used as the subjective outcome variable as previous research identified team outcome confidence as an important factor for a team's functioning (see Fransen et al., 2017) or its actual performance (in the laboratory: Bray, 2004; Greenlees, Nunn, Graydon, & Maynard, 1999; in field studies: Feltz, & Lirgg, 1998; Fransen, Decroos, et al., 2015; Myers, Feltz, et al., 2004; Myers, Payment, et al., 2004).

The second main research question relates to the relation between NVB and objective performance in a real-world scenario. Examining this relation seems to be crucial as in the previous research, the effects of NVB were only assessed with subjective outcome variables and the research was conducted in artificial, laboratory settings. A few observational studies exist examining the influence of NVB on performance (Jordet, 2009a, 2009b; Jordet, & Hartman, 2008; Kraus et al., 2010; Moesch et al., 2016; Moll et al., 2010), however, these studies do not allow to draw causal conclusions for the influence of NVB on performance. Thus, it seems important to assess both subjective ratings and objective behavioural outcomes of the NVB-effect in a controlled field study. This approach is in line with theories assuming an effect of NVB not only on cognitions and emotions but also on behaviour (e. g., Warr, & Knapper, 1968, in their schematic model of person perception and van Kleef, 2009, in the EASI-model), and with Baumeister, Vohs, and Funder's (2007) claim to examine behavioural consequences found in questionnaires. This leads to the second main research question:

Does NVB influence subjective outcome variables, i. e., perceptions of capability and individual outcome expectations, as well as objective behavioural outcomes, i. e., performance, in a real-world sports scenario?

Similarly to team outcome confidence as subjective outcome variable of the first main research question, individual outcome expectations originate in Bandura's (1997) efficacy beliefs-framework, too. Importantly, both these variables refer to the outcome-oriented in contrast to the process-oriented part of efficacy beliefs, thus, to a (team's) belief in outperforming others (Fransen et al., 2017).

The studies conducted in this dissertation to answer these main questions are described in chapter 7.

7 Integration of this Dissertation's Studies in its General Framework

In the following chapter the studies which were realised to answer the main research questions will be explained. Accordingly, the three publications will be embedded in the dissertation's general framework. Moreover, before answering the main research questions, an explorative questionnaire study was conducted examining whether athletes exerting team sports rate NVB and its influence on teammates and opponents to be relevant in team sports. As this exploratory questionnaire study is not part of a publication it will be explained in detail in this chapter. Those studies answering the main research questions raised in the previous chapter resulted in three publications which can be found in the appendix. Thus, those studies will only be summarized in this chapter.

Totally nine studies were conducted in this dissertation: One exploratory questionnaire study ($N = 387$), three main laboratory experiments ($N = 80$; $N = 69$; $N = 61$) preceded by two experimental pre-studies (both $N = 40$) resulting in publication 1 (in the following named threepart study), two main laboratory experiments ($N = 59$; $N = 71$) resulting in publication 2 (in the following named twopart study), and one main experimental field study resulting in publication 3 ($N = 47$). The full publications can be found in the Appendix.

Importantly, except of the explorative questionnaire study which was a survey among athletes exerting team sports all studies have in common that they measure interpersonal effects of NVB by experimentally manipulating dominance and submissiveness using the guidelines from Weinberg (1988). However, the studies differ with regard to the setting (artificial and laboratory in the studies in publication 1 and 2 versus real-world and field in the study in publication 3) and to the outcome variables (subjective ratings in the studies in publication 1 and 2 versus both subjective outcomes and objective performance in the study in publication 3). Further, the studies differ in whether a team scenario is established in the studies leading to publication 1 and 2 or whether the outcome variables are measured on an individual level in the study leading to publication 3. Thus, due to the different settings, two different measures, i. e., team outcome confidence (from both the teammate's and the opponent's perspective in publication 1, only from teammate's perspective in publication 2) and individual outcome expectations (publication 3), are used as outcome variables.

7.1 Explorative questionnaire on the importance of NVB in team sports

The aim of this explorative questionnaire study was to figure out the importance athletes exerting team sports ascribe to NVB.

7.1.1 Introduction

This study directly assessed team players' perceptions on the importance of NVB. Preceding the dissertation's main studies, it was the aim of this explorative questionnaire to figure out whether NVB and its effects on teammates and opponents is –

according to ratings of team players – relevant in the field of team sports. Thus, it did not directly answer the main research questions, but it was conducted following a call from Tukey (1990) claiming for more exploratory research and to make sure that NVB and its interpersonal influences are an important phenomenon in team sports and need therefore to be considered by experimental, laboratory studies.

7.1.2 Method

Totally $N = 387$ athletes (49.6% female, 50.4% male; $M_{age} = 26.00$, $SD = 8.61$) filled out the questionnaire which was available both online and in a paper-and-pencil-version. More than one half of the athletes did their sports on a professional level, at least partly during their career (56.7%). All athletes were exerting team sports, with a distribution of 27.4% football players, 19.0% handball players, 16.0% uni-hockey players, 10.6% volleyball players, 10.3% exerting sports in dyads such as beach-volley or badminton, and 16.7% exerting other team sports. As no validated questionnaire assessing athletes' perceptions on the importance of NVB exists, the items were generated exploratory. In the beginning of the questionnaire, the purpose of the study was directly mentioned, thus the participants were informed that the questionnaire is about the importance of NVB. Moreover, both for positive and for negative NVB pictures of an athlete showing positive NVB (typically dominant NVB) and of an athlete displaying negative NVB (typically submissive NVB) were presented to the participants to clarify what was meant by positive and negative NVB. To make it easier for the athletes, not the terms *dominant* and *submissive* but *positive* and *negative* were used, and no difference between intentional and unintentional NVB was made. Further, the participants were told that when answering the questionnaire they should especially remember changes in NVB after goals or important points – both referring to own goals/points and opponent's goals/ points. On a five-point likert scale ranging from (1) *not at all strong* to (5) *very strong*, participants were asked whether they generally perceive NVB, i), on their own, ii), among teammates, and iii), at opponents. Further, participants had to rate the influence of teammates' and opponents' NVB on team outcome confidence, on the influence of NVB on individual performance as well as on feelings of emotional contagion due to teammates' NVB. All items did further differentiate between influences of positive compared to negative body NVB.

7.1.3 Results

As the study was exploratory, the data were analysed on the item level and in a descriptive way (see Fig. 1-3). The results generally showed that only 1.8% of the athletes did not at all perceive NVB on their own (0.3% in the own team, and 2.1% in the opponent team), whereas 62.3% strongly or very strongly perceived NVB on their own (78.0% in the own team, 61.0% in the opponent team). Concerning emotional contagion, the results indicated that 66.6% (21.1%) have feelings of strong or very strong emotional contagion because of their teammates' positive (negative) NVB. Referring to the influence of NVB on team outcome confidence and on the influence

on the individual performance, the results suggest that both team outcome confidence and individual performance are mostly influenced by the *teammates' positive* NVB (team outcome confidence: $M = 4.07$; $SD = .82$; individual performance: $M = 3.35$; $SD = 1.02$).

Further, when comparing gender (female vs. male), different sports (dyads vs. sports with more than two team members), and different levels (hobby vs. professional) concerning the perception of positive and negative NVB, no differences were found between the groups, as the confidence intervals of the mean values for the group comparisons were overlapping (see Fig. 1-3). Additionally, two third (66.4%) of the participants has more than once talked to a teammate during training or a competition about his NVB, and about one third of the participants (36.7%) did some practice to improve their own and their team's NVB.

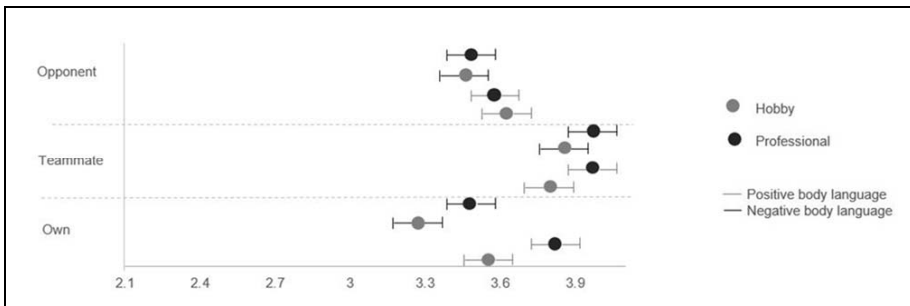


Fig. 1. Comparison of mean values and confidence intervals for the perception of positive and negative NVB between sports practised in dyads and with more than two team members.

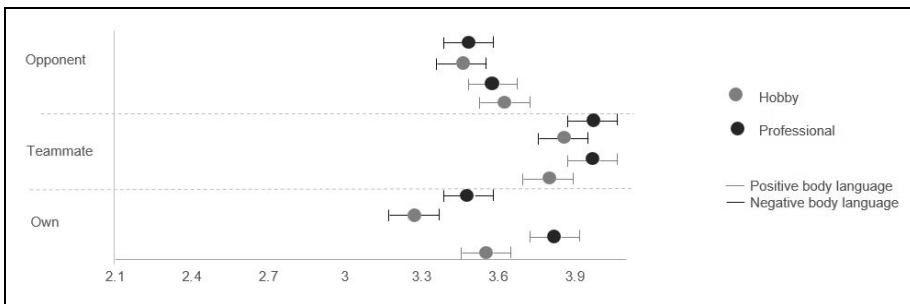


Fig. 2. Comparison of mean values and confidence intervals for the perception of positive and negative NVB between hobby- and professional athletes.

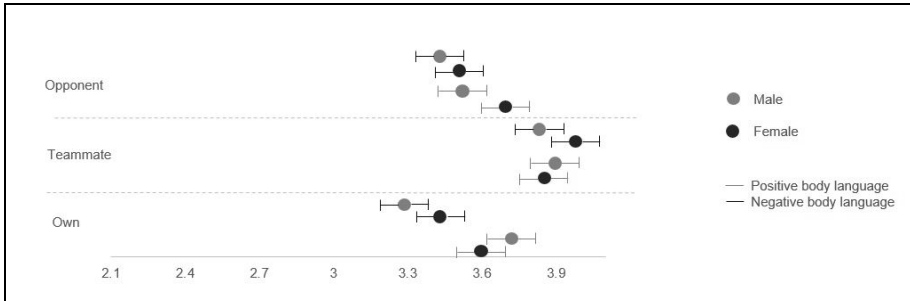


Fig. 3. Comparison of mean values and confidence intervals for the perception of positive and negative NVB between women and men.

7.1.4 Discussion

The results of the explorative study underline the importance of NVB among athletes exerting team sports as teammates' and opponents' NVB is strongly perceived by athletes. Moreover, athletes' subjective ratings indicate that NVB influences their team outcome confidence and their individual performance. The result that no differences between groups (men vs. women, dyads vs. sports with more than two team members, hobby vs. professional athletes) were found is in line with previous studies in the sports setting (Furley, & Schweizer, 2013) suggesting that the human capacity to recognize NVB seems to be a general one, independent of age, gender, and expertise. Further, the results align with the EASI-model (van Kleef, 2009) and evolutionary accounts of NVB (Darwin, 1872) proposing that some basic emotions are universally recognizable.

To conclude, NVB seems to be highly present in team sports and therefore, examining it in more detail conducting experimental studies is of high importance to better understand the interpersonal effects of NVB.

7.2 Threepart experimental study on the influence of external performance information (publication 1)

The threepart study aimed to experimentally test the importance of NVB when external performance information is available. The full publication can be found in the Appendix.

7.2.1 Introduction

Referring to previous experimental research on NVB in the sports performance setting, NVB seems to be among the most important factors influencing cognitions and emotions among perceivers (Buscombe et al., 2006; Fransen, Vanbeselaere, et al., 2015; Fransen et al., 2012; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtkke, et al., 2012; Furley et al., 2015; Furley, & Schweizer, 2014;

Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005; Jones, & Harwood, 2008; Manley et al., 2008; Moesch, & Apitzsch, 2012; Ronglan, 2007). These results are in line with assumptions of person perception theories (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968). However, in these studies, only NVB as factor influencing person perception was assessed although person perception theories assume further cues to be relevant for the person perception process. Therefore, external performance information as second present person stimulus information factor (Warr, & Knapper, 1968) besides NVB was included to test the effects of NVB on team outcome confidence. Consequently, it was the aim of this study to investigate whether external performance-related information reduces the effects of NVB on a team's outcome confidence.

To realise these goals, three sequential experiments with the same structure were designed. In Experiment 1, a baseline for the effect size of NVB on team outcome confidence was established. In Experiment 2, performance-related information was added that differentiated between low- and high-performance athletes. In Experiment 3, the information differentiated even more between low- and high-performance athletes.

It was hypothesized that both NVB and performance-related information have an effect on team outcome confidence (Experiments 1-3). However, it was assumed that the NVB-effect decreases when information about a player's quality distinguishes between good and less good players (Experiments 2 and 3).

7.2.2 Method

Pre-studies

Video footage of 12 male and 12 female football players differentiating between dominant and submissive NVB was created. All actors were filmed twice when entering a changing room and presenting themselves in front of a camera, once in the dominant and once in the submissive posture, following the guidelines from Weinberg (1988; see fig. 4, for fixed image-examples of the videos; the original videos could be provided for private purposes by contacting the author). This resulted in 24 video clips for each gender, thus, totally 48 videos which were pretested in two separate studies aiming to ensure that the videos significantly differentiated between dominant and submissive NVB.

Both the male and the female footage was rated by $N = 40$ participants (female pre-study: 27 women, 13 men; $M_{age} = 23.50$, $SD = 2.74$; male pre-study: 26 women, 14 men; $M_{age} = 22.59$, $SD = 2.03$). Participants were instructed to rate the 24 (12 dominant and 12 submissive) videos on two seven-point Likert scales, ranging from *not at all dominant* (1) to *highly dominant* (7) and *not at all submissive* (1) to *highly submissive* (7). Results of the two (one for the dominance ratings and one for the submissiveness ratings) 2×2 (video [dominant vs. submissive] $\times$ [gender of participants: male vs. female]) ANOVAs with repeated measures on the video factor showed that the actors were rated as significantly more dominant in the dominant

videos ($M = 5.32$, $SD = 0.64$ for the female videos, $M = 5.39$, $SD = 0.47$ for the male videos) than in the submissive videos ($M = 2.14$, $SD = 0.72$ for the female videos, $M = 2.55$, $SD = 0.87$ for the male videos). Further, the actors were rated as significantly more submissive in the submissive videos ($M = 5.47$, $SD = 0.69$ for the female videos, $M = 5.22$, $SD = 0.73$ for the male videos) than in the dominant videos ($M = 2.33$, $SD = 0.55$ for the female videos, $M = 2.49$, $SD = 0.51$ for the male videos). Thus, the videos could be used as stimulus material to manipulate dominant and submissive NVB in the three main experiments.



Fig. 4. Fixed image of one player's videos, on the left the dominant posture, on the right the submissive posture.

Main experiments

NVB (six dominant and six submissive videos per participant in the corresponding gender) and participants' perspective (participants rated each video from a teammate's and an opponent's perspective) were manipulated as within-participants factors in all three experiments. In Experiment 2 and 3, performance-related information was added as another independent variable. Team outcome confidence as the dependent variable and the general procedure were the same in all three experiments.

Measure, procedure and method in main experiments

Inquisit software 5.0 (online computer software, 2016) was used to present the videos in a completely randomized design. To create a realistic framework, women only watched female videos, and men only male videos. In all the experiments, the participants received information on the personal characteristics of the player in the video simultaneously to the video presentation. This information consisted of the personal characteristics of the player in the video (i. e., name, age, position, years of membership in the club and hobbies), which was the same in both the dominant and submissive condition. Instructions for the participants involved adopting the role of a

team captain in an upcoming football promotion tie and helping the coach to form the best team for the match.

Team outcome confidence as dependent variable was assessed with two single-items per video measuring the participants' confidence that their team would win the game if (i) the player was a part of the own team and (ii) if the player was a part of the opponent team (Fransen et al., 2017; Myers, & Feltz, 2007). Thus, participants rated the videos after the presentation of each video on a rating scale provided with eleven equally spaced categories, beginning at 0% (*not at all confident*) and ending at 100% (*absolutely confident*).

While in Experiment 1 ($N = 80$ sport science students; 41 women and 39 men; $M_{\text{age}} = 23.90$, $SD = 4.90$) a baseline for the magnitude of the NVB-effect without the performance-related information-factor was built, in Experiment 2 ($N = 69$ sport science students; 34 women and 35 men; $M_{\text{age}} = 22.35$, $SD = 3.27$) and 3 ($N = 61$ sport science students; 29 women and 32 man; $M_{\text{age}} = 20.82$, $SD = 1.86$), performance-related information was provided as another within-participants factor additionally to the personal characteristics that participants already saw in Experiment 1. In Experiment 2, the players in the video randomly received either 55, 60 or 65 (high-performance information) or 35, 40 or 45 (low-performance information) points of a maximum 100 points on an expert rating about the players' performance during the whole season. In Experiment 3, this performance information distinguished even more strongly between good and bad players by again randomly attributing the players in the videos 80, 85 or 90 points as high-performance information or 10, 15 or 20 points as low-performance information. Some information on the background (e. g., points as results of whole season's performance, expert ratings, highest score 100, average score 50 points) of this performance-points was given to the participants when introducing the task.

7.2.3 Results

As a summary of the three main studies' results, a comparison of the effect sizes for the three Experiments can be found in Figure 5. Totally five experimental effects were compared: The effect size of the interaction between perspective and NVB from Experiment 1, and the effect sizes of both the interaction between perspective and NVB and between perspective and information from Experiments 2 and 3. As the confidence intervals for all the effect sizes overlapped, participants were similarly influenced in their team outcome confidence independent of whether performance information was available or not (Experiment 1 vs. Experiment 2 and 3) and independent of how strong the information was (Experiment 2 vs. 3). Thus, the effect of NVB seems to remain constantly high independent of additional information. Moreover, in all three experiments, the effect sizes for the interaction between perspective (team-mate vs. opponent) and NVB were nearly identical.

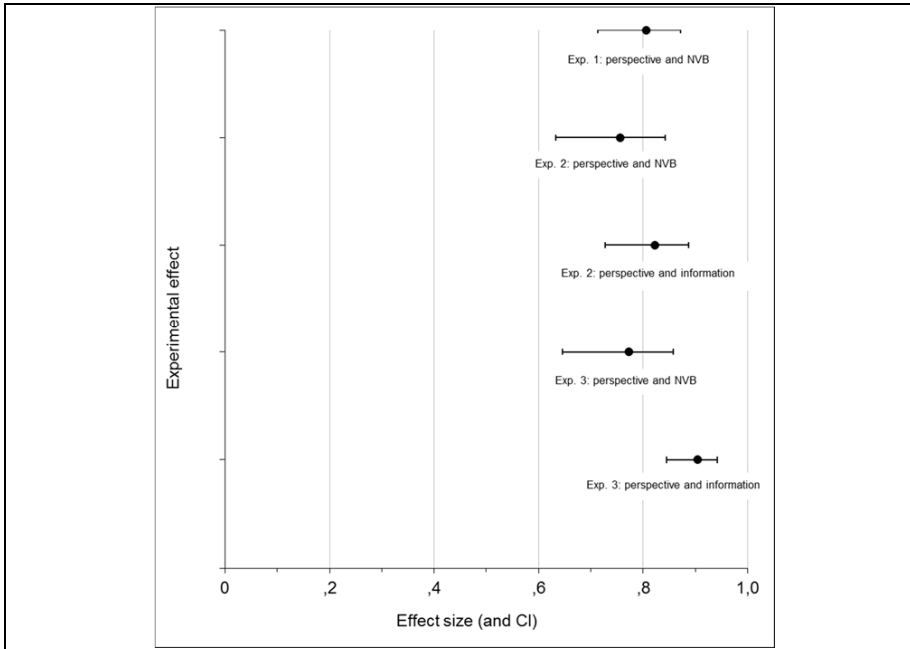


Fig. 5. The effect sizes r and 95% confidence intervals for the five experimental effects in the threepart study.

7.2.4 Discussion

In line with previous laboratory research on the interpersonal effects of NVB in the sports performance setting (Buscombe et al., 2006; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtko, et al., 2012; Furley et al., 2015; Greenlees, Buscombe, et al., 2005; Greenlees, Bradley, et al., 2005), large effect sizes for the influence of NVB on team outcome confidence were found, irrespective of whether additional performance-related information was available and irrespective of how strong the information distinguished between good and bad players. Further, in line with the hypotheses and with person perception theories (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968), both NVB and performance-related information influenced person perception. However, in contrast to the hypotheses, the NVB-effect was not significantly reduced when performance-related information was provided. Thus, further research might not test the influence of externally provided performance information but of internal performance information transported through gender stereotypes as this factor might also be crucial in the person perception process (e. g., Kunda, & Thagard, 1996).

7.3 Twopart experimental study on the influence of internal performance information (publication 2)

In the second main study, the interplay between internal performance information and NVB as factors influencing person perception in the sports setting was examined. The full publication can be found in the Appendix.

7.3.1 Introduction

The threepart laboratory study has shown that the influence of NVB on team outcome confidence remains large when external performance information was provided. However, the research so far did not consider internal performance information as the person perception process influencing factor although both person perception theories (Kunda, & Thagard, 1996), and research on stereotypes (Chalabaev, Sarrazin, Fontayne, Boiché, & Clément-Guillotin, 2013; Steele, & Aronson, 1995) in the sports setting reveal internal information transported through stereotypes to be relevant in the person perception process. Especially in football, gender stereotypes on the performance abilities of men and women seem to be very salient (Hermann, & Vollmeyer, 2016) and highly internalized (Steele, & Aronson, 1995), and consequently, seem to have an effect on (football) performance itself (Chalabaev, Sarrazin, Stone, & Cury, 2008; Heidrich, & Chiviackowsky, 2015; Hermann, & Vollmeyer, 2016). Thus, as the activation of stereotypes seems to have clear behavioural consequences (Wheeler, & Petty, 2001), gender stereotypes were expected to have an influence on person perception and their internalization might reduce the influence of NVB. Accordingly, it was the aim of this study to test the influence of NVB and internal performance information transported through gender stereotypes on team outcome confidence.

Two experiments in which participants' group belonging (sport science students in Experiment 1 versus male soccer players in a low-level German club in Experiment 2) was varied were conducted to realise the aim of the study. The different samples were chosen as previous research indicated that men's pro-masculine stereotypes in the sports setting seem to be stronger than women's (Boiché, Chalabaev, & Sarrazin, 2014). Crucially, to allow for a comparison of the influence of internal and external performance information, the structure of this twopart study was identical to the threepart study. Similar to the hypotheses of the threepart study it was assumed that both NVB and internal performance information transported through gender stereotypes influence team outcome confidence. Further, this influence of gender stereotypes would reduce the NVB-effect compared to the effect sizes for the NVB-effect when (i) no further information (Experiment 1 in the threepart study) or when (ii) external performance information (Experiments 2 and 3 in the threepart study) was provided. Referring only to the two experiments of this study, it was expected that the influence of gender stereotypes is higher in Experiment 2 as gender stereotypes might be less present in an academic setting composed of both women and men than among low-level male football players.

7.3.2 Method

To have the opportunity to compare the influence of internal and external performance information, the same pretested stimulus material as in the threepart study was used, and the manipulation of NVB, team outcome performance as dependent variable, and the general procedure were the same as in the threepart study. However, compared to the threepart study, instead of external performance information, gender stereotypes as within-participants factor was manipulated by ensuring that both male and female participants had to rate video footage of men and women in football as a typically male sport. Thus, gender stereotypes were activated by subtle stimuli as research has shown that stereotypes can besides their activation through environmental stimuli and obvious actions also be activated by subtle events like the presentation of faces (Wheeler, & Petty, 2001). Accordingly, the participants (study 1: $N = 59$, 36 women and 23 men; $M_{\text{age}} = 22.33$, $SD = 3.03$; study 2: $N = 71$ men; $M_{\text{age}} = 25.96$, $SD = 5.34$) were instructed to assume the role of a football player in an university football team in an upcoming promotion tie. Further information included that the team was a mixed team, composed of men and women playing together and that the team competed in a league in which the level of the teams and the players' football experience was similar.

7.3.3 Results

As in the threepart study, a comparison of the effect sizes for the relevant experimental effects (Experiments 1-3 of the threepart study and the two experiments of this study) summarizes the results of this study (see Fig. 6). As in the threepart study, the confidence intervals for all experimental effects overlapped and were large, meaning that NVB influenced team outcome confidence similarly, independent of whether additional information was available or not (Experiment 1 in the threepart study vs. all other Experiments). The effect sizes for internal and external information were medium (Experiment 1 in this study) or large (all other Experiments), thus, both NVB and additional information seem to strongly influence team outcome confidence. However, as there was no overlap between the confidence intervals for the effect sizes of the NVB effects in this study and the effect sizes for internal performance information, the influence of gender stereotypes was statistically significantly smaller than the influence of NVB.

Further, despite the increase of the effect size for internal performance information from medium to large on a descriptive level when agreement with the stereotype was higher, there was still an overlap for the confidence intervals in Experiment 1 and 2 of this study. Additionally, when comparing the effect sizes of external information with those of internal performance information, there was no overlap between the confidence intervals and the effect sizes for external information were significantly higher. Thus, perceivers were significantly more influenced by external than by internal performance information.

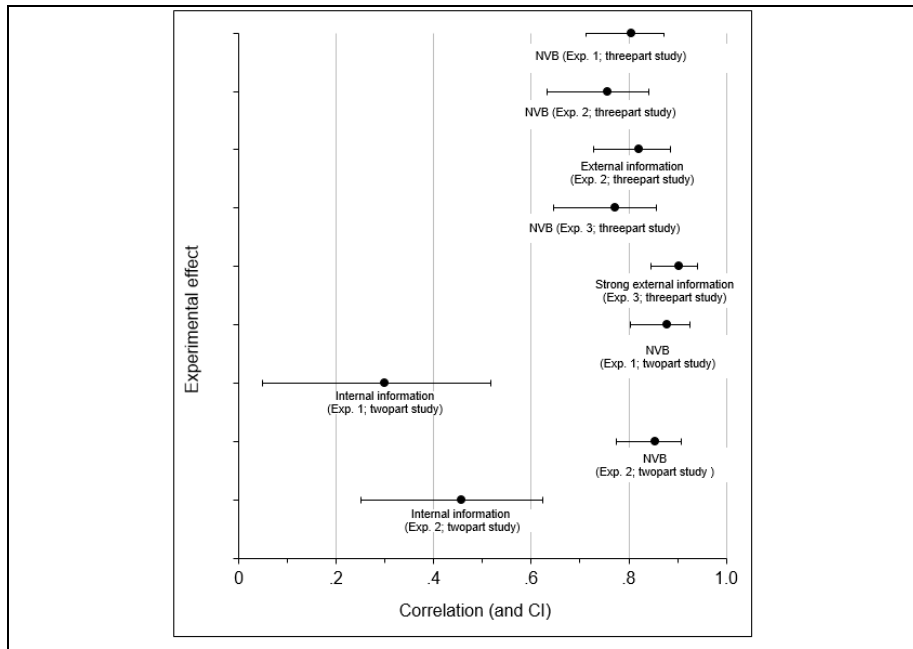


Fig. 6. The effect sizes r and 95% confidence intervals for the experimental effects in the threepart and the twopart study.

7.3.4 Discussion

Similar to the results of the threepart-study in which external performance information was added as another factor influencing the person perception process, the results of this study suggest that internal performance information has an influence on teammates' outcome confidence, but, that nevertheless, the effect sizes for the NVB-effect remain large. Consequently, the hypothesis that both NVB and internal performance information influence a team's outcome confidence was supported. However, contrarily to the hypotheses, the NVB- effect was not reduced when adding internal performance information. Thus, consistent with previous laboratory research (e. g., this dissertation's threepart study), NVB seems to exert a strong influence on perceivers. As a consequence, based on these stable results for the NVB-effect from laboratory, experimental studies, it seems necessary to test whether the importance of NVB remains similarly high in a real-world scenario.

7.4 Field study on the influence of NVB on performance in a football penalty shootout (publication 3)

The aim of the third main study was to test whether the results of the laboratory studies could be transferred to the field. The full publication can again be found in the Appendix.

7.4.1 Introduction

As previous laboratory research examining the effects of NVB on several subjective outcome variables has consistently shown large effect sizes for the NVB-effect, a field study was conducted aiming to figure out whether i), the importance of NVB is transferable to the real world, and ii), NVB does not only influence subjective outcome variables but has also behavioural outcomes.

A football penalty shootout was established to reach this goal. Goalkeepers' NVB was manipulated and the influences of NVB on penalty takers' perceptions of goalkeepers' capabilities and penalty takers' outcome expectations as subjective outcome variables as well as on accuracy and speed of the penalties as objective outcome variables were tested. It was hypothesized that penalty takers perceive dominant goalkeepers as more capable than submissive goalkeepers, that penalty takers' outcome expectations are lower and that accuracy and speed are higher when shooting against a dominant compared to a submissive goalkeeper.

7.4.2 Method

An experimental field study in which the participants ($N = 47$; all male; $M_{age} = 22.09$, $SD = 2.19$; average football experience: $M_{exp} = 10.83$ years, $SD = 4.98$) had to shoot penalty kicks on two goalkeepers showing either dominant or submissive NVB was conducted. The perceived goalkeeper's capabilities, the outcome expectations of the penalty takers before the begin of the shootout when facing the goalkeepers standing in the goal, as well as the accuracy and speed of each penalty were measured. The experimental set-up before the start of the shootout can be seen in Figure 7.



Fig. 7. Representation of the experimental set-up before the start of the shootout.

Design and procedure

The penalty takers took totally 20 penalties, alternating against two goalkeepers, A and B, for a total of ten penalties against each goalkeeper. In the repeated within-measures design, the participants were shooting against a dominant and against a submissive goalkeeper, but per participant, one goalkeeper was either dominant or submissive. Further, it was alternated for each participant which goalkeeper was dominant and which was submissive, and it was randomised which goalkeeper was in the goal during the first shot. This led to 10 kicks per condition. Inquisit software 5.0 (Online computer software, 2016) was used to additionally randomise the reactions of the goalkeepers, i. e. jumping to the left or to the right. The goalkeepers were experienced goalkeepers and confederates being trained in advance on how to behave during the shootout.

Measures

Concerning the subjective variables, the participants had to rate the capabilities of both goalkeepers on a seven-point Likert scale, ranging from *not at all strong* (1) to *totally strong* (7), and their outcome expectations. With regard to the outcome expectations, penalty takers were asked to indicate with 'yes' or 'no' for each shot against goalkeeper A and against goalkeeper B how many times out of ten they would score a goal. For each response, they should further rate how sure they were with their 'yes' or 'no' answer from *not at all sure* (1) to *absolutely sure* (10). The total outcome expectation score (from 0 to 100) was calculated by summing up the certainty scores for all 'yes' answers. With this method, a certainty for making ten goals has a greater weight than a certainty for making one goal (Feltz, & Chase, 1998; Furley, & Dicks, 2012; Greenlees, Buscombe, et al., 2005).

Relating to the measurement of accuracy and speed as objective performance measures, these variables were analysed with the Kinovea Motion analysis software. Accuracy was assessed measuring the distance from the ball when crossing the goal line to the inner post (marker 1; see Fig. 8). Speed was measured in two ways, first ($= v_1$), by determining the speed from the moment the ball left the player's foot (marker 2) to the position 20 frames after marker 2 (marker 3), and second ($= v_2$), by measuring the average speed between marker 2 and marker 4 which was set when the ball passed the goal line (see Fig. 9).



Fig. 8. Fixed image of one kick from the camera behind the goal, represented with the Kinovea motion analysis software showing the marker to assess accuracy.



Fig. 9. Fixed image of one kick from the camera on the side of the goal, represented with the Kinovea motion analysis software showing the three relevant markers assessing speed.

7.4.3 Results

Regarding goalkeeper's capabilities (see Fig. 10), the results of the paired *t*-tests revealed that the ratings for goalkeeper A's capabilities were not significantly higher than for goalkeeper B when goalkeeper A is dominant and B submissive, $t(23) = 1.48$, $p = .15$, $r = .29$ (*t*-test 1). In contrast, the capability ratings were significantly higher for goalkeeper B when goalkeeper B is dominant and A submissive, $t(22) = 2.87$, $p = .01$, $r = .52$ (*t*-test 2). The results of additional independent *t*-tests showed that both goalkeeper A and B were rated more capable in their dominant than in their submissive posture. This difference was not significant for goalkeeper A, $t(45) = 1.58$, $p = .12$, $r = .23$ (*t*-test 3) but for goalkeeper B, $t(45) = 2.11$, $p = .04$, $r = .30$ (*t*-test 4).

Figure 11 shows the results for the ratings on outcome expectations. The paired *t*-tests showed that outcome expectations were significantly higher against goal-keeper A than against goalkeeper B, independent of whether goalkeeper A is dominant and B is submissive, $t(22) = 4.53, p < .001, r = .69$ (*t*-test 5), or whether goal-keeper B is dominant and A is submissive, $t(22) = 5.61, p < .001, r = .77$ (*t*-test 6). Summarizing the results for accuracy and speed, the analyses revealed no significant main effect for the influence of NVB on *v*1, *v*2, and accuracy. Further, the interaction effects between NVB and goalkeeper and NVB and condition were not significant, meaning that the influence of NVB did not depend on whether the first penalty was against a dominant or submissive goalkeeper, nor did it depend on whether the first penalty was against goalkeeper A or B.

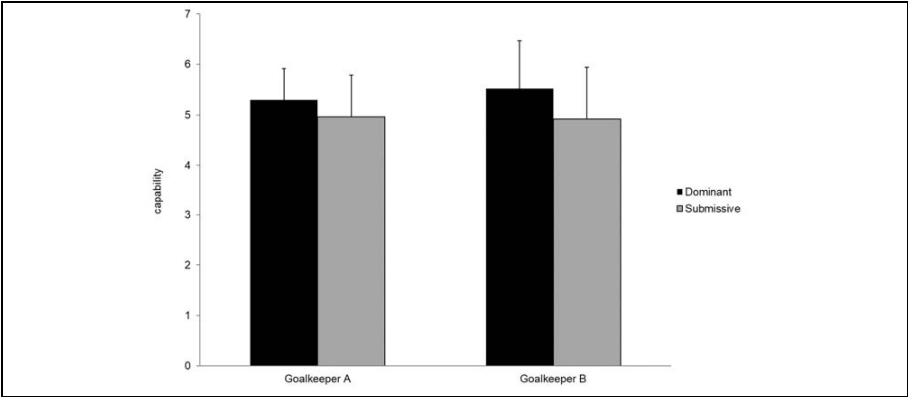


Fig. 10. Mean capability ratings as a function of NVB and the goalkeeper. The error bars represent standard deviations.

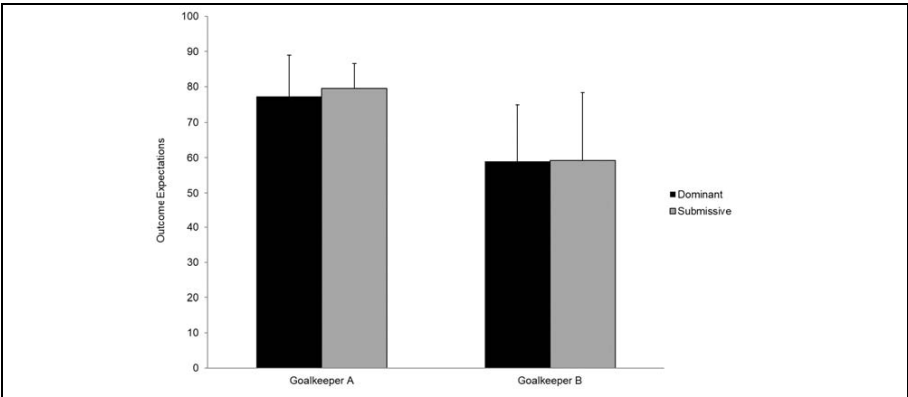


Fig. 11. Mean outcome expectation ratings as a function of NVB and the goalkeeper. The error bars represent standard deviations.

7.4.4 Discussion

The results for the subjective outcome variables are partly in line with previous laboratory research, and thus, support the idea that NVB might play an important role not only in the laboratory but also in real-world settings. However, the results did not reveal a significant influence of NVB on performance. This result questions the transferability of the laboratory results to the field where further environmental factors might have an influence on perceptions and performance. More precisely, the results on goalkeeper's capabilities align with the results of this dissertation's laboratory studies and further previous research (Furley, Dicks, & Memmert, 2012; Buscombe et al., 2006; Greenlees, Bradley, et al., 2005) as dominant goalkeepers are perceived as more capable than submissive goalkeepers. Regarding the effects on outcome expectations, NVB did not significantly influence the penalty takers' outcome expectations, but independent of NVB, outcome expectations against goalkeeper A were substantially higher than against goalkeeper B.

As goalkeeper B was taller than goalkeeper A, one reason for this main effect of goalkeeper might be that the size of the goalkeeper influenced the shooting behaviour more than NVB did. Thus, the results somehow agree with studies on penalty shootouts proposing that personal characteristics, such as size (Masters, Poolton, & van der Kamp, 2010) and hair colour (Hess, 2016) strongly influence perceptions. Another reason why NVB did not significantly influence outcome expectations and performance is that penalty takers – intentionally or unintentionally – chose the so called keeper independent strategy. This would mean that they were not paying attention to the goalkeeper what actually seems to be the more successful strategy in penalty kicks than the keeper-dependent strategy (Navarro, van der Kamp, Ranvaud, & Savelsbergh, 2013; Nöel, & van der Kamp, 2012; Wood, & Wilson, 2010).

Nevertheless, this study provides added value to the psychological research, in general, and the NVB research in specific, as – for the first time in the NVB-research – not only subjective but also objective performance variables are assessed in a real-world scenario.

8 General Discussion

Summary of results

The aim of this dissertation was to examine the interpersonal effects of nonverbal behaviour (NVB), i. e., dominance and submissiveness, in the sports performance setting. Nine studies (one exploratory questionnaire study, three main laboratory experiments preceded by two experimental pre-studies, two main laboratory experiments, and one main experimental field study) were conducted to answer the main research questions whether performance-related information influences the effects of NVB on team outcome confidence, and whether NVB does not only have an effect on subjective outcome variables, but also on objective behavioural measures of performance in a real-world sports scenario. Thus, this dissertation advances previous research on NVB in the sports performance setting by showing that in a laboratory setting, the influence of NVB on team outcome confidence is large independent of additional performance information, but that the transferability of these laboratory controlled effects to the field, as well as the influence of NVB on performance measures needs to be addressed by further research.

In advance of answering the main research questions, an exploratory questionnaire had been conducted. The results indicated that NVB seems to play an important role in team sports as most of the athletes strongly perceive teammate's and opponent's NVB during matches and rate the influence of both positive and negative NVB on their team's confidence and their own performance to be strong. Building up on these preliminary results revealing interpersonal effects of NVB to be highly relevant in the field and with evolutionary accounts of NVB (Shariff, & Tracy, 2011; Warr, & Knapper, 1872) and person perception theories (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1978) as theoretical background, a threepart and a twopart experimental, laboratory study were designed to test whether this high importance of NVB could be confirmed in an experimental setting in which besides NVB further information influencing the person perception process is available. Conducting these studies, previous laboratory research on NVB in the sports setting (Buscombe et al., 2006; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtkke, et al., 2012; Furley et al., 2015; Furley, & Schweizer, 2014; Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005; Jones, & Harwood, 2008; Manley et al., 2008) was advanced by including NVB as the person perception process influencing factor.

With video footage of football players as stimulus material, the results of the threepart and twopart laboratory study indicated that even when performance-related information (external in the threepart- and internal in the twopart-study) is available during the person perception process, the influence of NVB on team outcome confidence remains large (see the threepart study for the influence of external and the twopart study for the influence of internal performance information). Thus, neither external

nor internal performance information could reduce the influence of NVB on team outcome confidence. When comparing internal and external performance information, the results of the two studies revealed that perceivers are more influenced by external than by internal performance information.

Consequently, by showing that NVB is still highly important when integrating further performance relevant information besides NVB, these two studies are one step closer to the real world than the previous laboratory studies. However, one reason for the large effect sizes for the NVB-effect might be the fact that only few cues were available during the perception process, as noted by Kahneman (2011) in the *WYSIATI* (*What you see is all there is*)-rule. According to this rule, during the perception process, people tend to be satisfied with the available information and do not miss missing information. However, as in the real world, there is more information available than the information given to the perceivers in the laboratory studies, a real-world penalty shootout was conducted. This study aimed to test whether the importance of NVB remains large even when perceivers have the opportunity to integrate all information existing in the real world in their perception process. Further, as in the sports performance setting, usually ultimate performance is the outcome that counts, in the penalty shootout, not only individual outcome expectations as subjective performance variables were assessed, but also accuracy and speed of the penalties as measurements of objective performance. The results of this study revealed that subjective ratings of perceived goalkeeper's capabilities partly confirm the results of previous laboratory research as dominant goalkeepers were rated more capable than submissive goalkeepers. However, the results for individual outcome expectations and the performance variables question the transferability of the laboratory results to the field as no significant effects for the influence of NVB were found. Thus, according to the results of the field study, it seems possible that the large effects of NVB found in the previous laboratory research were possibly overestimated (Furley et al., 2015). Nevertheless, the results of this dissertation's laboratory studies indicate that indeed in a laboratory, but at least in a more realistic setting compared to other laboratory studies, the importance of NVB remains large.

Limitations and further research directions

First, following the results of the field study, further research is needed to test the influence NVB actually has in the real world, and if and in which way it influences performance. In these future studies, some methodological challenges of real-world studies need to be considered, such as balancing between a high internal and external validity, excluding interfering factors but at the same time keeping the scenario as realistic as possible, and retaining feasibility in terms of finding appropriate confederates and participants, or handling technical issues. Furthermore, it might be a promising approach to conduct studies aiming to figure out the causality in the NVB-performance relation to foster an understanding of the underlying mechanisms. More precisely, it seems possible that NVB influences performance, or that performance

influences subsequent teammates'/opponents' NVB, or that NVB first influences one's own performance and that this increased own performance in turn reduces opponents' or enhances teammates' performance in an iterative way.

Second, in the real world, especially during sports competitions, it seems possible that some teammates' NVB especially influences other team members as in this dissertation, it has not been tested whether the importance of NVB differs dependent on different team roles. For example it might be possible that the formal (the captain) or informal (a motivator) leaders' or coach's NVB is more strongly perceived and interpreted by other team members than a substitute's NVB. This approach is in line with research on leadership in sports, claiming that leaders have a special role in the team as their behaviour positively and negatively influences for example team confidence and performance (Fransen, Haslam, Steffens, Vanbeselaere, de Cuyper, & Boen, 2015).

Third, in this dissertation, personal characteristics have not been assessed although several personality variables might have an impact on the interpersonal effects of NVB. One important variable in this context seems to be emotional intelligence as people with higher emotional competencies might be better in identifying nonverbal expressions displayed by others (Petrides, & Furnham, 2003). Further, it seems possible that self-confident people and people with generally high efficacy beliefs (trait sport confidence; Vealey, 1986) are focused on the relevant task and think of preceding successful events (performance accomplishments as one source of self-efficacy, according to Feltz, & Chase, 1998) when being confronted with a task. Consequently, they are not influenced by opponent's NVB but stick to themselves and the task. Further, differences might exist between experts and novices regarding the influence NVB has during the perception process. Indeed, research has shown that individuals are able to distinguish between NVB of success and failure independent of their expertise level (Furley, & Schweizer, 2014). However, as experts seem to be more efficient in identifying, recollecting and manipulating relevant information than novices (e. g., Nielsen, & McPherson, 2001), it seems feasible that experts and novices differ from each other in whether the perception process is more determined by data-driven or schema-driven processing modes (Freeman, & Ambady, 2011). Finally relevant in the context of individual differences is the relation between the sensitivity towards nonverbal cues and the extent to which personal motives are present. More precisely, it seems possible that perceivers with a strong power motive are quite sensitive to the perception and decoding of nonverbal cues associated with power and strength, such as dominance and submissiveness.

Fourth, not only individual differences but also different situations and settings might influence the importance of NVB. In this dissertation, different settings have been chosen, starting with an artificial scenario and moving towards a real-world, but still controlled situation. To keep this control, in no experiment of this dissertation, pressure has been induced to the participants although pressure seems to be an important factor influencing athletes' perceptions and performance (Jordet, 2009a,

2009b; Jordet, & Hartman, 2008; Jordet, Hartman, & Sigmundstad, 2009). As research on NVB suggests the influence of pressure (Furley, & Schweizer, 2016b) and stress appraisal due to pressurized tasks (Brimmell, Parker, Furley, & Moore, 2018) on NVB, too, further research needs to address the influence of pressure on the recognition and interpretation of NVB.

Fifth, the results of this dissertation might be of interest for other applied research fields than sport psychology in which the ability to recognize emotions is of importance, for example in clinical psychology (Baron-Cohen, 2002). In this vein, studies using different methodological approaches such as matching emotion words and facial expressions have shown that children with autism spectrum disorder (ASD) have an impaired ability to recognise emotions from facial expressions (see Uljarevic & Hamilton, 2013, for a meta-analysis). However, a recent study using the thin slices approach when presenting videos of winning and losing athletes revealed that children with ASD are nearly equally well in recognizing leading and trailing athletes compared to a non-clinical sample (Ryan, Furley, & Mulhall, 2016). Thus, in contrast to previous studies, ASD-children seem to have the similar ability to decode nonverbal emotional expressions than normal children. According to the authors of this study, one possible explanation for these surprising results is that due to the thin slices approach and the video presentation without tone, in this study, ASD-children did not have to integrate multisensory information – one aspect these children normally have difficulties with (Brandwein et al., 2015). Thus, to gain a better understanding for the results of the study from Ryan and colleagues (2016), it might be a fruitful approach to give the children additional information which they have to integrate or to choose real-world situations in which they normally have difficulties to recognize nonverbal expressions, for example on the schoolyard. This would then be a similar approach as in this dissertation with the aim to figure out when and why children with ASD fail in emotion recognition. The results of this dissertation might be of importance for this transfer as they showed in non-clinical samples that further information and different settings have an influence on the perception and interpretation of nonverbal cues.

Practical implications

From a practical perspective, three aspects should be mentioned. First, athletes, coaches and referees need to raise their awareness for the potential effects of the own NVB on others. These effects might be within the team, on opponents or, referring to referees, on athletes when taking decisions, especially as individuals are often less aware of their own NVB compared to the awareness for others' NVB (DePaulo, 1992).

Therefore, it might be important to implement training programs for athletes which in a first step focus on gaining awareness about the effects of the own NVB, and in which in a second step, self-presentational techniques are established. In this vein,

athletes could be psycho-educated about the importance of NVB and then be confronted with their own NVB during competitions. Afterwards, they could be interviewed in how they perceived their demeanour in a certain moment, and this could be contrasted with teammates' and coaches' thoughts about the relevant scene. This might elicit differences between own and others' perceptions and thus, increase awareness of the own NVB. Based on this awareness, training sessions could be established in which athletes consciously adopt positive, dominant NVB, following the guidelines from Weinberg (1988). As people seem in most situations to be able to control their NVB (DePaulo, 1992), and to develop the competence to regulate the own NVB during the life-span, a continuous practice of positive NVB might actually lead to the ability to deliberately control the own NVB. Some authors even suggest that with extensive training, NVB that has originally be "faked" can become habitual, what would in turn reduce the resources needed to deliberately control the desired NVB (Jones, & Pittmann, 1982; Schlenker, 1980). One area in the sports setting, in which the importance of NVB is acknowledged and training sessions for improving nonverbal communication skills are somehow already integrated, is football officiating (FIFA, 2015). With these trainings, the FIFA accredits the importance of NVB for soccer referees what has also be shown by Cunningham, Simmons, Mascarenhas, and Redhead (2014). Further, with regard to referees, a qualitative study from Schnyder and Hossner (2016) revealed that the ability to control emotions is one important characteristic of a good elite referee. Thus, to become a good referee, the competence to consciously control NVB seems to be fundamental. However, especially for referees, it might be difficult to deliberately control their NVB as referees' NVB seems to display a lack of confidence in situations in which they have to communicate ambiguous decisions, although they have the willingness to display confidence (Furley, & Schweizer, 2016b). Regarding these results and the fact that contextual constraints such as pressure or fatigue (Matsumoto et al., 2013) impede the deliberate control of NVB, implementing trainings to foster self-presentation techniques seems to be even more essential.

Second, to reduce the potentially negative effects of others' NVB, training programs could be initiated to build routines allowing to control the own thoughts towards accomplishing an upcoming task, e. g., shooting a penalty without being distracted by others', e. g., the goalkeeper's, (faked) NVB. Positive, and functional self-talk might be one possibility to foster this focus on the task, and not on situational constraints (Hardy, 2006).

Third, this dissertation's results might be of importance for all processes during which expectancies are built and judgements are made based on scarce information available. As the results of this dissertation show that NVB is an important cue on which perceivers build their ratings about someone's capabilities even when further information is available, people taking decisions during selection processes should be made aware of the importance of NVB. Might it be during personal selection pro-

cesses in organizations or during talent selection in the sports setting, people responsible for the selective decisions should be trained in the ability to consciously distinguish between objective performance criteria and perceptual cues such as NVB. A first study from Manley and colleagues (2008) supports this idea by suggesting that NVB is one of the most important informational cues when athletes form their initial impressions of coaches.

Conclusion

In conclusion, this dissertation provides added value to the research on the interpersonal effects of NVB in the sports performance setting: According to the laboratory studies, even when additional information is provided, the influence of NVB on a team's outcome confidence is large. Referring to the football penalty shootout, the study provides an important starting point for future field studies focussing on the influence of NVB on performance.

In any case, when preparing for upcoming competitions after the defeat on the World Championships 2018, the German national team might integrate sessions to improve its body language to make sure that it is not only Manuel Neuer who shows a "gigantic presence" on the pitch, and who "makes the goal small for each penalty taker" (Eichler, 2012), but that also the other team members nonverbally express their regained confidence in winning.

9 References

- Adler, P., & Adler, P. A. (1978). The role of momentum in sport. *Journal of Contemporary Ethnography*, 7, 153-175. doi:10.1177/089123167800700202
- Bandura, A. (1997). *Self-efficacy. The exercise of control*. New York: Freeman.
- Baesler, E. J., & Burgoon, J. K. (1987). Measurement and reliability of nonverbal behaviour. *Journal of Nonverbal Behavior*, 11, 205-233. doi:10.1007/BF00987254
- Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends in Cognitive Science*, 6, 248-254. doi:10.1016/S1364-6613(02)01904-6
- Barrett, L. F. (2011). Was Darwin wrong about emotional expression? *Current Directions in Psychological Science*, 20(6), 400-406. doi:10.1177/0963721411429125
- Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly*, 47(4), 644-675. doi:10.2307/3094912
- Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science*, 2(4), 396-403. doi:10.1111/j.1745-6916.2007.00051
- Boiché, J., Chalabaev, A., & Sarrazin, P. (2014). Development of sex stereotypes relative to sport competence and value during adolescence. *Psychology of Sport and Exercise*, 15(2), 212-215. doi:10.1016/j.psychsport.2013.11.003
- Brandwein, A. B., Foxe, J. J., Butler, J. S., Frey, H., Bates, J. C., Shulman, L. H., & Molholm, S. (2015). Neurophysiological indices of atypical auditory processing and multisensory integration are association with symptom severity in autism. *Journal of Autism and Developmental Disorders*, 45(1), 230-244. doi:10.1007/s10803-014-2212-9
- Bray, S. R. (2004). Collective efficacy, group goals, and group performance of a muscular endurance task. *Small Group Research*, 35(2), 230-238. doi:10.1177/1046496403260531
- Brimmell, J., Parker, J. K., Furley, P., & Moore, L. J. (2018). Nonverbal behavior accompanying challenge and threat states under pressure. *Psychology of Sport and Exercise*, 39, 90-94. doi:10.1016/j.psychsport.2018.08.003
- Brügelmann, M. (2018, June 18). Basler vernichtet Özil! *Bild*. Retrieved from <https://www.bild.de/sport/fussball/fifa-wm-2018/basler-vernichtet-dfb-stars-56055200.bild.html> Accessed July 5, 2018.
- Buscombe, R., Greenlees, I., Holder, T., Thelwell, R., & Rimmer, M. (2006). Expectancy effects in tennis: The impact of opponents' pre-match non-verbal behavior on male tennis players. *Journal of Sports Science*, 24(12), 1265-1272. doi:10.1080/02640410600598281
- Cacioppo, J. T., Berntson, G. G., Larsen, J. T., Poehlmann, K. M., & Ito, T. A. (2000). The psychophysiology of emotion. In M. Lewis & R. J. M. Haviland-Jones (Eds.), *The handbook of emotions* (2nd ed., pp. 173-191). New York, NY: Guilford.
- Chalabaev, A., Sarrazin, P., Fontayne, P., Boiché, J., & Clément-Giolotin, C. (2013). The influence of sex stereotypes and gender roles on participation and performance in sport and exercise: Review and future directions. *Psychology of Sport and Exercise*, 14(2), 136-144. doi:10.1016/j.psychsport.2012.10.005
- Chalabaev, A., Sarrazin, P., Stone, J., & Cury, F. (2008). Do achievement goals mediate stereotype threat? An investigation on females' soccer performance. *Journal of Sport and Exercise Psychology*, 30, 143-158. doi:10.1123/jsep.30.2.143
- Cunningham, I., Simmons, P., Mascarenhas, D., & Redhead, S. (2014). Skilled Interaction: Concepts of communication and player management in the development of sport officials. *International Journal of Sport Communication*, 7, 166-187. doi:10.1123/IJSC.2013-0098
- Darwin, C. (1872). *The expression of emotions in man and animals*. London: Murray.
- DePaulo, B. M. (1992). NVB and self-presentation. *Psychological Bulletin*, 111, 203-243. doi:10.1037/0033-2909.111.2.203
- Eichler, C. (2012). Klar im Geist. *FAZ*. Retrieved from <http://www.faz.net/aktuell/manuel-neuer-klar-im-geist-11731368.html>. Accessed May 08, 2018.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6(3), 169-200. doi:10.1080/02699939208411068
- Ekman, P. (2016). *Nonverbal messages. Cracking the code. My life's pursuit*. San Francisco, Ca: The Paul Ekman Group.

- Ekman, P., & Friesen, W. (1978). *Facial Action Coding system: A technique for the measurement of facial movement*. Palo Alto, CA: Consulting Psychologists Press.
- Feltz, D. L., & Chase, M. A. (1998). The measurement of self-efficacy and confidence in sport. In J. Duda (Ed.), *Advancements in sport and exercise psychology measurement* (pp. 63-78). Morgantown, WV: Fitness Information Technology.
- Feltz, D. L., & Lirgg, C. D. (1998). Perceived team and player efficacy in hockey. *Journal of Applied Psychology*, 83(4), 557–564. doi:10.1037/0021-9010.83.4.557
- Feltz, D. L., Short, S. E., & Sullivan, P. J. (2008). *Self-efficacy in sport*. Champaign: Human Kinetics.
- FIFA – Fédération Internationale de Football Association (2015). *Laws of the game 2015/16*. Zurich, Switzerland: FIFA.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). New York: Academic Press. doi:10.1016/S0065-2601(08)60317-2
- Fransen, K., Decroos, S., Vanbeselaere, N., Vande Broek, G., De Cuyper, B., Vanroy, J., & Boen, F. (2015). Is team confidence the key to success? The reciprocal relation between collective efficacy, team outcome confidence, and perceptions of team performance during soccer games. *Journal of Sports Sciences*, 33(3), 219–231. doi:10.1080/02640414.2014.942689
- Fransen, K., Haslam, S. A., Steffens, N. K., Vanbeselaere, N., De Cuyper, B., & Boen, F. (2015). Believing in «us»: Exploring leaders' capacity to enhance team confidence and performance by building a sense of shared social identity. *Journal of Experimental Psychology: Applied*, 21(1), 89-100. doi:10.1037/xap0000033
- Fransen, K., Mertens, N., Feltz, D., & Boen, F. (2017). "Yes, we can!" – A review on team confidence in sports. *Current Opinion in Psychology*. Advance online publication. doi:10.1016/j.copsyc.2017.05.024
- Fransen, K., Vanbeselaere, N., De Cuyper, B., Vande Broek, G., & Boen, F. (2015). Perceived sources of team confidence in soccer and basketball. *Medicine & Science in Sports & Exercise*, 47(7), 1470–1484. doi:10.1249/MSS.0000000000000561
- Fransen, K., Vanbeselaere, N., Exadaktylos, V., Vande Broek, G., De Cuyper, B., Berckmans, D., ... Boen, F. (2012). "Yes, we can!": Perceptions of collective efficacy sources in volleyball. *Journal of Sports Sciences*, 30(7), 641–649. doi:10.1080/02640414.2011.653579
- Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review*, 118(2), 247–279. doi:10.1037/a0022327
- Fridlund, A. J. (1994). *Human facial expression: An evolutionary view*. San Diego, CA: Academic.
- Forgas, J. P. (1995). Mood and Judgement: The affect infusion model (AIM). *Psychological Bulletin*, 117, 39-66. doi:10.1037/0033-2909.117.1.39
- Frijda, N. H. (1986). *The emotions*. Cambridge, England: Cambridge University Press.
- Furley, P., & Dicks, M. (2012). "Hold your head high". The influence of emotional versus neutral nonverbal expressions of dominance and submissiveness in baseball. *International Journal of Sport Psychology*, 43, 294–311. Retrieved from https://www.researchgate.net/profile/Philip_Furley/publication/234082101_Hold_your_head_high_The_influence_of_emotional_versus_neutral_nonverbal_expressions_of_dominance_and_submissiveness_in_baseball/links/09e4150ef193e8ff0b000000.pdf
- Furley, P., Dicks, M., & Memmert, D. (2012). Nonverbal behavior in soccer: The influence of dominant and submissive body language on the impression formation and expectancy of success of soccer players. *Journal of Sport and Exercise Psychology*, 34(1), 61–82. doi:10.1123/jsep.34.1.61
- Furley, P., Dicks, M., Stendtkke, F., & Memmert, D. (2012). "Get it out that way. The wait's killing me." Hastening and hiding during soccer penalty kicks. *Psychology of Sport and Exercise*, 13(4), 454–465. doi:10.1016/j.psychsport.2012.01.009
- Furley, P., Moll, T., & Memmert, D. (2015). "Put your hands up in the air"? The interpersonal effects of pride and shame expressions on opponents and teammates. *Frontiers*, 6(1361), 1–20. doi:10.3389/fpsyg.2015.01261
- Furley, P., & Schweizer, G. (2013). The expression of victory and loss: Estimating who's leading or trailing from nonverbal cues in sports. *Journal of Nonverbal Behavior*, 38(1), 13–29. doi:10.1007/s10919-013-0168-7

- Furley, P., & Schweizer, G. (2014). "I'm pretty sure that we will win!" The influence of score-related nonverbal behavioral changes on the confidence in winning a basketball game. *Journal of Sport and Exercise Psychology*, 36(3), 316–320. doi:10.1123/jsep.2013-0199
- Furley, P., & Schweizer, G. (2016a). In a flash: Thin slice judgment accuracy of leading and trailing in sports. *Journal of Nonverbal Behavior*, 40, 83–100. doi:10.1007/s10919-015-0225-5
- Furley, P., & Schweizer, G. (2016b). Nonverbal communication of confidence in soccer referees: An experimental test of Darwin's leakage hypothesis. *Journal of Sport and Exercise Psychology*, 38, 590–597. doi:10.1123/jsep.2016-0192
- Furley, P., & Schweizer, G. (in press). Body language in sport. In G. Tenenbaum, & R. Eklund (Eds.), *Handbook of sport psychology*. Hoboken, NJ: John Wiley & Sons.
- Greenlees, I. A., Bradley, A., Holder, T. P., & Thelwell, R. C. (2005). The impact of two forms of opponents' non-verbal communication on impression formation and outcome expectations. *Psychology of Sport and Exercise*, 6(1), 103–115. doi:10.1016/j.psychsport.2003.10.002
- Greenlees, I. A., Buscombe, R., Thelwell, R. C., Holder, T. P., & Rimmer, M. (2005). Impact of opponents' clothing and body language on impression formation and outcome expectations. *Journal of Sport and Exercise Psychology*, 27(1), 39–52. doi:10.1123/jsep.27.1.39
- Greenlees, I. A., Leyland, A., Thelwell, R. C., & Filby, W. (2008). Soccer penalty takers' uniform colour and pre-penalty kick gaze affect the impressions formed of them by opposing goalkeepers. *Journal of Sports Sciences*, 26(6), 569–576. doi:10.1080/02640410701744446
- Greenlees, I. A., Nunn, R. L., Graydon, J. K., & Maynard, I. A. (1999). The relationship between collective efficacy and precompetitive affect in rugby players: Testing Bandura's model of collective efficacy. *Perceptual and Motor Skills*, 89, 431–440. doi: 10.2466/pms.1999.89.2.431
- Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. *Psychology of Sport and Exercise*, 7, 81–97. doi:10.1016/j.psychsport.2005.04.002
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional Contagion*. Paris, France: Cambridge University Press.
- Hess, U. (2016). Nonverbal Communication (pp. 208–218). In: H. S. Friedman (Ed.), *Encyclopedia of Mental Health* (2nd edition, Vol 3). Waltham, MA: Academic Press, 2016. doi:10.1016/B978-0-12-397045-9.00218-4
- Heidrich, C., & Chiviacowsky, S. (2015). Stereotype threat affects the learning of sport motor skills. *Psychology of Sport and Exercise*, 18, 42–46. doi: 10.1016/j.psychsport.2014.12.002
- Hermann, J. H., & Vollmeyer, R. (2016). «Girls should cook, rather than kick!» – Female soccer players under stereotype threat. *Psychology of Sport and Exercise*, 26, 94–101. doi: 10.1016/j.psychsport.2016.06.010
- Inquisit 5.0 [online computer software] (2016). Seattle, WA: Millisecond Software.
- Johansson, G. (1973). Visual perception of biological motion and a model for its analysis. *Perception & Psychophysics*, 14(2), 201–211. doi:19.3758/BFO3212378
- Jones, M., & Harwood, C. (2008). Psychological momentum within competitive soccer: Players' perspectives. *Journal of Applied Sport Psychology*, 20, 57–72. doi:10.1080/10413200701785841
- Jones, E. E., & Pittman, T. S. (1982). Toward a general theory of strategic self-presentation. In J. Suls (Ed.), *Psychological perspectives on the self* (Vol. 1, pp. 231–262). Hillsdale, NJ: Erlbaum.
- Jordet, G. (2009a). When superstars flop: Public status and „choking under pressure“ in international soccer penalty shootouts. *Journal of Applied Sport Psychology*, 21, 125–130. doi:10.1080/10413200902777263
- Jordet, G. (2009b). Why do English players fail in soccer penalty shootouts? A study of team status, self-regulation, and choking under pressure. *Journal of Sports Sciences*, 27, 97–106. doi:10.1080/02640410802509144
- Jordet, G., & Hartmann, E. (2008). Avoidance motivation and choking under pressure in soccer penalty shoot-outs. *Journal of Sport and Exercise Psychology*, 30, 450–457. doi:10.1123/jsep.30.4.450
- Jordet, G., Hartman, E., & Sigmundstad, E. (2009). Temporal links to performing under pressure in international soccer penalty shootouts. *Psychology of Sport and Exercise*, 10(6), 621–627. doi:10.1016/h.psychsport.2009.03.004
- Kahneman, D. (2011). *Thinking fast and slow*. London, UK: Penguin books.

- Kraus, M. W., Huang, C., & Keltner, D. (2010). Tactile communication, cooperation, and performance: An ethological study of the NBA. *Emotion*, 10, 745-749. doi:10.1037/a0019382
- Kunda, Z., & Thagard, P. (1996). Forming Impressions from stereotypes, traits, and behaviors: A parallel-constraint-satisfaction theory. *Psychological Review*, 103(2), 284-308. doi:10.1037/0033-295X.103.2.284
- Manley, A. J., Greenlees, I., Graydon, J., Thelwell, R., Filby, W. C. D., & Smith, M. J. (2008). Athletes' perceived use of information sources when forming initial impressions and expectancies of a coach: An explorative study. *The Sport Psychologist*, 22, 73-89. doi:10.1123/tsp.22.1.73
- Masters, R., Poolton, J., & Van der Kamp, J. (2010). Regard and perceptions of size in soccer: Better is bigger. *Perception*, 39, 1290-1295. doi:10.1068/p6746
- Matsumoto, D., Frank, M. G., & Hwang, H. S. (2013). *Nonverbal Communication. Science and Applications*. Los Angeles: Sage.
- Mehta, P. H., Jones, A. C., & Josephs, R. A. (2008). The social endocrinology of dominance: Basal testosterone predicts cortisol changes and behavior following victory and defeat. *Journal of Personality and Social Psychology*, 94(6), 1078-1093. doi:10.1037/0022-3514.94.6.1078
- Mertens, J. P., Tracy, J. L., & Shariff, A. F. (2012). Status signals: adaptive benefits of displaying and observing the nonverbal expressions of pride and shame. *Cognition & Emotion*, 26, 390-406. doi:10.1080/02699931.2011.645281
- Moesch, K., & Apitzsch, E. (2012). How do coaches experience psychological momentum? A qualitative study of female elite handball teams. *The Sport Psychologist*, 26, 435-453. doi:10.1123/tsp.26.3.435
- Moesch, K., Kenttä, G., Bäckström, M., & Mattsson, C. M. (2015). Exploring NVBs in elite handball: How and when do players celebrate? *Journal of Applied Sport Psychology*, 27, 94-109. doi:10.1080/10413200.2014.953231
- Moesch, K., Kenttä, G., Bäckström, M., & Mattsson, C. M. (2016, online first). Nonverbal post-shot celebrations and their relationship with performance in elite handball. *International Journal of Sport and Exercise Psychology*, 1-15. doi:10.1080/1612197X.2016.1216148
- Moesch, K., Kenttä, G., & Mattsson, C. M. (2015). Exploring NVB in elite handball players: Development of the Handball Post-Shot Behavior Coding Scheme (H-PSB-CS). *Journal of Sport Behavior*, 38, 52-78.
- Moll, T., Jorret, G., & Pepping, G.-J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of Sport Sciences*, 28(9), 983-992. doi:10.1080/02640414.2010.484068
- Myers, N. D., & Feltz, D. L. (2007). From self-efficacy to collective efficacy in sport: Transitional methodological issues. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of Sport Psychology* (pp. 799-819). Wiley Online Library.
- Myers, N. D., Feltz, D. L., & Short, S. E. (2004). Collective efficacy and team performance: A longitudinal study of collegiate football teams. *Group Dynamics: Theory, Research, and Practice*, 8(2), 126-138. doi:10.1037/1089-2699.8.2.126
- Myers, N. D., Payment, C. A., & Feltz, D. L. (2004). Reciprocal relationships between collective efficacy and team performance in women's ice hockey. *Group Dynamics: Theory, Research, and Practice*, 8(3), 182-195. doi:10.1037/1089-2699.8.3.182
- Navarro, M., Van der Kamp, J., Ranvaud, R., & Savelsbergh, G. J. P. (2013). The mere presence of a goalkeeper affects the accuracy of penalty kicks. *Journal of Sports Sciences*, 31(9), 921-929. doi:10.1080/02640414.2012.762602
- Nielsen, T. M., & McPherson, S. L. (2001). Response selection and execution skills of professionals and novices during singles tennis competition. *Perceptual and Motor Skills*, 93(2), 541-555. doi:10.2466/pms.2001.93.2.541
- Nöel, B., & Van der Kamp, J. (2012). Gaze behaviour during the soccer penalty kick: An investigation of the effects of strategy and anxiety. *International Journal of Sport Psychology*, 43(4), 326-345. Retrieved from www.academia.edu
- Parkinson, B. (2005). Do facial movements express emotions or communicate motives? *Personality and Social Psychology Review*, 9(4), 278-311. doi:10.1207/s15327957pspr0904_1
- Parkinson, B. (1996). Emotions are social. *British Journal of Psychology*, 87(4), 663-683. doi:10.1111/j.2044-8295.1996.tb02615.x

- Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: Behavioral validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality* 17, 39-57. doi:10.1002/per.466
- Reiss, L. (2018, June 19). „Die Mannschaft“ sucht ihren Teamgeist. *t-online*. Retrieved from https://www.t-online.de/sport/fussball/id_83956948/wm-2018-deutsche-nationalmannschaft-sucht-teamgeist-nach-mexiko-pleite.html Accessed July 6, 2018
- Rejeski, W. J., & Lowe, C. A. (1980). Nonverbal expression of effort as causally relevant information. *Personality and Social Psychology Bulletin*, 6, 436-440. doi:10.1177/014616728063017
- Riggio, R. E., & Riggio, H. R. (2012). Face and body in motion. Nonverbal communication. In T. F. Cash (Ed.), *Encyclopedia of body image and human appearance* (Vol. 1, pp. 425-430). San Diego, CA: Elsevier Academic. doi:10.1016/B978-0-12-384925-0.00068-7
- Ronglan, T. R. (2007). Building and communicating collective efficacy: A season-long in-depth study of an elite sport team. *The Sport Psychologist*, 21, 78-93. doi:10.1123/tsp.21.1.78
- RTL (2018, June 18). WM 2018: Der Katastrophen-Kick der deutschen Nationalmannschaft gegen Mexiko in der Analyse. *RTL*. Retrieved from <https://www.rtl.de/cms/wm-2018-der-katastrophen-kick-der-deutschen-nationalmannschaft-gegen-mexiko-in-der-analyse-4178759.html> Accessed July 6, 2018
- Russell, J. A., Bachorowski, J.-A., & Fernandez-Dols, J.-M. (2003). Facial and vocal expressions of emotion. *Annual Review of Psychology*, 54, 329-349. doi:10.1146/annurev.psych.54.101601.145102
- Ryan, C., Furley, P., & Mulhall, K. (2016). Judgments of NVB by children with high-functioning autism spectrum disorder: Can they detect signs of winning and losing from brief video clips? *Journal of Autism and Developmental Disorders*, 46, 2916-2923. doi:10.1007/s10803-016-2839-9
- Schlenker, B. R. (1980). *Impression management*. Monterey, CA: Brooks/Cole.
- Schnyder, U., & Hossner, E.-J. (2016). Psychological issues in football officiating: An interview study with top-level referees. *Current Issues in Sport Science*, 1:004. doi:10.15203/CISS_2016.004
- Shariff, A. F., & Tracy, J. L. (2011). What are emotion expressions for? *Current Directions in Psychological Science*, 20(6), 395-399. doi:10.1177/0963721411424739
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797-811. doi: 10.1037/0022-3514.69.5.797
- Theweleit, D. (2018, June 18). Messi und Ronaldo spielen an der WM für die Unsterblichkeit. *Neue Zürcher Zeitung*. Retrieved from <https://www.nzz.ch/sport/fussball-wm-2018/fussball-wm-messi-und-ronaldo-spielen-fuer-die-unsterblichkeit-ld.1395653>. Accessed July 5, 2018.
- Tracy, J. L., & Matsumoto, D. (2008). The spontaneous expression of pride and shame: Evidence for biologically innate nonverbal displays. *Proceedings of the National Academy of Sciences*, 105(33), 11655-11660. doi:10.1073/pnas.0802686105
- Tracy, J. L., & Robins, R. W. (2007). The prototypical pride expression: Development of a nonverbal behaviour coding system. *Emotion*, 7(4), 789-801. doi:10.1037/1528-3542.7.4.789
- Tukey, J. W. (1990). Data-based graphics: visual display in the decades to come. *Statistical Science*, 5(3), 327-339. doi:10.1214/ss/1177012101
- Uljarevic, M., & Hamilton, A. (2013). Recognition of emotions in autism: A formal meta-analysis. *Journal of Autism and Developmental Disorders*, 43(7), 1517-1526. doi:10.1007/s10803-012-1695-5
- Van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social information (EASI) model. *Current Directions in Psychological Science*, 18(3), 184-188. doi:10.1111/j.1467-8721.2009.01633
- Vealey, R. S. (1986). Conceptualization of sport-confidence and competitive orientation: Preliminary investigation and instrument development. *Journal of Sport Psychology*, 8, 221-246. doi:10.1123/jsp.8.3.221
- Warr, P. B., & Knapper, C. (1968). *The perception of people and events*. London: Wiley.
- Weinberg, R. S. (1988). *The mental advantage: Developing your psychological skills in tennis*. Champaign, IL: Leisure Press.
- Weisbuch, M., & Ambady, N. (2010). Affective forecasting knowing what to want. *Current Directions in Psychological Science*, 14, 131-134. doi:10.1111/j.0963-7214.2005.00355.x

- Wheeler, S. C., & Petty, R. E. (2001). The effects of stereotype activation on behaviour: A review of possible mechanisms. *Psychological Bulletin*, 127(6), 797-826. doi: 10.1037/0033-2909.127.6.797
- Wood, G., & Wilson, M. R. (2010). A moving goalkeeper distracts penalty takers and impairs shooting accuracy. *Journal of Sports Sciences*, 28, 937–946. doi: 10.1080/02640414.2010.495995

10 Appendix

10.1 Publication 1: NVB and additional performance information

Abstract

The aim of the present research is to investigate whether the effects of nonverbal behaviour (NVB) on team outcome confidence in sports decrease when additional information on players' performance is provided. In three experiments using video footage of football players, we examined the effects of both NVB and performance information on team outcome confidence. When no additional performance-related information was given, team outcome confidence was significantly influenced by NVB (Experiment 1). When performance-related information was added, the effect of NVB remained large, independent of how strong information distinguished between low- and high-performance players (Experiments 2 & 3). In line with previous research, our results suggest that NVB has an important impact on a team's outcome confidence even when additional performance-related information is available.

Keywords: person perception; emotional expression; dominance and submissiveness

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Introduction

“My goal is to make sure my body language is right”, says Mesut Özil, a midfielder in the English Premier League and German National Team (Olley, 2016). With this statement, he acknowledges a continuous critique about his demeanour during matches. Even German National coach Joachim Löw criticizes Özil because of his body language: “Mesut has to improve his body language. He is aware of that because I and I think also Arsène Wenger has told him that” (SID, 2014).¹ Furthermore, media outlets have suggested that Özil's body language may have negatively affected his teammates' performance in the past (Wallrodt, 2016). Thus, despite being one of the best assist providers in the English Premier League from an objective perspective, his performance abilities are often not valued because of his nonverbal behaviour (NVB) on the field. Referring to this quote and to previous research on body language in the sport performance setting (Furley, Dicks, & Memmert, 2012; Furley, Moll, & Memmert, 2015; Furley, & Schweizer, 2014; Greenlees, Buscombe, Thelwell, Holder, & Rimmer, 2005; Greenlees, Leyland, Thelwell, & Filby, 2008), NVB might indeed be among *the* outstanding factors influencing emotions and team confidence within sport teams. However, research on NVB so far has neglected the player's objective performance. Therefore, both NVB and performance information as factors influencing confidence in sport teams are the concern of our study. More precisely, we are interested in the interplay of NVB and performance-related information: Do they exert separate additive effects on team confidence or do they depend on each other in such a way that when one kind of information is present, the effects of the other one diminishes?

Functions of Nonverbal Behaviour

Theoretical perspective on NVB

The two-stage model of emotional expression explains why nonverbal expressions transport social information (Shariff, & Tracy, 2011). In this model, Shariff and Tracy have built on Darwin's book, *The Expression of Emotions in Man and Animals* (Darwin, 1972), and the basic emotions proposed by Ekman (1992), who postulated that some basic emotions are innate and universally recognized. In the two-stage model of emotional expression, it is postulated that emotional expressions had a physiological function early on in evolution, serving as an internal physiological preparation to respond adaptively to incoming stimuli, while later, emotional expressions evolved to serve as communication tools. Thus, emotional expressions converted from being physiological reactions towards the nonverbal communication of social intentions. This evolutionary process has led to an exaggerated display of nonverbal expressions so that they are distinctive and have the capacity to function as effective signals. Further, it resulted in the universal human capacity to be able to recognize and

1 Originally, this quote from Joachim Löw is in the German language. Löw says in Die Welt (2016): “Mesut muss an seiner Körpersprache arbeiten. Das weiß er von mir, und ich glaube auch von Arsène Wenger”.

reliably interpret emotional expressions (see however Barrett, 2011, for a different approach).

Dominance and submissiveness as status symbols

Two examples of nonverbal expressions that are used to communicate one's social status to others (Mehta, Jones, & Josephs, 2008) are dominance and submissiveness. In terms of evolution, primates used dominant NVB to show their superiority when they won a fight and conversely submissive NVB to show an opponent their own inferiority to avoid further attacks from the opponent (De Waal, 2007; Mazur, 2005). In the sport setting, too, it has been demonstrated that nonverbal expressions, such as pride and shame or dominance and submissiveness, are used to communicate winning or losing in a competition and that these nonverbal signals of leading and trailing athletes influence the cognition of observers (Furley, & Schweizer, 2013, 2014). Accordingly, the previous research on dominant and submissive NVB in sport has shown that players showing dominant NVB are perceived more positively compared to athletes showing submissive NVB (Furley, Dicks, et al., 2012).

Predicting Outcomes from Nonverbal Behaviour

Previous research on the importance of NVB

The previous research examining the effects of NVB on person perception in the sport setting provides relevant findings concerning the importance of NVB. Of particular interest for our research, Furley and colleagues (2015) conducted a study in which they examined the interpersonal consequences of NVB in sport from both a teammate's and an opponent's perspective. In an artificial football penalty shootout, this study used point-light² stimuli to demonstrate that pride and shame act as nonverbal emotional expressions that influence observers' perceptions of athletes in such a way that within teammates, pride enhances positive emotions, cognitions and outcome expectancies, whereas shame enhances negative emotions and cognitions and reduces the expectancy of success beliefs. Conversely, when an opposing goalkeeper observes a penalty taker who shows expressions of pride, this goalkeeper tends to have lower performance expectations and expects a penalty of higher quality compared to a penalty taker who shows neutral NVB. Further, penalty takers expressing shame elicit more positive emotions and higher performance ability expectations from an opposing goalkeeper compared to takers expressing neutral NVB. With only a few exceptions, the effect sizes for the NVB effect in this study were large, according to Cohen (1988). Several authors in the past have also addressed the effects of NVB in sport (in an artificial setting: Buscombe, Greenlees, Holder, Thelwell, & Rimmer, 2006; Furley, Dicks, et al., 2012; Furley, Dicks, Stendtkke, & Memmert, 2012; Greenlees, Bradley, Holder, & Thelwell, 2005; Greenlees, Buscombe, et

2 The point-light technique (Johansson, 1973) is a method frequently used in the NVB research because it allows researchers to solely manipulate cues of body language while keeping constant surface features such as clothing or facial features.

al., 2005; Greenlees et al., 2008; in a non-laboratory study during the European and World Championships between 1972 and 2008: Moll, Jordet, & Pepping, 2010). Similar to Furley and colleagues (2015), the results of all these studies have in common that they reveal consistently high effects for the influences of nonverbal expressions on the related outcome variables (e. g., expectancies of success, perception of opponent's performance and personal characteristics of the opponent). Thus, the previous research already provides important findings on the importance of NVB in the sport performance setting.

The research mentioned so far serves as a significant starting point for further advancing our understanding of the role of NVB in sports: The experimental settings in these studies made sure "that no other information could be integrated to influence the participant's ratings and therefore the NVB-effect was most likely exaggerated compared to the actual effects of NVB in the field" (Furley et al., 2015, p. 18). Taking up this quote, it seems necessary to give perceivers more information that might influence the perception process to reduce the likelihood that the high effect sizes are simply the result of a setting that ignores further relevant information and therefore increases effect sizes. Thus, it is also crucial to create adequate stimulus material to test the effects of multiple cues. Importantly, several theoretical accounts predict that the effects of NVB should decrease when additional relevant information is provided.

Theoretical perspective on influences on the person perception process

Numerous theories on person perception and information integration provide support for the idea of including further information. Warr and Knapper (1968), in their schematic model of person perception, describe three sources of information that are used to form an impression of a target person. These sources are stored stimulus person information (i. e., reports from others about a players' ability), present stimulus person information (i. e., body language) and present context information (the context in which the perceiver is, e. g., observing sports clothes in a gym or in a job interview). Present stimulus information is the most important source of information; the other two sources mainly influence the effects of the present stimulus person information.

Importantly, more than one source of information influences the person perception process in this model – an assumption that also several other theories on person perception and information integration share (Asch, 1946; Anderson, 1991; Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Kunda, & Thagard, 1996). Despite their similarities, these theories differ in whether all available information is integrated in the perception process (Asch, 1946; Anderson, 1991) or not (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Kunda, & Thagard, 1996), according to Kunda and Thagard (1996).

For example, Fiske and Neuberg (1990) in their continuum model of impression formation distinguish between category-based or schema-driven top-down and attribute-based or data-driven bottom-up processes when forming an impression of a per-

son. The authors assume that different informational cues (i. e., NVB and performance information in our study) differently contribute to the perception process. More precisely, people automatically use cues that are immediately accessible in a social encounter to categorize a person. After this initial, schema-driven, categorization often through physical features such as body language, category-related cognitions are built and attention is drawn to attribute-based, more individuated target attributes such as personal characteristics. Dependent on the consistency of different available information, several re-categorisation processes are initiated until an overall evaluation is produced. Thus, if schema-based information is consistent enough, it is possible that the perception process is stopped before attribute-based information is proceeded. Of particular relevance for our research, Fiske and Neuberg (1990) also emphasize that several informational cues are included in the perception process but compared to Warr and Knapper (1968), they ascertain a priority in the perception process by noting that the category-based processes in general dominate the more attribute-based ones (see also Kunda, & Thagard, 1996).

Referring more detailed to those theories which assume that all available information cues are used to form an impression of a person, Anderson (1991) in his information integration theory holds an elementaristic perspective and assumes that people assess all available information separately and then integrate it, forming subjective internal representations of the world in an algebraic process. Combined with cognitive knowledge systems, these internal representations finally lead to an observable behaviour. The theory makes no assumptions concerning which information is more likely to be processed, but it allows that the importance of different information could be quantified. Thus, Fiske and Neuberg (1990) and Anderson (1991) disagree regarding the process by which informational cues are integrated. According to Fiske and Neuberg (1990), different informational cues are processed at different stages of the perception process, depending on their source. According to Anderson (1991), it is not the systematic order of processing information from different sources that determines the final impressions, but the integration of information is conceptualized as a more dynamic process which finally leads to a stable judgement. However, importantly, concerning our research, both these theories and also Warr and Knapper's (1968) schematic model of person perception allow deriving similar assumptions, namely that several informational cues (NVB and performance information) influence the person perception process, and consequently, that the influence of NVB might be reduced when more than one source of information is given. Concerning the research on integration of different information in the sports setting, a few studies have examined more than one factor influencing the perception process. This factor was clothing generally (Buscombe et al., 2006; Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005), and specifically wearing the colour red (Furley, Dicks, & Memmert, 2012; Greenlees et al., 2008; Hill, & Barton, 2005). However, clothing and its colour did not consistently prove to influence the person perception process.

These findings may be inconsistent because the colour of clothing does not necessarily provide performance-relevant information.

The Present Research

In the present study, we extend the previous research by adding performance-related information when testing the effects of NVB on team confidence. Accordingly, the aim of the present research is to test whether performance-related information has a diminishing influence on the effects of NVB on a team's confidence in winning a game.

Performance-related information was included besides NVB as a second present person stimulus information factor, following theoretical models on person perception (Fiske, & Neuberg, 1990; Warr, & Knapper, 1968; see also Freeman, & Ambady, 2011, for similar assumptions) and information integration (Anderson, 1991). Team confidence was the outcome variable in our study for two reasons. First, qualitative studies on sources of team confidence have provided the first evidence that body language, and in particular negative body language, might be an important source of (reduced) team confidence (Fransen, Vanbeselaere, de Cuyper, vande Broek, & Boen, 2015; Fransen, Vanbeselaere, Exadaktylos, vande Broek, de Cuyper, Berckmans, et al., 2012). Second, several studies have assumed a positive relationship between team confidence and the team's functioning (see Fransen, Mertens, Feltz, & Boen, 2017, for a review) or its actual performance (in the laboratory: Bray, 2004; Greenlees, Nunn, Graydon, & Maynard, 1999; in field studies: Feltz, & Lirgg, 1998; Fransen, Decroos, Vanbeselaere, vande Broek, De Cuyper, Vanroy, & Boen, 2015; Myers, Feltz, & Short, 2004; Myers, Payment, & Feltz, 2004).

A sequence of three experiments was designed to realize our goals. To make sure that differences in the results are only caused by the influence of NVB and performance-related information, the structure of all three experiments was identical, and only the kind of information provided was varied. We assumed that giving information about a player's performance to the participants would influence their person perception process and thus significantly reduce the high effects of NVB on team outcome confidence. A baseline for the effect size of NVB on team outcome confidence was established in Experiment 1. In Experiment 2, perceivers were additionally provided with performance-related information that distinguished between low- and high-performance athletes. In Experiment 3, this distinguishing information was even more pronounced.

Generally, we hypothesized both NVB and performance-related information to have an effect on team outcome confidence (Experiments 1–3). Crucially, however, according to the reviewed literature on person perception theories, we hypothesized that the effect of NVB on team outcome confidence should decrease when performance-related information distinguishes between excellent and less good players (Experiments 2 & 3).

Experiments

To test our hypotheses, we created videos of football players as stimulus material for all experiments, which had to fulfil the following preconditions: First, the material should clearly differentiate between dominant and submissive NVB to make sure that our results are only caused by our experimental manipulations. Thus, besides differences in NVB, there should be no difference between a dominant and a submissive video. Second, the material should give us the opportunity to further manipulate performance-related information. Third, the material should be derived from a sports situation that might on one hand happen in a sports competition scenario but that is on the other hand still highly controlled. Fourth, considering that participants in the experiments should rate the confidence in their own team, and that mixed teams in football are very rare, both male and female videos were needed to allow for gender-equivalent ratings during the experiments. In the following, we describe how we created and tested our stimulus material in two separate pre-studies for both the female and the male videos, before advancing to the experiments themselves.

Development of the Stimulus Material

We created video footage of 12 female and 12 male football players (actors). The footage consisted of each player entering a changing room and posing in front of a video camera. Each video lasted 15 seconds. All footage was filmed with a Nikon 1, V3 digital video camera mounted on a tripod placed 2 m from the posing actor at a height of 1.65 m so that the entire body of the actor could be seen all the time. All actors received the same instructions on how to present themselves in front of the camera. The instructions were directly derived from the experimental manipulations of dominance and submissiveness used by Greenlees, Bradley, and colleagues (2005) and Furley and Dicks (2012). In the dominant NVB condition, the actors were asked to (i) walk and stand with an erect posture (shoulders back and chest out), (ii) spread the limbs from the torso to occupy more space, and (iii) hold the head up (chin parallel to the ground) so that the eyes were looking directly at the camera for prolonged periods of time. Instructions for the submissive NVB condition consisted of adopting a slouched posture with (i) the head and chin pointing down and shoulders hanging to the front, (ii) limbs touching the torso to minimize the occupied space, and (iii) eyes looking down or briefly glancing at the camera. Each actor (12 men and 12 women) was filmed twice, once in the dominant and once in the submissive NVB condition, resulting in 24 video clips for each gender and 48 total videos. We realized two separate pre-studies for the 24 male and 24 female videos.

Pre-studies

By conducting the two pre-studies – Pre-study 1 for the female videos and Pre-study 2 for the male videos – we were aiming to ensure that the stimulus material we used for all the following experiments to manipulate NVB significantly differentiated between dominant and submissive postures.

Method

Participants

A total of 40 participants (27 women, 13 men) with an average age of $M_{age} = 23.50$ ($SD = 2.74$) rated the female videos. The male footage was also rated by 40 participants (26 women, 14 men) with an average age of $M_{age} = 22.59$ ($SD = 2.03$). All participants voluntarily took part in the study. Written informed consent was obtained from every participant before commencing the experiment, and institutional ethical approval was obtained.

NVB manipulation: videos (within-participants)

From each actor, one video in a dominant posture and one video in a submissive posture were provided, leading to 12 dominant and 12 submissive videos, both for female and male videos.

Measure

Participants evaluated each dominant and each submissive video on two 7 – point Likert scales, ranging from not at all dominant (1) to highly dominant (7) and not at all submissive (1) to highly submissive (7). We used two unidimensional scales instead of a single bipolar one, as some researchers have suggested that NVB may be comprised of both dominant and submissive cues at the same time. Although we tried to rule this out by our instructions, we followed their recommendations and used two separate scales (Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012).

Procedure

Inquisit software 5.0 (Online computer software, 2016) was used to present the videos in a completely randomized design, meaning that the order in which the videos was presented was automatically varied for each participant. In the instructions, the participants were told that the following experiment was about how accurately athletes could be evaluated without knowing them personally. After each video, the participants rated the videos by clicking the left mouse button on the two Likert scales described above. After completing the experiment, the participants were informed about the purpose of the study.

Data analysis

Data analysis was the same for both pre-studies: Two (one for the dominance ratings and one for the submissiveness ratings) 2×2 (video [dominant vs. submissive] $\times$ [gender of participants: male vs. female]) ANOVAs with repeated measures on the video factor were conducted to test whether i) the dominant videos were perceived as more dominant than the submissive videos (ANOVA 1) and whether the submissive videos were perceived as more submissive than the dominant ones (ANOVA 2) and ii) whether perceivers' gender influenced the ratings of dominance and submissiveness.

Results

The actors were rated as significantly more dominant in the dominant videos ($M = 5.32$, $SD = 0.64$ for the female videos, $M = 5.39$, $SD = 0.47$ for the male videos) than in the submissive videos ($M = 2.14$, $SD = 0.72$ for the female videos, $M = 2.55$, $SD = 0.87$ for the male videos). At the same time, the actors were rated as significantly more submissive in the submissive videos ($M = 5.47$, $SD = 0.69$ for the female videos, $M = 5.22$, $SD = 0.73$ for the male videos) than in the dominant videos ($M = 2.33$, $SD = 0.55$ for the female videos, $M = 2.49$, $SD = 0.51$ for the male videos). For the male and female videos, no significant main effect was observed for gender, and no significant interaction was noted between NVB and gender (see Tab. 1 for the results of all significance tests).

Additionally, we calculated Cronbach's α for the eight video scales (four for the male and four for the female footage), each consisting of 12 videos. Except for two scales, the values were acceptable, according to Kline (1999), with values higher than $\alpha = .70$ as follows: i) dominant videos, dominance ratings, $\alpha = .80$ (female videos), $\alpha = .57$ (male videos); ii) submissive videos, dominance ratings, $\alpha = .87$ (female videos), $\alpha = .88$ (male videos); iii) dominant videos, submissiveness ratings, $\alpha = .71$ (female videos), $\alpha = .60$ (male videos); and iv) submissive videos, submissiveness ratings, $\alpha = .72$ (female videos), $\alpha = .76$ (male videos).

Tab. 1. Results of ANOVAs (Pre-study 1 and Pre-study 2)

		Main effect NVB	Main effect gender	Interaction (NVB x gender)
Pre-study 1 (female videos)	Dominance rating	$F[1, 38] = 276.84$, $p < .001$, $\eta^2_p = .88$	$F[1, 38] = 0.25$, $p = .62$, $\eta^2_p = .01$	$F[1, 38] = 1.00$, $p = .33$, $\eta^2_p = .03$
	Submis- siveness rating	$F[1, 38] = 342.69$, $p < .001$, $\eta^2_p = .90$	$F[1, 38] = 0.99$, $p = .33$, $\eta^2_p = .03$	$F[1, 38] = 1.78$, $p = .19$, $\eta^2_p = .05$
Pre-study 2 (male videos)	Dominance rating	$F[1, 38] = 146.85$, $p < .001$, $\eta^2_p = .91$	$F[1, 38] = 0.40$, $p = .54$, $\eta^2_p = .03$	$F[1, 38] = 0.87$, $p = .77$, $\eta^2_p = .01$
	Submis- siveness rating	$F[1, 38] = 196.01$, $p < .001$, $\eta^2_p = .93$	$F[1, 38] = 0.48$, $p = .50$, $\eta^2_p = .03$	$F[1, 38] = 0.01$, $p = .94$, $\eta^2_p = .00$

Discussion

The results of the pre-studies show that our stimulus material differentiates between dominant and submissive postures. Further, the results revealed no gender differences. Thus, these videos could be used to manipulate NVB in the three main experiments.

Manipulation of Independent Variables, Measure and Procedure in the Three Experiments

In all three main experiments, we manipulated NVB (dominant vs. submissive) and participants' perspective (teammate or opponent). In Experiments 2 and 3, we additionally manipulated performance-related information. The manipulation of NVB and participants' perspective, the dependent measure and the general procedure were the same in all three main experiments. Therefore, we describe them in the following paragraphs.

NVB manipulation (within-participants)

We used the stimulus material that we created and tested in the pre-studies as the first experimental factor. Each participant saw six dominant and six submissive videos of his or her corresponding gender, thus totalling 12 videos.

Perspective manipulation (within-participants)

The second experimental factor was also varied within subjects and involved the perspective in which participants had to rate the footage. In the teammate condition, participants had to adopt the role of a potential teammate, while in the opponent condition, they had to adopt the role of a potential opponent of the player shown in the video. Each female participant saw 12 female videos, and each male participant saw 12 male videos; they rated each video both from a teammate's and an opponent's perspective.

Measure

We used team confidence or more precisely team outcome confidence as the dependent variable. The framework of this construct originally builds on Bandura's collective efficacy (1997). Thus, collective efficacy is one part of team confidence but the concept of team confidence not only comprises collective efficacy but also team outcome confidence as a second part (see Fransen et al., 2017, for a review). Collective efficacy as a team's confidence in the process of accomplishing a task within the team focuses on the skills to obtain a goal, thus it is clearly process-oriented. Contrarily, team outcome confidence – similar terms are competitive efficacy (Feltz, & Chase, 1998; Fransen, Kleinert, Dithurbide, Vanbeselaere, & Boen, 2014; Myers, & Feltz, 2007) and team outcome efficacy in work teams (Collins, & Parker, 2010) – is outcome-oriented and implies “athletes' confidence in their team's abilities to obtain a given outcome (e. g., the confidence that your team has the abilities to win the game or to finish in the top three of a ranking)” (Fransen et al., 2017, pp.3-4). Notably, team outcome confidence is not to be confused with Bandura's (1997) outcome expectancies as the confidence that certain behaviours (e. g., winning) are followed by certain consequences (e. g., coach's approval). Importantly, the previous research has consistently revealed a positive relation between the dynamic construct of team confidence and the ultimate performance of the team (see Fransen et al., 2017, for a

review). This distinction between the two types of team confidence is important as in our research, we intended to measure a team's belief in outperforming others, thus team outcome confidence and not collective efficacy. Accordingly, when measuring team outcome confidence, we adhered to the way in which team outcome confidence was measured in previous research (Fransen et al., 2014; Fransen et al., 2017; Myers & Feltz, 2007). Thus, we used a single-item measure assessing the confidence that the team would win the game if (i) the player was a part of the own team and (ii) if the player was a part of the opponent team, as this seems to be the most common way of measuring team outcome confidence (Fransen et al., 2017). Accordingly, we had two single-item measures for each video. The perceivers evaluated the short video scenes subsequent to every video presentation on a rating scale provided with 11 equally spaced categories, beginning at 0% (not at all confident) and ending at 100% (absolutely confident).

Procedure

Inquisit software 5.0 (online computer software, 2016) was used to present the videos. The participants were instructed to answer as accurately as possible, while speed was not emphasized. The videos were presented silently to make sure that variations in the ratings were only based on visual information. Using the software, the videos were presented in a completely randomized design, meaning that both the order of the presentation itself was automatically varied for each participant, and the condition (dominant or submissive) in which the participants watched the videos was randomized for each perceiver. Using this procedure, we ensured that no actors were rated more favourably just because of their general attractiveness (see Warr, & Knapper, 1968, for further information) and that the results did not depend on specific combinations of stimuli. After each video, the participants rated the videos by clicking the left mouse button on the scale described above. For each video, the respondents rated team outcome confidence from both the teammate's and opponent's perspective. In the end, the participants filled out a short questionnaire on the notebook to provide demographic data (gender, age, and experience with team sports). After completing the experiment, the participants were informed about the purpose of the study.

The participants were instructed to assume the role of a team captain in an upcoming football promotion tie. As the team's captain, they should help the coach to form the best team for the match. In line with the goal of the study and to create a framework in which the perceivers really felt like they were part of their own existing team, women only watched female footage, and men only watched male videos. In all the experiments, the participants received – simultaneously to the video and on the right side of the monitor – information on the personal characteristics of the player in the video. This information consisted of the personal characteristics of the player in the video (i. e., name, age, position, years of membership in the club and hobbies), which was the same in both the dominant and submissive condition.

For all three main experiments, a power analysis was run prior to data collection with G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2007). To ensure that all studies were adequately powered, a small-to-medium effect size of $\eta^2_p = .04$ (Cohen, 1988) was chosen. Further, a power of .80 and an α error of .05 was assumed, revealing the optimal sample size to be $N = 50$. As we intended the studies to be overpowered rather than underpowered, more than 50 participants were recruited for each experiment (see Schweizer, & Furley, 2016, on the role of sample sizes for sport psychological research).

Experiment 1: NVB and Team Outcome Confidence

The aim of Experiment 1 was to gather a baseline for the magnitude of the NVB-effect to be able to determine the influence of performance-related information when adding this factor in Experiments 2 and 3. According to the reviewed NVB literature, we assumed that team outcome confidence would be higher when teammates showed dominant NVB than when they displayed submissive NVB, whereas from the opponents' perspective, we hypothesized a reversed pattern of results.

Method

Participants

The sample consisted of 80 German sport science students (41 women and 39 men; $M_{\text{age}} = 23.90$, $SD = 4.90$) who voluntarily took part in the study. Neither gender nor football experience nor level of playing significantly influenced the pattern of results. Written informed consent was obtained from every participant before commencing the experiment, and the study was conducted in accordance with the APA ethical guidelines.

Results

As expected, team outcome confidence was higher in the dominant condition compared to the submissive condition when the actor was a teammate, whereas team outcome confidence was lower in the dominant condition compared to the submissive condition when the actor was an opponent (Fig. 1). According to Figure 1, the pattern of results for the teammate's and the opponent's perspective are almost mirror-inverted. A 2×2 (NVB [dominant, submissive] $\times$ perspective [teammate, opponent]) ANOVA with repeated measures on both independent variables confirmed the significance of this interaction between NVB and perspective on team outcome confidence ($F[1, 79] = 146.63$, $p < .001$, $\eta^2_p = .65$). In the remainder of this article, we refer to the interaction between NVB and perspective as *NVB-effect*. We do not report the main effects and the interaction effects in which perspective was not included because each effect was dependent on whether perceivers did their ratings from a teammates' or from an opponents' perspective. Otherwise, the effects would neutralize each other.

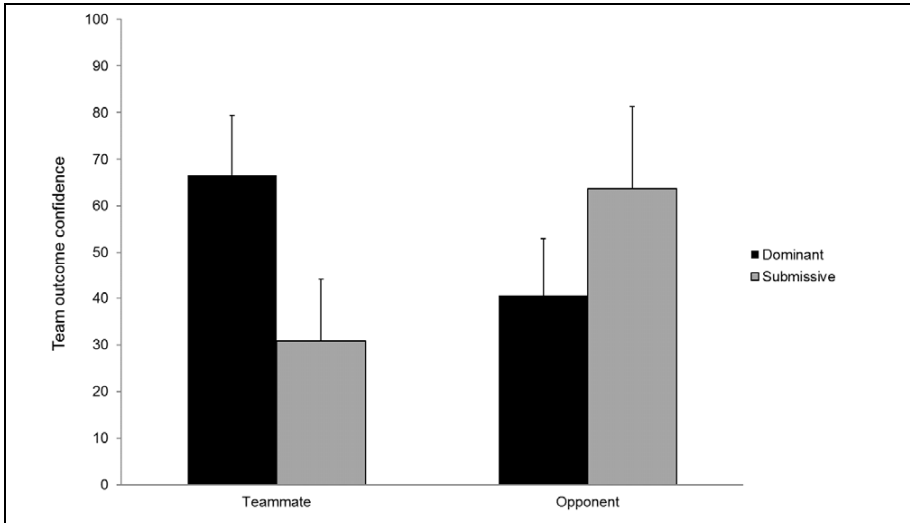


Fig. 1. Mean team outcome confidence ratings as a function of NVB from a teammate's and an opponent's perspective in Experiment 1. The error bars represent standard deviations.

Discussion

The data are in line with our hypothesis that perceivers feel more confident winning a match when a teammate shows dominant NVB compared to a teammate displaying submissive NVB. Furthermore – and also in line with our hypothesis – perceivers feel more confident winning a match when an opponent shows submissive NVB compared to an opponent showing dominant NVB. The large effect size for the NVB-effect (Cohen, 1988) in our study is consistent with previous research on NVB (Furley & Schweizer, 2014; Furley et al., 2015; Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005; Greenlees et al., 2008) and underlines that NVB highly influences the confidence of an athlete in his team.

However, the interpretation of the large effect size of Experiment 1 warrants some caution, as similar to previous research, differences in NVB were the only information that distinguished one video from another. Thus, we cannot conclude from our results that NVB is the only information that perceivers use in the person perception process, as participants had only one cue on which they had to give their ratings on perceived team outcome confidence. This is on one hand a strength of this study, as we ensured with our controlled and randomized stimulus material that the results were caused by variations in NVB as the independent variable. On the other hand, and similar to the limitations of previous research (i. e., Furley, Dicks, & Memmert, 2012; Furley & Schweizer, 2014; Furley et al., 2015), the NVB-effect might be smaller than the results of Experiment 1 suggest when a perceiver's person perception process would not only be determined by one relevant information category. Hence, the aim

of Experiment 2 was to examine whether the relevance of NVB on perceivers' team outcome confidence was reduced when further performance-related information was available.

Experiment 2: NVB, Performance Information and Team Outcome Confidence

According to Warr and Knapper's (1968) schematic model of person perception, we hypothesized that observers will use performance-related information (present stimulus person information) to form their impressions about the player in the video. We hypothesized that both NVB and performance information would influence team outcome confidence. Importantly, we expected the effect of NVB on team outcome confidence to be smaller when additional information was provided than when it was not.

Method

Participants

A total of 69 German sport science students – different from the ones in Experiment 1 – voluntarily took part in the study (34 women and 35 men; $M_{\text{age}} = 22.35$, $SD = 3.27$). Neither gender nor football experience nor level of playing significantly influenced the pattern of results. Written informed consent was obtained from every participant, and the study was conducted in accordance with the APA ethical guidelines.

Performance-related information (within-participants)

This factor was added in Experiment 2 compared to Experiment 1. In addition to the personal characteristics that the participants already saw in Experiment 1 (name, age, position, years of membership in the club and hobbies), the videos contained either high – or low-performance information. More precisely, the players in the video received either 55, 60 or 65 (high-performance information) or 35, 40 or 45 (low-performance information) points of a maximum 100 points on an expert rating about the players' performance during the whole season. This factor was varied within participants meaning that each observer indeed saw one player only with high – or low-performance information, but across all videos, each participant saw three high-performance information/dominant NVB videos, three high-performance information/submissive NVB videos, three low-performance information/dominant NVB videos and three low-performance information/submissive NVB videos.

Procedure (specific for Experiment 2)

The only difference in the procedure between Experiment 1 and 2 was that when introducing the task, the participants were informed that they would be provided with performance-related information. We told them that (i) the points were the final result of the players' performance during the whole season; (ii) they were made by experts; (iii) different criteria played a role when assigning the points, such as participation in important match situations and strengths in tackles; (iv) the highest score was 100 points, while the average score was 50 points and the lowest score was 0 points.

Adding performance-related information also expanded the randomization. First, to ensure a non-artificial scenario for each participant, we randomly varied each video in terms of whether they saw 55, 60 or 65 points as high-performance information and 35, 40 or 45 points as low-performance information. Second, the performance-related points were randomly assigned to the 12 videos each participant saw. Thus, for each participant, which video was seen in which condition was randomly varied. Using this procedure, we made sure that the results did not depend on specific combinations of stimuli.

Results

The descriptive results of Experiment 2 are illustrated in Figure 2. To test our hypothesis that performance-related information reduces the NVB-effect, we conducted a $2 \times 2 \times 2$ (performance-related information [high vs. low] $\times$ NVB [dominant vs. submissive] $\times$ perspective [teammate vs. opponent]) repeated-measure univariate ANOVA.³ The analysis revealed a significant interaction effect between information and perspective ($F[1, 68] = 141.62, p < .001, \eta^2_p = .68$) and between NVB and perspective ($F[1, 68] = 90.41, p < .001, \eta^2_p = .57$). This means that contrary to our hypothesis, team outcome confidence was influenced in an additive manner to the same degree by NVB and performance-related information. Accordingly, the effects on team outcome confidence were exactly the same, independent of whether perceivers had the dominant NVB/low-performance condition or the submissive NVB/high-performance condition. Furthermore, from a teammate's perspective, team outcome confidence was higher when performance-related information was high or when the player showed dominant NVB, whereas team outcome confidence was lower when the perceivers received low-performance information or saw players showing submissive NVB. Additionally, from the teammate's perspective, team outcome confidence was highest in the high-performance/dominant NVB condition, whereas team outcome confidence was lowest in the low-performance/submissive NVB condition. From the opponent's perspective, this pattern of results was exactly reversed. As in Experiment 1, we do not report the main effects and the interaction effects in which perspective was not included because each effect was dependent on whether perceivers did their ratings from a teammate's or from an opponent's perspective.

3 A box-plot analysis revealed 13 outliers. Removing the outliers did not change the results. Therefore, the outliers remained in our analysis.

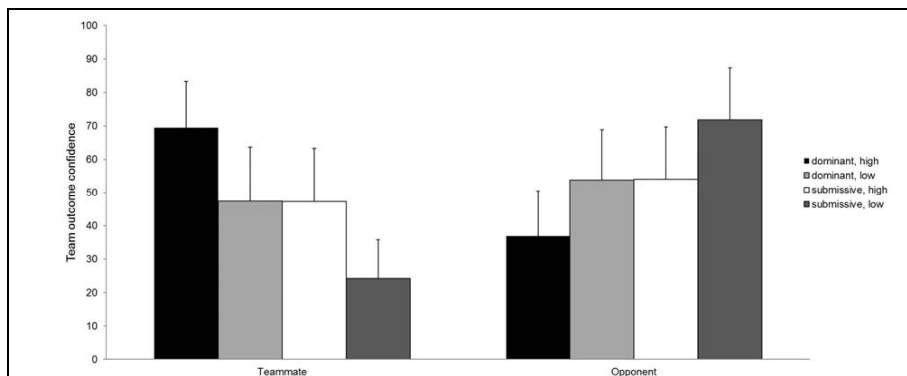


Fig. 2. Mean team outcome confidence ratings as a function of NVB and performance-related information from a teammate's and an opponent's perspective in Experiment 2. The error bars represent standard deviations.

Discussion

The data were not in line with our hypothesis that the influence of NVB on team outcome confidence is reduced when performance-related information is added as another factor influencing the person perception process. Still, our results are in accordance with our general hypothesis that both NVB and performance-related information have a considerable influence on team outcome confidence, as the effect sizes both for performance-related information and NVB were large in terms of Cohen (1988). Moreover, the effect size of the NVB-effect was as high as in Experiment 1 and comparable to previous NVB research (Buscombe et al., 2006; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, & Schweizer, 2014; Furley et al., 2015; Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005; Greenlees et al., 2008). Although the NVB-effect was not reduced as hypothesized, our findings are in line with person perception theories which all assume that first impressions are built on several available cues. Furthermore, we can conclude from the findings of Experiment 2 that the NVB-effect tends to remain constantly high even when generating a framework in which more information than in previous research has to be integrated in the perception process. One weakness of Experiment 2 might be that the performance-related information we allocated to the players was only moderately high (55, 60 or 65 points) or moderately low (35, 40 or 45 points). Thus, it did not differentiate very strongly between high- and low-performance players. It seems feasible that the effects of NVB on team outcome confidence are only reduced when performance-related information differentiates very strongly between good and bad players. Therefore, in Experiment 3, we provided the participants with stronger performance-related information.

Experiment 3: NVB, Strong Performance Information and Team Outcome Confidence

Considering the limitation of Experiment 2, in Experiment 3, we examined whether giving participants performance-related information that differentiates more strongly between players changes the relevance that performance-related information and NVB have as cues influencing the person perception process. We hypothesized that both NVB and performance-related information would have an effect on team outcome confidence; however, we expected the effect of NVB to decrease.

Method

Participants

A total of 61 Swiss university students – different from the ones in Experiment 1 – all studying sport science (29 women and 32 man; $M_{\text{age}} = 20.82$, $SD = 1.86$) participated in the study. They received course credits in return. Neither gender nor football experience nor level of playing significantly influenced the pattern of results. Written informed consent was obtained from every participant before commencing the experiment, and the study was conducted in accordance with the APA ethical guidelines.

Performance-related information manipulation (within-participants)

In contrast to Experiment 2, the players in the video either were attributed 80, 85 or 90 points as high-performance information or 10, 15 or 20 points as low-performance information. Thus, the performance-related information distinguished more strongly between good and bad players.

Results

The descriptive results of Experiment 3 are displayed in Figure 3. To test our hypothesis that performance-related information reduces the NVB-effect, we conducted a $2 \times 2 \times 2$ (performance-related information [high vs. low] $\times$ NVB [dominant vs. submissive] $\times$ perspective [teammate vs. opponent]) repeated-measure univariate ANOVA⁴, as in Experiment 2. The analysis revealed a significant interaction between NVB and perspective ($F[1, 60] = 88.48$, $p < .001$, $\eta^2_p = .60$) and between information and perspective ($F[1, 60] = 267.45$, $p < .001$, $\eta^2_p = .82$), meaning that just like in Experiment 2, team outcome confidence depended (in an additive manner) on whether the player in the video showed dominant or submissive NVB on the performance-related information perceivers had and on the teammate's or opponent's perspective. Specifically, just as in Experiment 2, the influence of the interaction between NVB and perspective and between information and perspective on team outcome confidence was highly significant, effect sizes were large, and the direction of the interactions was the same as well. The only difference between Experiment 2 and 3

4 A box-plot analysis revealed 11 outliers. Removing the outliers did not change the results. Therefore, the outliers remained in our analysis.

was that in Experiment 3, the influence of performance-related information was somewhat higher than the influence of NVB, according to the corresponding effect sizes. In contrast to Experiment 2, the effects on team outcome confidence slightly depended on whether the perceivers had the dominant NVB/low-performance condition or the submissive NVB/high-performance condition: From the teammate's perspective, team outcome confidence was higher in the submissive NVB/high-performance information condition compared to the dominant NVB/low-performance information condition, whereas from the opponent's perspective, team outcome confidence was higher in the dominant NVB/low-performance condition compared to the submissive NVB/high-performance condition. Nevertheless, just as in Experiment 2, the pattern of results was almost reversed from the opponent's perspective compared to the teammate's perspective. As in Experiment 1 and 2, we do not report the main effects and the interaction effects in which perspective was not included because each effect was dependent on whether perceivers did their ratings from a teammates' or from an opponents' perspective.

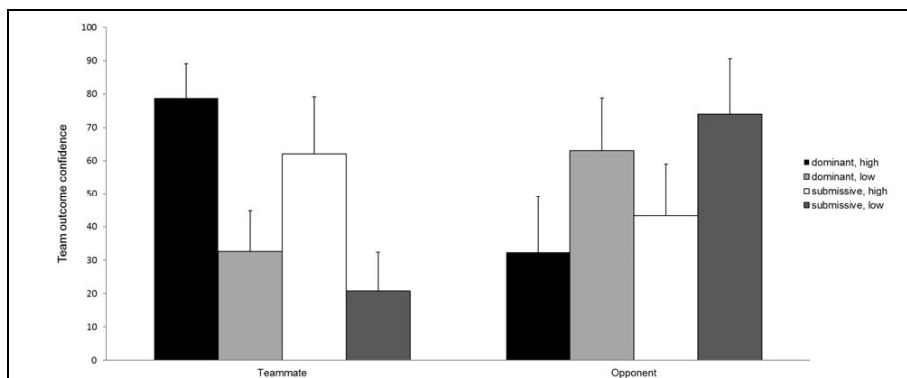


Fig. 3. Mean team outcome confidence ratings as a function of NVB and performance-related information from a teammate's and an opponent's perspective in Experiment 3. The error bars represent standard deviations.

Discussion

The results of Experiment 3 are not in line with the hypothesis that the influence of NVB on team outcome confidence is reduced when strong performance-related information is added. Instead, based on the effect size, the influence of NVB remains large and similar to previous NVB research and to the effect size in Experiment 2. As the effect size of performance-related information is also large, our data are in accordance with our general hypothesis that perceivers rely both on NVB and performance-related information when information is strong. Thus, in line with previous research on person perception, people do not rely on one single cue when forming their impressions of others, but on several available perception-relevant criteria (Warr, & Knapper, 1968). Furthermore, the effect size of performance-related information was

somewhat larger than in Experiment 2 and larger than the effect size of the NVB-effect in all three experiments, meaning that the influence of other criteria (i. e., performance-related information in our study) tends to be higher when they are unambiguous in terms of the interpretation.

Comparing Experiment 1-3 Results

For the three experiments, we calculated confidence intervals for the effect sizes that describe the interactions between perspective, NVB and information and team outcome confidence (Cumming, 2012). This allowed us to assess whether the effect sizes for NVB varied between the experiments depending on the presence and strength of additional information. From Experiment 1, we considered the effect size of the interaction between perspective and NVB, and from Experiments 2 and 3, we took the effect sizes of both the interaction between perspective and NVB and between perspective and information. Afterwards, we transformed partial eta square into the effect size r using Cohen's calculations (Cohen, 1988) and computed the 95% confidence intervals for all the effect sizes (Cumming, 2012). The comparison of the effect sizes and confidence intervals for all experimental conditions are shown in Figure 4 (see Tab. 2 for exact values). The confidence intervals for all the effect sizes overlapped, meaning that the perceivers were similarly influenced in their team outcome confidence regardless of the presence or absence (Experiment 1 vs. Experiment 2 & 3) and the strength (Experiment 2 vs. 3) of performance-related information. Thus, we could not confirm our hypothesis that the effect of NVB on team outcome confidence decreases when performance-related information distinguishes between good and bad players. Importantly, the effect sizes for the interaction between perspective and NVB are nearly identical in all three experiments which means that the effect of NVB remains constantly high independent of further performance-related information. The effect sizes for the interaction between perspective and information were somewhat larger than for the influence of NVB, especially in Experiment 3, where performance-related information distinguished very strongly between good and bad players, suggesting that the influence of performance-related information on team outcome confidence might be slightly bigger than the influence of NVB. Nevertheless, as the confidence intervals for all the effect sizes overlapped, the magnitudes both of the NVB-effect and of the performance-related information effect are quite the same, supporting our general hypothesis that both NVB and performance-related information influence team outcome confidence among teammates and opponents.

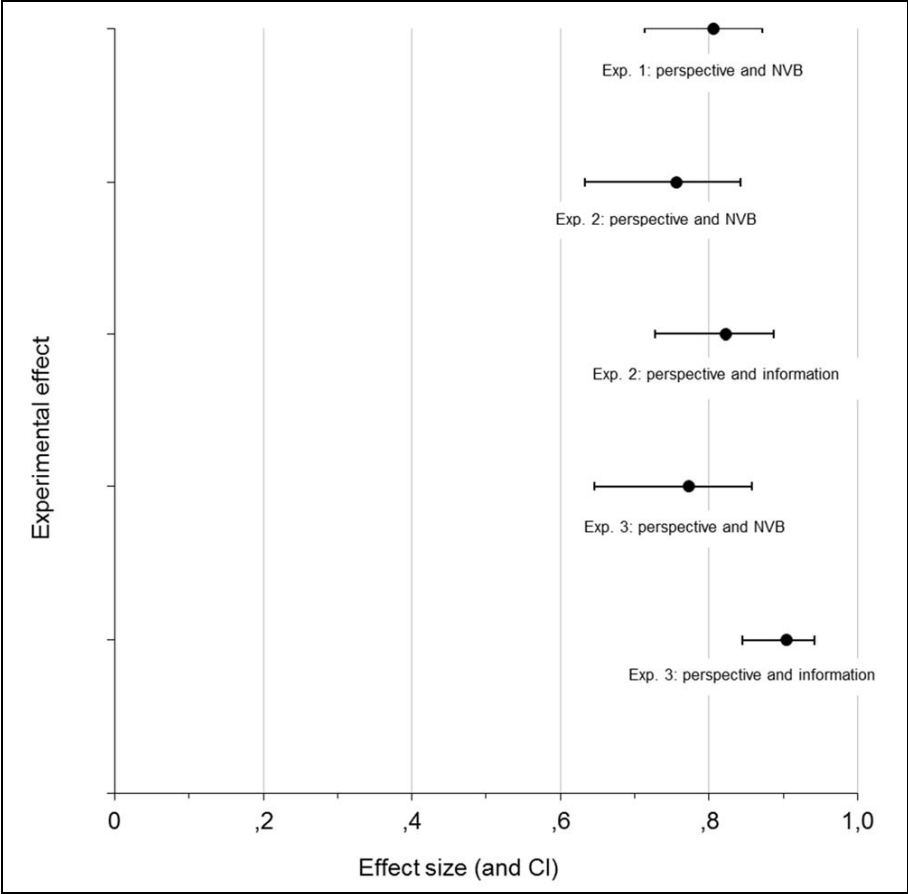


Fig. 4. The effect sizes r and 95% confidence intervals for the five experimental effects in Experiments 1–3.

Tab. 2. Comparison of Effect Sizes Between Experiments

	<i>n</i>	<i>r</i>	95% CI
Experiment 1: perspective and NVB	80	.806	[.713, .872]
Experiment 2: perspective and NVB	69	.756	[.632, .842]
Experiment 2: perspective and information	69	.822	[.727, .886]
Experiment 3: perspective and NVB	61	.772	[.646, .857]
Experiment 3: perspective and information	61	.904	[.844, .941]

Note. CI = confidence interval. Numbers in brackets indicate lower limits and upper limits.

General Discussion

Summary and Theoretical Integration of Results

The aim of the present study was to advance previous research on the importance of NVB in the sport performance setting by creating an experimental design in which, besides NVB, performance-related information that might influence the person perception process was included. Across a series of three experiments, it was shown that the NVB-effect was stable, irrespective of how strong performance-related information distinguished between good and bad players. The nonverbal expression of dominance and submissiveness strongly influenced team outcome confidence of the perceivers in Experiment 1. Thus, we were able to replicate the previous research on the effects of NVB in the sport performance setting by revealing a high effect size for the NVB-effect and thereby following the increasing calls for replication in the psychological literature (Pashler, & Wagenmakers, 2012; Simons, 2014; Yong, 2012). The results of Experiment 2 and 3 were partly in line with our hypothesis: On one hand, and according to our general hypothesis, both performance-related information and NVB significantly influenced team outcome confidence. On the other hand, and in contrast to our hypothesis, the effect sizes for the NVB-effect were not significantly reduced but remained large when adding performance-related information. Independent of whether information distinguished less strong (Experiment 2) or stronger (Experiment 3) between athletes' performance, the effect sizes for both the NVB- and the performance-related information effect were large, meaning that team outcome confidence was nearly to the same degree influenced by performance-related information and by differences in NVB.

The current results add to the growing body of literature on NVB in the sport performance setting. Importantly, the present research provides added value to previous NVB research because our findings suggest that the NVB-effect remains stable even in a framework in which further performance-related information and personal characteristics are available. Furthermore, our results add evidence to the theoretical assumptions of the person perception research by suggesting that not only NVB but also further performance-related information has an influence on team outcome confidence. Thus, our results are in line with theories of person perception and information integration (Anderson, 1991; Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968) which emphasize that person perception processes rely on multiple instead of single cues. Following Fiske and Neuberg's (1990) continuum model of impression formation, it is likely that NVB as category-based information is processed prior to the more individuated performance information. Consequently, when this nonverbal information is sufficient to allocate a player in an existing football player schema, the perception process might be stopped even before the integration of performance information has started. As we did not measure whether and how long perceivers paid attention to the performance information we cannot

shed more light on this. Still, we can be sure that the participants did read the performance information as our results do not only show a large effect for NVB but also for performance information. Moreover, as the present findings experimentally identify a teammate's or an opponent's NVB as one important source of a team's outcome confidence, our results confirm the previous, exploratory research on sources of team confidence (Fransen, Vanbeselaere, De Cuyper, et al., 2015; Fransen, Vanbeselaere, Exadaktylos, et al., 2012) suggesting that especially negative body language is an important source of team confidence.

Thus, our results are also consistent with evolutionary accounts of NVB and the two-stage model of emotional expression, in which Shariff and Tracy (2011) argued that emotional expressions transport social information. These interpersonal effects of NVB are also of particular relevance in our research, as we measured effects of NVB from both a teammate's and an opponent's perspective, and they are further highlighted in van Kleef's information as social information model (Van Kleef, 2009) that has its origins in a social-functional perspective on emotion (Parkinson, 1996; Shariff & Tracy, 2011). This model highlights a recent perspective on emotions by pointing out that emotions not only have intrapersonal effects (e. g., affecting one's own cognitions, motivations and behaviour) but also have an interpersonal influence on others observing them.

Strengths, Limitations and Future Directions

First, on one hand, we add to the previous research on the importance of NVB (Buscombe et al., 2006; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtkke, et al., 2012; Furley et al., 2015; Greenlees, Buscombe et al., 2005; Greenlees, Bradley et al., 2005; Greenlees et al., 2008) and on sources of team confidence (Fransen, Vanbeselaere, De Cuyper, et al., 2012; 2015, Fransen, Vanbeselaere, Exadaktylos, et al., 2015). On the other hand, by systematically including performance-related information, we also refer to important theoretical assumptions concerning the person perception process (Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Warr, & Knapper, 1968) that have mostly been ignored by previous research on NVB. This well-accepted theoretical framework of our study enhances the robustness and replicability of our results (Wagenmakers, Wetzels, Borsboom, van der Maas, & Kievit, 2012).

Second, we used a completely randomized design in which the videos were shown in a random order and in which the participants were also randomly presented with different subsets of the stimulus material. Using this design, we made sure that differences in team outcome confidence were likely to be caused by differences in NVB and performance-related information, and not by very specific stimuli (Wells, & Windschitl, 1999), such as general sympathy or personal characteristics, such as size, hair colour or the face itself.

The third strength concerns the stimulus material of our study. In contrast to the previous research, we experimentally pre-tested our stimulus material with adequate

samples. Further, to not only avoid the risk of confounding variables but also to ensure the comparability between the effect sizes of all our studies, we used the same stimulus material, including adhering to one sport, throughout all experiments. As earlier experiments in which stimuli from several sports have been used did not find differences in the effects of nonverbal displays when comparing different kinds of team sports (Furley, & Schweizer, 2014), our results are probably generalizable to other team sports, despite using stimulus material only from one sport. Finally, our study was adequately powered.

Besides the strengths, nevertheless, some limitations of the present study have to be acknowledged. First, we only measured the first impressions that participants had when watching potential teammates and opponents, but not the impact of these impressions on subsequent behaviour. Still, as expectancies concerning a person seem to have an influence on the behaviour when being confronted with this person (Fiske, & Taylor, 1991; Miller, & Turnbull, 1986), we see this limitation to be rather small.

Second, we did not exclusively sample participants with experience in football or in team sports what might limit the transferability of our results to real-world football. Theoretically, experience might influence perception processes (e. g., Warr, & Knapper, 1968). However, i) when controlling for football experience our results remained stable, ii) previous research did not find an influence of domain-specific knowledge on the effects of NVB (Furley, & Schweizer, 2014) and iii) although not all of our participants were football players all of them had extensive experience in competitive sports, so it is probable that the participants were able to assume the captain's role and to adequately interpret the performance-related information.

Third, we are aware that by using artificially created stimuli, we compromised between a highly controlled design as a strength of our study and actually existing NVB-effects in the field. Several conceptual limitations of our design limited the external validity of our research. Primarily, especially concerning the ratings from the opponent's perspective, ratings in a real team would not only be determined by the perceived quality of the opponent but also by the ability of the own team with reference to the opposite team. In our study, we do not know which hypothetical teammates the participants were referring to or if they were referring to an own team at all. Further, in a real world setting, players might often be aware of performance-related information when entering a football field and watching the NVB of a teammate or opponent. Thus, performance information and NVB-information are not necessarily given simultaneously as in our research, but expectancies created by knowing about the past performance of a player might instead influence how NVB is perceived.

Fourth, from a methodological perspective, although single-item measures to assess team outcome confidence have commonly been used in previous research (Fransen et al., 2017), Lee and Bobko (1994) noted that the predictive power of efficacy (e. g., concerning measures of performance [Feltz, & Chase, 1998]), is reduced when using one item-scales for efficacy assessments. Therefore, research trying to predict in-game performance might prefer to use multi-item measures. Future studies might

foster the transfer of our results to the field by examining the effects of NVB during actual sports competitions. This might involve a multi-method approach to assess team confidence and the measurement of additional factors influencing confidence (e. g., considering feelings about the perceived quality of the own and the opponent team and about the importance of one single player within a team).

Fifth, we did not include a measure of task importance in our study. However, when a task is considered as personally important, i. e., participants are more motivated to accomplish a task, this might change the way in which information is processed, and consequently, the importance and effect sizes of different perception cues. Thus, task importance might be a considerable variable in the NVB-research. More precisely, according to Petty and Cacioppo's Elaboration Likelihood Model (1986), when task importance is perceived high, participants are more motivated to elaborate available information, what fosters the central route of information processing (i. e., elaborating objective information) compared to the peripheral route (i. e., elaborating superficial cues). Referring to our study, when (perceived) task importance and thus motivation is high, it is more likely that performance information is processed, while when (perceived) task importance is low, NVB is more likely to be processed. Thus, task importance might be a potential moderator in this context and should be integrated in future research.

Sixth, the results of the pre-studies suggested that our videos distinguished very strongly between dominant and submissive NVB. As we varied the strength of performance-related information but not the strength of NVB, it might be possible that the importance of performance-related information would increase and the NVB-effect would decrease if the videos distinguished less strong between dominant and submissive NVB. Accordingly, the high effect sizes of the NVB-effect in our research can only be interpreted as a hint for the central role of NVB in the field. Further research might investigate the relation between performance information and NVB when the manipulation of NVB is less strong, thus testing whether the NVB-effect is reduced when the difference between dominant and submissive players is less obvious.

Seventh, several authors in the past have reported that gender might have a crucial influence on the integration of different information (Meyers-Levy, 1989) and on perception (Warr, & Knapper, 1968). Following the selectivity hypothesis (Meyers-Levy, 1989), men and women differ in their information processing strategies in a way that men rely more on single cues that are particularly salient (heuristic processing) while women try to include all available information (comprehensive processing). However, including gender as a covariate in our analyses did not change the results.

Finally, as we did not measure the influence of NVB and performance-related information on the actual performance of teammates and opponents, further studies investigating the effects of NVB on a team's actual success are needed.

Our results apparently have practical implications for athletes, coaches and applied practitioners. According to our findings, coaches might implement training programs

to develop positive self-presentation techniques during but also before competitions. Athletes should be made aware of the potential negative effect of a submissive body posture on the team outcome confidence of their teammates, and the supporting effect on the opposing team. Whereas the influence of dominant and submissive postures on others seems to be quite straight-forward, the influence of dominant and submissive postures on the self might interact with context (e. g., Briñol, Petty, & Wagner, 2009; Cesario, & McDonald, 2013). Therefore, context needs to be considered when thinking about self-presentational techniques. Additionally, the findings should raise awareness for coaches and staff working in the talent selection area. Similar to personal selection in work and organizational psychology, coaches and managers should be trained to enhance their awareness of the criteria by which they identify the talent of athletes to distinguish between objective performance criteria and the influence of cues such as body language.

Conclusion

In conclusion, the present research adds to the growing body of research on the interpersonal effects of NVB in sports by showing that even when objective performance-related information is available, NVB remains an important cue that influences team outcome confidence among athletes. Thus, our study suggests that changing his body language might indeed be the last step that Mesut Özil needs to take to become a “legend”, just as Arsène Wenger hopes (Wilson, 2016).

References

- Anderson, N. H. (1991). *Contributions to information integration theory, Volume 1: Cognition*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Asch, S. E. (1946). Forming impressions of personality. *Journal of Abnormal and Social Psychology*, 41, 303–314. doi:10.1037/h0055756
- Bandura, A. (1997). *Self-efficacy. The exercise of control*. New York: Freeman.
- Barrett, L. F. (2011). Was Darwin wrong about emotional expression? *Current Directions in Psychological Science*, 20(6), 400–406. doi:10.1177/0963721411429125
- Bray, S. R. (2004). Collective efficacy, group goals, and group performance of a muscular endurance task. *Small Group Research*, 35(2), 230–238. doi:10.1177/1046496403260531
- Briñol, P., Petty, R. E., & Wagner, B. (2009). Body posture effects on self-evaluation: A self-validation approach. *European Journal of Social Psychology*, 39, 1053–1064. doi:10.1002/ejsp.607
- Buscombe, R., Greenlees, I., Holder, T., Thelwell, R., & Rimmer, M. (2006). Expectancy effects in tennis: The impact of opponents' pre-match non-verbal behavior on male tennis players. *Journal of Sports Science*, 24(12), 1265–1272. doi:10.1080/02640410600598281
- Cesario, J., & McDonald, M. M. (2013). Bodies in context: Power poses as a computation of action possibility. *Social Cognition*, 31(2), 260–274. doi:10.1521/soco2013.31.2.260
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. (2nd ed.). Hillsdale: Lawrence Erlbaum Associates.
- Collins, C. G., & Parker, S. K. (2010). Team capability beliefs over time: Distinguishing between team potency, team outcome efficacy, and team process efficacy. *Journal of Occupational Organization Psychology*, 83(4), 1003–1023. doi:10.1348/096317909X484271
- Cumming, G. (2012). *Understanding the new statistics: Effect sizes, confidence intervals, and meta-analysis*. New York, NY: Routledge.
- Darwin, C. (1872). *The expression of emotions in man and animals*. London: Murray.

- De Waal, F. (2007). *Chimpanzee politics: Power and sex among apes*. Baltimore, MD: Johns Hopkins University Press.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6(3), 169–200. doi:10.1080/02699939208411068
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behaviour Research Methods*, 39(2), 175–191. doi:10.1002/0470013192.bsa491
- Feltz, D. L., & Chase, M. A. (1998). The measurement of self-efficacy and confidence in sport. In J. Duda (Ed.), *Advancements in sport and exercise psychology measurement* (pp. 63–78). Morgantown, WV: Fitness Information Technology
- Feltz, D. L., & Lirgg, C. D. (1998). Perceived team and player efficacy in hockey. *Journal of Applied Psychology*, 83(4), 557–564. doi:10.1037/0021-9010.83.4.557
- Feltz, D. L., Short, S. E., & Sullivan, P. J. (2008). *Self-efficacy in sport*. Champaign: Human Kinetics.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). New York: Academic Press. doi:10.1016/S0065-2601(08)60317-2
- Fiske, S. T., & Taylor, S. E. (1991). *Social cognition*. Reading, MA: Addison-Wesley.
- Fransen, K., Decroos, S., Vanbeselaere, N., Vande Broek, G., De Cuyper, B., Vanroy, J., & Boen, F. (2015). Is team confidence the key to success? The reciprocal relation between collective efficacy, team outcome confidence, and perceptions of team performance during soccer games. *Journal of Sports Sciences*, 33(3), 219–231. doi:10.1080/02640414.2014.942689
- Fransen, K., Kleinert, J., Dithurbide, L., Vanbeselaere, N., & Boen, F. (2014). Collective efficacy or team outcome confidence? Development and validation of the Observational Collective Efficacy Scale for Sports (OCESS). *International Journal of Sport Psychology*, 45, 121–137. doi:10.7352/IJSP2014.45.121
- Fransen, K., Mertens, N., Feltz, D., & Boen, F. (2017). “Yes, we can!” – A review on team confidence in sports. *Current Opinion in Psychology*. Advance online publication. doi:10.1016/j.copsyc.2017.05.024
- Fransen, K., Vanbeselaere, N., De Cuyper, B., Vande Broek, G., & Boen, F. (2015). Perceived sources of team confidence in soccer and basketball. *Medicine & Science in Sports & Exercise*, 47(7), 1470–1484. doi:10.1249/MSS.0000000000000561
- Fransen, K., Vanbeselaere, N., Exadaktylos, V., Vande Broek, G., De Cuyper, B., Berckmans, D., Ceux, T., De Backer, M., & Boen, F. (2012). “Yes, we can!”: Perceptions of collective efficacy sources in volleyball. *Journal of Sports Sciences*, 30(7), 641–649. doi:10.1080/02640414.2011.653579
- Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review*, 118(2), 247–279. doi:10.1037/a0022327
- Furley, P., & Dicks, M. (2012). “Hold your head high”. The influence of emotional versus neutral nonverbal expressions of dominance and submissiveness in baseball. *International Journal of Sport Psychology*, 43, 294–311. Retrieved from https://www.researchgate.net/profile/Philip_Furley/publication/234082101_Hold_your_Head_high_The_influence_of_emotional_versus_neutral_nonverbal_expressions_of_dominance_and_submissiveness_in_baseball/links/09e4150ef193e8ff0b000000.pdf
- Furley, P., Dicks, M., & Memmert, D. (2012). Nonverbal behavior in soccer: The influence of dominant and submissive body language on the impression formation and expectancy of success of soccer players. *Journal of Sport and Exercise Psychology*, 34(1), 61–82. doi:10.1123/jsep.34.1.61
- Furley, P., Dicks, M., Stendtkke, F., & Memmert, D. (2012). “Get it out that way. The wait's killing me.” Hastening and hiding during soccer penalty kicks. *Psychology of Sport and Exercise*, 13(4), 454–465. doi:10.1016/j.psychsport.2012.01.009
- Furley, P., Moll, T., & Memmert, D. (2015). “Put your hands up in the air”? The interpersonal effects of pride and shame expressions on opponents and teammates. *Frontiers*, 6(1361), 1–20. doi:10.3389/fpsyg.2015.01261
- Furley, P., & Schweitzer, G. (2013). The expression of victory and loss: Estimating who's leading or trailing from nonverbal cues in sports. *Journal of Nonverbal Behavior*, 38(1), 13–29. doi:10.1007/s10919-013-0168-7

- Furley, P., & Schweizer, G. (2014). "I'm pretty sure that we will win!" The influence of score-related nonverbal behavioral changes on the confidence in winning a basketball game. *Journal of Sport and Exercise Psychology*, 36(3), 316–320. doi:10.1123/jsep.2013-0199
- Greenlees, I. A., Bradley, A., & Holder, T. P., & Thelwell, R. C. (2005). The impact of two forms of opponents' non-verbal communication on impression formation and outcome expectations. *Psychology of Sport and Exercise*, 6(1), 103–115. doi:10.1016/j.psychsport.2003.10.002
- Greenlees, I. A., Buscombe, R., Thelwell, R. C., Holder, T. P., & Rimmer, M. (2005). Impact of opponents' clothing and body language on impression formation and outcome expectations. *Journal of Sport and Exercise Psychology*, 27(1), 39–52. doi:10.1123/jsep.27.1.39
- Greenlees, I. A., Leyland, A., Thelwell, R. C., & Filby, W. (2008). Soccer penalty takers' uniform colour and pre-penalty kick gaze affect the impressions formed of them by opposing goalkeepers. *Journal of Sports Sciences*, 26(6), 569–576. doi:10.1080/02640410701744446
- Greenlees, I. A., Nunn, R. L., Graydon, J. K., & Maynard, I. A. (1999). The relationship between collective efficacy and precompetitive affect in rugby players: Testing Bandura's model of collective efficacy. *Perceptual and Motor Skills*, 89, 431–440. doi:10.2466/pms.1999.89.2.431
- Hill, R. A., & Barton, R. A. (2005). Psychology: Red enhances human performance in contests. *Nature*, 435(7040), 293. doi:10.1038/435293a
- Inquisit 5.0 [online computer software] (2016). Seattle, WA: Millisecond Software.
- Johansson, G. (1973). Visual perception of biological motion and a model for its analysis. *Perception & Psychophysics*, 14(2), 201–211. doi:10.3758/BF03212378
- Kline, P. (1999). *The handbook of psychological testing*. (2nd ed.). London: Routledge.
- Kunda, Z., & Thagard, P. (1996). Forming Impressions from stereotypes, traits, and behaviors: A parallel-constraint-satisfaction theory. *Psychological Review*, 103(2), 284–308. doi:10.1037/0033-295X.103.2.284
- Lee, C., & Bobko, P. (1994). Self-efficacy beliefs. Comparison of five measures. *Journal of Applied Psychology*, 79(3), 364–369. doi:10.1037/0021-9010.79.3.364
- Mazur, A. (2005). *Biosociology of dominance and deference*. Lanham, MD: Rowman & Littlefield.
- Mehta, P. H., Jones, A. C., & Josephs, R. A. (2008). The social endocrinology of dominance: Basal testosterone predicts cortisol changes and behavior following victory and defeat. *Journal of Personality and Social Psychology*, 94(6), 1078–1093. doi:10.1037/0022-3514.94.6.1078
- Meyers-Levy (1989). Gender differences in information processing: a selectivity interpretation. In P. Cafferata & A. Tybout (Eds.), *Cognitive and affective responses to advertising* (pp. 219–260). MA: Lexington Books.
- Miller, D. T., & Turnbull, W. (1986). Expectancies and interpersonal processes. *Annual Review of Psychology*, 37, 233–256. doi:10.1146/annurev.ps.37.020186.001313
- Moll, T., Jordet, G., & Pepping, G.-J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of Sport Sciences*, 28(9), 983–992. doi:10.1080/02640414.2010.484068
- Myers, N. D., Feltz, D. L., & Short, S. E. (2004). Collective efficacy and team performance: A longitudinal study of collegiate football teams. *Group Dynamics: Theory, Research, and Practice*, 8(2), 126–138. doi:10.1037/1089-2699.8.2.126
- Myers, N. D., Payment, C. A., & Feltz, D. L. (2004). Reciprocal relationships between collective efficacy and team performance in women's ice hockey. *Group Dynamics: Theory, Research, and Practice*, 8(3), 182–195. doi:10.1037/1089-2699.8.3.182
- Olley, J. (2016, April 12). Arsenal's Mesut Ozil: I'm working on my body language to show the fans I'm still fighting. *The Standard*. Retrieved from <http://www.standard.co.uk/sport/football/arsenal-s-mesut-ozil-i-m-working-on-my-body-language-to-show-the-fans-i-m-still-fighting-a3223351.html>. Accessed 13.02.2017.
- Parkinson, B. (1996). Emotions are social. *British Journal of Psychology*, 87(4), 663–683. doi:10.1111/j.2044-8295.1996.tb02615.x
- Pashler, H., & Wagenmakers, E.-J. (2012). Editors' instruction to special section on replicability in psychological science. A crisis of confidence? *Perspectives on Psychological Science*, 7(6), 528–530. doi:10.1177/1745691612465253
- Petty, R. E., & Cacioppo, J. T. (1968). The Elaboration Likelihood Model of Persuasion. *Advances in Experimental Social Psychology*, 19, 123–205. doi:10.1016/S0065-2601(08)60214-2

- Schweizer, G., & Furley, P. (2016). Reproducible research in sport and exercise psychology: The role of sample sizes. *Psychology of Sport and Exercise*, 23, 114–122. doi:10.1016/j.psychsport.2015.11.005
- Shariff, A. F., & Tracy, J. L. (2011). What are emotion expressions for? *Current Directions in Psychological Science*, 20(6), 395–399. doi:10.1177/0963721411424739
- Short, S. E., Sullivan, P. J., & Feltz, D. L. (2005). Development and preliminary validation of the Collective Efficacy Questionnaire for Sports. *Measurement in Physical Education and Exercise Science*, 9(3), 181–202. doi:10.1207/s15327841mpee0903_3
- SID (2014, May 12). Löw nimmt Özil in die Pflicht: „Muss an seiner Körpersprache arbeiten.“ [Low takes Ozil into duty: “He has to improve his body language.”]. *Fokus*. Retrieved from http://www.focus.de/sport/fussball/wm-2014/wm-loew-nimmt-oezil-in-die-pflicht-muss-an-seiner-koerpersprache-arbeiten_id_3836593.html. Accessed February 10, 2017.
- Simons, D. J. (2014). The value of direct replication. *Perspectives on Psychological Science*, 9(1), 76–80. doi:10.1177/1745691613514755
- Van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social information (EASI) model. *Current Directions in Psychological Science*, 18(3), 184–188. doi:10.1111/j.1467-8721.2009.01633
- Wagenmakers, E.-J., Wetzels, R., Borsboom, D., van der Maas, H. L., & Kievit, R. A. (2012). An agenda for purely confirmatory research. *Perspectives on Psychological Science*, 7(6), 632–638. doi:10.1177/1745691612463078
- Wallrodt, L. (2016, June 20). Ein wenig mehr Demut würde Özil guttun [Some more humbleness would be appropriate for Ozil.]. *Die Welt*. Retrieved from <https://www.welt.de/sport/fussball/em-2016/article156367361/Ein-wenig-mehr-Demut-wuerde-Oezil-guttun.html>. Accessed February 13, 2017.
- Warr, P. B., & Knapper, C. (1968). *The perception of people and events*. London: Wiley.
- Wells, G. L., & Windschitl, P. D. (1999). Stimulus sampling and social psychological experimentation. *Personal and Social Psychology Bulletin*, 25(9), 1115–1125. doi:10.1177/01461672992512005
- Wilson, J. (2016, November 4). Arsene Wenger: Mesut Ozil has the talent to become an Emirates legend if he stays at Arsenal. *Telegraph*. Retrieved from <http://www.telegraph.co.uk/football/2016/11/04/arsene-wenger-mesut-ozil-has-the-talent-to-become-an-emirates-le/>. Retrieved February 13, 2017.
- Yong, E. (2012). Replication studies: Bad copy. *Nature*, 485(7398), 298–300. doi:10.1038/485298a

10.2 Publication 2: NVB and stereotypes

Abstract

The aim of the present study is to investigate whether the effects of nonverbal behavior (NVB) on team outcome confidence in sports depend on the availability of internal performance information transported through gender stereotypes. Using video footage of soccer players, two experiments were designed to examine the effects of NVB and internal performance information on team outcome confidence. The results show that independent of how strongly the stereotype was internalized (Experiment 1 vs. 2), NVB and gender stereotypes influence team outcome confidence. In addition, the NVB effect remains large despite the salience of internal performance information, i. e., gender stereotypes. These results are in line with previous research on NVB in sports as they emphasize the robustness of the NVB effect regardless of the influence of other factors relevant for person perception.

Keywords: Person perception; emotional expression; dominance and submissiveness; gender stereotypes; sports

Seiler, K., Schweizer, G., & Seiler, R. (2018). *Influences of stereotypes on the relation between nonverbal behavior and team confidence in soccer*. Unpublished manuscript.

Introduction

Previous research on nonverbal behavior (NVB) in the sports performance setting (Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtkke, & Memmert, 2012; Furley, Moll, & Memmert, 2015; Furley, & Schweizer, 2014; Greenlees, Buscombe, Thelwell, Holder, & Rimmer, 2005; Greenlees, Leyland, Thelwell, & Filby, 2008) has shown that NVB might be among the most important factors influencing emotions and team confidence within sports teams. Even when external performance information is included as a potential factor influencing the person perception process, the effect of NVB on team confidence remains large (Seiler, Schweizer, & Seiler, 2018). However, research thus far has neglected to consider internal instead of external performance information as a factor influencing the person perception process, although according to person perception theories (see Kunda, & Thagard, 1996, for a review) internal person information plays a crucial role in the person perception process. Stereotypes on gender differences regarding sports performance are very relevant in sports (see Chalabaev, Sarrazin, Fontayne, Boiché, & Clément-Guillotin, 2013, for a review) and may be considered a particular kind of internally represented information about athletes' performance (Steele, & Aronson, 1995).

Therefore, in this study we included NVB and internal performance information transported through gender stereotypes on the soccer abilities of men and women – a sport in which gender stereotypes seem to be especially salient (Hermann, & Vollmeyer, 2016) – as factors influencing person perception. Thus, the aim of the present study was to examine to the best of our knowledge for the first time the interplay of internal performance information, that is, gender stereotypes in soccer, and the effect of NVB on team confidence. More precisely, we wanted to investigate whether the large effects of NVB on person perception are reduced when stereotypes about gender differences are activated.

Theoretical Approaches on NVB and Gender Stereotypes

Several theories on person perception and information integration (Anderson, 1991; Asch, 1946; Brewer, 1988; Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Kunda, & Thagard, 1996) assume that perceivers integrate not only one but several sources of information during the person perception process. Further, the theories specify when and how this information is processed. According to Kunda and Thagard (1996), the different types of information are typically classified into stereotypes (social categories such as gender, age, race, and profession), thus internal information, and individuating information (e. g., behavior, personality, and family circumstances) although the difference between these two categories is not always clear. Although the theories differ in whether all available information is integrated in the perception process (Anderson, 1991; Asch, 1946) or not (Brewer, 1988; Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Kunda, & Thagard, 1996), they all have in common an emphasis on stereotypes as the person perception influencing factor. Freeman, and Ambady's (2011) dynamic interactive theory of personal construal is

the most recent of these theories. It postulates that higher-level cognitive states (so-called top-down processes) and lower-level perceptual processing (so-called bottom-up processes) dynamically interact during the perception process. More specifically, top-down processes (such as experiences, knowledge, or stereotype activation) and bottom-up processes (including sensory information received from face, body, and voice cues) stimulate each other and thus, form the person construal. Freeman and Ambady (2011) made no definite assumption whether one process is initiated before the other one as they hypothesized that the different informational nodes are mutually activated. Still, most important for this research, they assumed that several informational cues influence the person perception process.

Previous Research on NVB and Gender Stereotypes (in Sports)

Importance of NVB in the sports setting

In the context of previous research on the effects of NVB on person perception in the sports performance setting, two studies are of particular interest for this research. First, Furley and colleagues (2015) examined the interpersonal consequences of NVB in an artificial soccer penalty shootout. They showed that pride and shame as nonverbal emotional expressions strongly influence observers' perceptions of athletes, especially emotions, cognitions, and expectancy of success beliefs. With only a few exceptions, the effect sizes for the NVB effect in that study were large, according to Cohen (1988). Second, Seiler and colleagues (2018) conducted a study that responded to Furley et al.'s (2015) criticism of previous studies in artificial settings "that no other information could be integrated to influence the participant's ratings and therefore the NVB effect was most likely exaggerated compared to the actual effects of NVB in the field" (Furley et al., 2015, p. 18). Seiler et al. used video footage of soccer players to show that the influence of NVB on team outcome confidence remains large even when additional external information about an athlete's performance abilities is provided, irrespective of the strength of the information. More precisely, the results revealed that from the teammate's perspective, dominant NVB and high-performance information enhanced team outcome confidence whereas submissive NVB and low-performance information reduced team outcome confidence. Reversed results were shown from the opponent's perspective. Of importance for the present study, the effect sizes for the NVB effect were constantly large, regardless of the presence or absence (Experiment 1 vs. Experiments 2 & 3) and the strength of the information (Experiment 2 vs. Experiment 3). External performance information considerably influenced team outcome confidence but could not reduce the NVB effect compared to Experiment 1 in which no performance-related information was given. Researchers have also investigated the relation between NVB and team confidence (Buscombe Greenlees, Holder, Thelwell, & Rimmer, 2006; Furley, Dicks, et al., 2012; Furley, Dicks, Stendtkke, et al., 2012; Greenlees, Bradley, Holder, & Thelwell, 2005; Greenlees, Buscombe, et al., 2005; Greenlees et al., 2008; Moll, Jordet, & Pepping, 2010). As in the studies by Furley and colleagues (2015) and Seiler and

colleagues (2018), the results for those studies suggested large effects for the influences of NVB on the related outcome variables. Thus, previous research revealed that the NVB effect is consistently large even when further relevant information is included and thus, advances our understanding of the importance of NVB in sports. However, as these studies either did not integrate additional influential factors at all or ignored that the NVB effect might be influenced by not only external but also internal performance information, stereotypes as internal person information should be considered a relevant factor, especially when regarding the person perception literature (Kunda, & Thagard, 1996) and the relevance of gender stereotypes in sports (Chalabaev et al., 2013).

Importance of gender stereotypes (in soccer)

Not only according to several theories on person perception (Anderson, 1991; Asch, 1946; Brewer, 1988; Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Kunda, & Thagard, 1996) but also from an empirical perspective, stereotypes are discussed as having a great influence on the person perception process. Stereotypes can be activated by several environmental stimuli, subtle events (e. g., presentation of faces), and obvious actions (e. g., explicit reminders of a given stereotype; Wheeler, & Petty, 2001). Importantly, the activation of stereotypes tends to have clear behavioral consequences, thus influencing the overt actions of observers (Wheeler, & Petty, 2001). For example, Madon, Jussim, Keiper, Eccles, Smith, and Palumbo (1998) showed in a naturalistic setting that perceivers (in that study, teachers) use gender stereotypes as implicit information concerning the estimated performance of a target person (male and female students in that study).

However, not only in the academic setting (see Nguyen, & Ryan, 2008, for a meta-analytic review) but also in the sports setting, gender stereotypes are prevalent. In a review in the sports setting, Chalabaev and colleagues (2013) revealed that gender differences in sports might only partially be caused by biological factors and that environmental factors, for example, stereotypes, might also be responsible for these differences. Accordingly, the authors showed that strong differences between genders exist in participation in and social acceptance of different kinds of sports (Chalabaev et al., 2013). Referring to Csizma, Wittig, and Schurr (1988), soccer is rated as one of the most masculine sports, more appropriate for men than for women. These attitudes and objective differences in the physical abilities of women and men (Chalabaev et al., 2013) reinforce the existence of gender stereotypes about male and female soccer performance. Additionally, studies examining the influence of gender stereotypes on performance in soccer have revealed that women's performance in a dribbling task decreases when stereotypes are activated (Chalabaev, Sarrazin, Stone, & Cury, 2008; Heidrich, & Chiviackowsky, 2015; Hermann, & Vollmeyer, 2016). Thus, gender stereotypes on the performance abilities of men and women seem to be highly internalized, and this internalization affects the performance itself (see Steele, & Aronson, 1995, for the role of reduced performance through stereotype

threat), which is, in turn, relevant for the present study as this internalization of performance information might reduce the influence of NVB on person perception.

The Present Research

In the present study, we extend previous research by adding internal instead of external (as Seiler et al., 2018) performance information, that is, gender stereotypes about the soccer performance of men and women, when testing the effects of NVB on team confidence. Accordingly, the aim of the present research is to test whether internal performance information resulting from gender stereotypes in contrast to external performance has a diminishing influence on the effects of NVB on a teammate's outcome confidence in soccer. This comparison between effect sizes is very relevant as internal and external information seems to influence the person perception process (Kunda, & Thagard, 1996). As Seiler and colleagues (2018) used external performance information as a factor influencing team confidence, we compared the effect sizes in the present study with the results in that study.

To realize our goals, we designed two experiments. To make sure that differences in the results of the two experiments, as well as differences in the results of the present study, are comparable with the results from Seiler and colleagues' (2018) study, the structure of the two experiments in the present study was identical and the same as that in Seiler and colleagues' (2018) study. The only difference between the two experiments in the present study was participants' group belonging (sport science students in Experiment 1 versus male soccer players in a low-level German club in Experiment 2).

We expected for both experiments that NVB and gender stereotypes would statistically significantly influence team outcome confidence. Crucially, however, according to the literature on person perception and especially on the high relevance of gender stereotypes in soccer, we assumed that internal performance information activated by gender stereotypes would influence the person perception process. Consequently, this influence would statistically significantly reduce the high effects of NVB on team outcome confidence compared to the effect sizes for the NVB effect when (i) no further information (Experiment 1 in Seiler et al., 2018) or when (ii) external performance information (Experiments 2 & 3 in Seiler et al., 2018) was given. Referring only to the two experiments of the present study, we hypothesized the influence of gender stereotypes to be higher in Experiment 2 as gender stereotypes might be less present in an academic setting composed of women and men than in low-level male soccer clubs.

Experiments: General Method

To test the hypotheses, we used videos of soccer players as stimulus material for the two experiments. The footage was the same as described in detail in the Seiler et al. (2018) study as the footage had to fulfill similar preconditions: First, the material should clearly differentiate between dominant and submissive NVB to make sure that

the present results were caused only by the experimental manipulations. Thus, in addition to differences in NVB, there should be no difference between a dominant NVB video and a submissive NVB video. Second, the material should be derived from a sports situation that might happen in a sports competition scenario but was still highly controlled. Although these preconditions were the same as in Seiler et al.'s (2018) study, the third precondition was different compared to Seiler et al. (2018). Thus, third, the material should give us the opportunity to test for the effects of gender stereotypes, meaning we needed videos of men and women that could similarly be rated by women and men. Most importantly, the stimulus material had to be identical to that used by Seiler and colleagues (2018) as we aimed to compare the results of the present study with those of Seiler and colleagues (2018). Therefore, concerning the development and testing of the video footage, we refer to Seiler and colleagues (2018) for more detailed descriptions. Importantly, the pre-studies showed that the material fulfilled all preconditions and could thus be used in this study. Of particular interest for the present study, the results of the pre-studies revealed no difference irrespective whether participants rated gender-equivalent videos or not. As the manipulation of independent variables, the measure and the procedure were the same for both experiments. We describe these points before advancing to each experiment.

Manipulation of Independent Variables, Measure, and Procedure in the Two Experiments

In both experiments, we manipulated the NVB (dominant vs. submissive) and gender stereotypes. Thus, the manipulation of NVB and gender stereotypes, the dependent measure, and the general procedure were the same in both experiments. Therefore, we describe them in the following paragraphs.

NVB manipulation (within-participants)

The first experimental factor was the video footage which was created and tested as described in Seiler et al. (2018) with soccer players showing dominant and submissive NVB when entering a changing room and posing in front of a video camera. The instructions for dominant and submissive NVB¹ were directly derived from the experimental manipulations of dominance and submissiveness used by Greenlees, Bradley, and colleagues (2005) and Furley and Dicks (2012). In the dominant NVB condition, the actors were asked to (i) walk and stand with an erect posture (shoulders back and chest out), (ii) spread their limbs from the torso to occupy more space, and (iii) hold their head up (chin parallel to the ground) so that their eyes were looking directly at the camera for prolonged periods of time. Instructions for the submissive NVB condition consisted of adopting a slouched posture with (i) the head and chin

1 In the present study, we used a standardized method of manipulating NVB. Consequently, it may be possible that in the description of the manipulation, there may occur doublings with previous research (e. g., Seiler et al., 2018) using the same manipulations.

pointing down and shoulders hanging to the front, (ii) limbs touching the torso to minimize the occupied space, and (iii) eyes looking down or briefly glancing at the camera. Each actor (12 men & 12 women) was filmed twice, once in the dominant NVB condition and once in the submissive NVB condition, resulting in 24 video clips for each gender and 48 total videos. Each participant saw six dominant and six submissive videos of six men and six women, thus, a total of 12 videos.

Gender stereotype manipulation (within-participants)

We activated gender stereotypes by using a procedure in which we made sure that the male and female participants had to rate video footage of men and women and by referring to a typically male sport in which internal gender stereotypes are highly present. We used this method of activating the stereotype as previous research showed that stereotypes can be activated by subtle events (Stone, & McWhinnie, 2008; Wheeler, & Petty, 2011), i. e., by watching videos of female and male athletes.

Measure

The dependent variable was team outcome confidence which we measured using a single item assessing the confidence that the team would win the game if the player was a part of his or her team. This method of measuring team outcome confidence is identical to previous research (Fransen, Kleinert, Dithurbide, Vanbeselaere, & Boen, 2014; Fransen, Mertens, Feltz, & Boen, 2017; Myers, Feltz, Short, 2007; Seiler et al., 2018) and is the most common way of measuring team outcome confidence, according to Fransen and colleagues (2017). The perceivers evaluated the short video scenes after every video presentation on a rating scale with 11 equally spaced categories, beginning at 0% (*not at all confident*) and ending at 100% (*absolutely confident*). Compared to Seiler and colleagues (2018), we assessed team outcome confidence only from the teammate's and not from the teammate's and opponent's perspective as in both studies examining the effects of NVB from the teammate's and the opponent's perspective (Furley et al., 2015; Seiler et al., 2018), the results from the teammate's and opponent's perspective were exactly reversed. Thus, as in previous research the opponent's perspective did not add any additional information, in the present study, we focused only on the teammate's perspective.

Procedure

We used online computer software Inquisit 5.0 (2016) to present the videos, and we instructed the participants to answer as accurately as possible, while speed was not emphasized. We presented the videos without sound to make sure that differences in the ratings were due only to the visual information. The software enabled us to present the videos in a completely randomized design; that is, for each participant, we not only automatically varied the order of the presentation but also randomized the condition (dominant or submissive and video of men or women) of the videos for each participant. Using this procedure, we ensured that no actors could be rated more favorably just because of their general attractiveness (see Warr, & Knapper,

1968, for further information) and that the results are independent of specific stimuli combinations. After each video, the participants were told to rate the videos by clicking the left mouse button on the scale described above. At the end of the data collection, participants filled out a short questionnaire in a notebook that gathered demographic data (gender, age, and experience with team sports) and tested how strongly gender stereotypes were present by asking participants their agreement with the statement that women are worse in soccer than men on a scale ranging from *not at all* (1) to *absolutely* (5). After finishing the experiment, the participants were informed about the aim of the study.

The participants were instructed to assume the role of a soccer player on a university soccer team in an upcoming soccer promotion tie. They further received information that their team was a mixed team, composed of men and women playing together and that their team competed in a league in which the level of the teams and the players' soccer experience was similar. Simultaneously as the video played and on the right side of the monitor, in both experiments, information about the personal characteristics of the player in the video was provided, consisting of the name, age, position, years of membership in the club, and hobbies, which was the same in the dominant and submissive conditions.

For both experiments, a power analysis was run before the data were collected with G*Power 3.1 (Faul et al., 2007). To ensure that all studies were adequately powered, a small-to-medium effect size of $\eta^2_p = .04$ (Cohen, 1988) was chosen. Further, a power of .80 and an α error of .05 was assumed, revealing the optimal sample size was 50.

Experiment 1: NVB and Soccer Stereotypes in an Academic Setting

The aim of Experiment 1 was to examine whether the large effect sizes for the NVB effect which were consistently shown in previous research (see Seiler et al., 2018, for the study that is most similar of all previous NVB research) are influenced by additional, internal performance information activated through gender stereotypes. According to the reviewed literature on NVB, person perception, and gender stereotypes in sports, we hypothesized that both NVB and gender stereotypes statistically significantly influence team outcome confidence, meaning that team outcome confidence is higher when the teammate is dominant and male than when the teammate is submissive and female. We also expected that by including internal performance information, the NVB effect would be smaller than when (i) no further information (Experiment 1 in Seiler et al., 2018) or when (ii) external performance information (Experiments 2 & 3 in Seiler et al., 2018) was given.

Method: Participants

Fifty-nine German sports science students (36 women and 23 men; $M_{\text{age}} = 22.33$, $SD = 3.03$) participated voluntarily in the study. The agreement with the stereotype was $M = 2.72$ ($Median = 3$, $Mode = 4$), $SD = 1.24$. Written informed consent was

obtained from every participant before the experiment began, and the study was conducted in accordance with American Psychological Association (APA) guidelines.

Results. As expected, team outcome confidence was higher in the dominant condition compared to the submissive condition, and team outcome confidence was higher when the teammate was a man than when the teammate was a woman (Fig. 1). A 2×2 (NVB [dominant, submissive] $\times$ gender [male, female]) analysis of variance (ANOVA) with repeated measures on both independent variables revealed this main effect of NVB ($F[1, 58] = 189.50, p < .001, \eta^2_p = .77$) and of gender ($F[1, 58] = 5.58, p < .05, \eta^2_p = .09$) was statistically significant.²

However, the interaction between NVB and gender was not statistically significant ($F[1, 58] = 1.34, n. s., \eta^2_p = .02$). This means that the influence of NVB on confidence did not differ between the female and male soccer players.

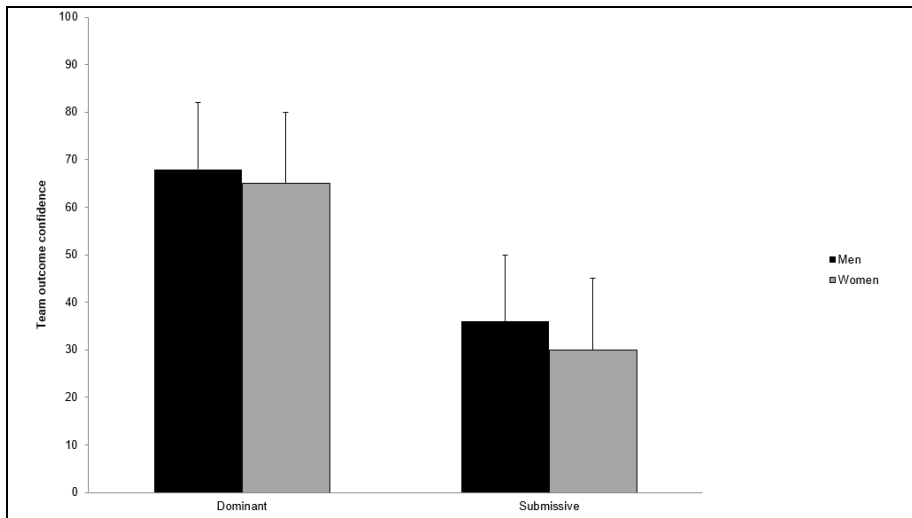


Fig. 1. Mean team outcome confidence ratings as a function of NVB and internal performance information in Experiment 1. The error bars represent standard deviations.

Discussion

The data were in line with the hypotheses that NVB and gender stereotypes statistically significantly influence team outcome confidence among teammates. The effect sizes for the NVB effect were large, and the effect for gender stereotypes was smaller than the effect size for the NVB effect, but still medium, according to Cohen (1988). However, the results contradict the hypotheses as the NVB effect was not reduced

² A box-plot analysis revealed five outliers. Removing the outliers did not change the results. Therefore, the outliers remained in the analysis.

compared to when there is no additional information or external performance information, meaning that the effect size was not smaller than in all experiments by Seiler et al. (2018). Thus, although gender stereotypes statistically significantly influence team outcome confidence – a result in line with previous research on person perception and gender stereotypes (Chalabaev et al., 2013; Kunda, & Thagard, 1996) – the influence of gender stereotypes was not big enough to diminish the NVB effect compared to experiments in which no further information was added (Seiler et al., 2018). However, the interpretation of the results of Experiment 1 warrants some caution, as the agreement with the stereotype was rather small. It seems possible that the effect of NVB is reduced by stereotype information only when the agreement with the stereotype is substantial. Consequently, we conducted a second study with a different sample solely consisting of male soccer players in which we expected the agreement with the gender stereotype to be stronger. Thus, the aim of Experiment 2 was to examine whether the effect of NVB for perceivers' team outcome confidence is reduced when agreement with the stereotype is higher.

Experiment 2: NVB and soccer stereotypes in a male soccer team

While conducting Experiment 2, we aimed (i) to replicate the findings for Experiment 1 in another sample and (ii) to investigate whether (in contrast to Experiment 1) stereotype activation might reduce the effect of NVB on confidence when agreement with the stereotype is stronger than in Experiment 1. In Experiment 2, everything was kept as in Experiment 1, but all the participants were men recruited from a low-level German soccer club. This male sample was chosen as previous research indicated that men's or boys' pro-masculine stereotypes in the sports setting are higher than those of women or girls (Boiché et al., 2014). Accordingly, we assumed that in a sample consisting of male soccer players the agreement with the stereotype might be higher than in an academic, gender-mixed sample. Further, we assumed that higher agreement would lead to a higher effect of gender stereotypes compared to Experiment 1 and to a smaller NVB effect than in Experiment 1.

Method

Participants

A total of 71 male German sport science students in a German low-level soccer club participated voluntarily in the study ($M_{\text{age}} = 25.96$, $SD = 5.34$). The mean of the agreement with the stereotype was 3.51 ($Median = 4$; $Mode = 4$), and the standard deviation was 1.18. Written informed consent was obtained from every participant, and the study was conducted in accordance with APA guidelines.

Results

As expected, team outcome confidence was higher in the dominant condition compared to the submissive condition, and team outcome confidence was higher when the teammate was a man than when the teammate was a woman (Fig. 2). A 2×2

(NVB [dominant, submissive] $\times$ gender [male, female]) ANOVA with repeated measures on both independent variables revealed the main effect of NVB ($F[1, 70] = 185.75, p < .001, \eta^2_p = .73$) and of gender ($F[1, 70] = 18.57, p < .001, \eta^2_p = .21$) was statistically significant.³ However, the interaction between NVB and gender was not statistically significant ($F[1, 70] = 0.86, n.s., \eta^2_p = .01$).

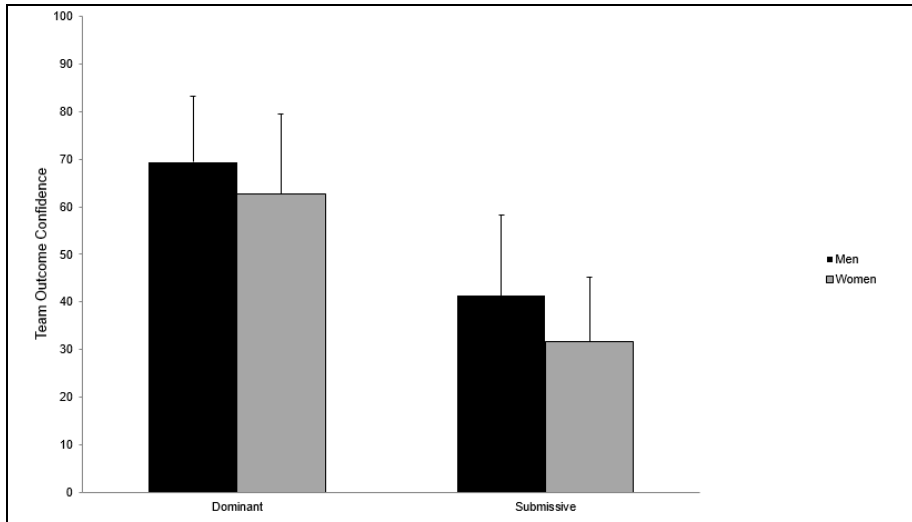


Fig. 2. Mean team outcome confidence ratings as a function of NVB and internal performance information in Experiment 2. The error bars represent standard deviations.

Discussion

As expected, agreement to the stereotype was more substantial among male soccer players than among sports students. Accordingly, the effect size for gender stereotypes was higher than in Experiment 1 and now large, according to Cohen (1988). As also expected, NVB still influences team outcome confidence among teammates. However, in contrast to the hypotheses, the effect size for the NVB effect was as high as in Experiment 1 even when the agreement to gender stereotypes was higher than in Experiment 1. Again, these results are in line with previous research on NVB by revealing high effect sizes for the NVB effect and with research on gender stereotypes as the effect size for gender stereotypes is high, too.

Comparison of Results

For the two experiments, we calculated confidence intervals for the effect sizes that described the interactions between NVB, information, and team outcome confidence

³ A box-plot analysis revealed four outliers. Removing the outliers did not change the results. Therefore, the outliers remained in the analysis.

(Cumming, 2012). This allowed us to assess whether the effect sizes for NVB varied between the two experiments depending on the salience of the stereotype. Further, this procedure enabled us to compare the effect sizes of the present study with those in Seiler and colleagues' (2018) study, and thus, to get an overview of the magnitude of the different relevant effects, i. e., influence of NVB on team outcome confidence in relation to external and internal performance information. From both experiments in this study, we considered the effect sizes for the main effect of NVB and of internal information. Afterward, the partial eta square was transformed into the effect size r using Cohen's (1988) calculations, and the 95% confidence intervals for all the effect sizes (Cumming, 2012) were computed. The comparison of the effect sizes and confidence intervals for all experimental conditions of this study and those in Seiler and colleagues' (2018) study are displayed in Figure 3 (see Tab. 1 for the exact values). The confidence intervals for all NVB effects overlapped and were large, meaning that the influence of NVB on team outcome confidence was similarly high and not dependent on the presence or absence of additional information (Experiment 1 in Seiler et al., 2018 vs. all other Experiments). Likewise, the influence of NVB on team outcome confidence was not dependent on the source of additional information (internal in Experiments 2 and 3 in Seiler et al., 2018 vs. external in the two Experiments in this study) of additional information. The effect sizes for internal and external information are medium (Experiment 1 in this study) or large (all other Experiments), indicating that not only NVB but also additional information, i. e., gender stereotypes in this study, exert a strong influence on a team's outcome confidence. However, as the confidence intervals for the effect sizes of the NVB effects in this study did not overlap with the effect sizes for internal performance information, in the present studies, the influence of gender stereotypes is statistically significantly smaller than the importance of NVB. However, whether the differences between gender stereotypes and NVB generalize to other experimental manipulations (both of NVB and of stereotypes) or the field needs to be investigated in further studies.

Tab. 1. Comparison of effect sizes between experiments

	<i>n</i>	<i>r</i>	95% CI
NVB (Experiment 1; Seiler et al., 2018)	80	.806	[.713, .872]
NVB (Experiment 2; Seiler et al., 2018)	69	.756	[.632, .842]
External information (Experiment 2; Seiler et al., 2018)	69	.822	[.727, .886]
NVB (Experiment 3; Seiler et al., 2018)	61	.772	[.646, .857]
Strong external information (Experiment 1; Seiler et al., 2018)	61	.904	[.844, .941]
NVB (Experiment 1)	59	.878	[.802, .926]
Internal information (Experiment 1)	59	.300	[.048, .516]
NVB (Experiment 2)	71	.854	[.775, .907]
Internal information (Experiment 2)	71	.458	[.252, .625]

Note. CI = confidence interval. Numbers in brackets indicate lower limits and upper limits.

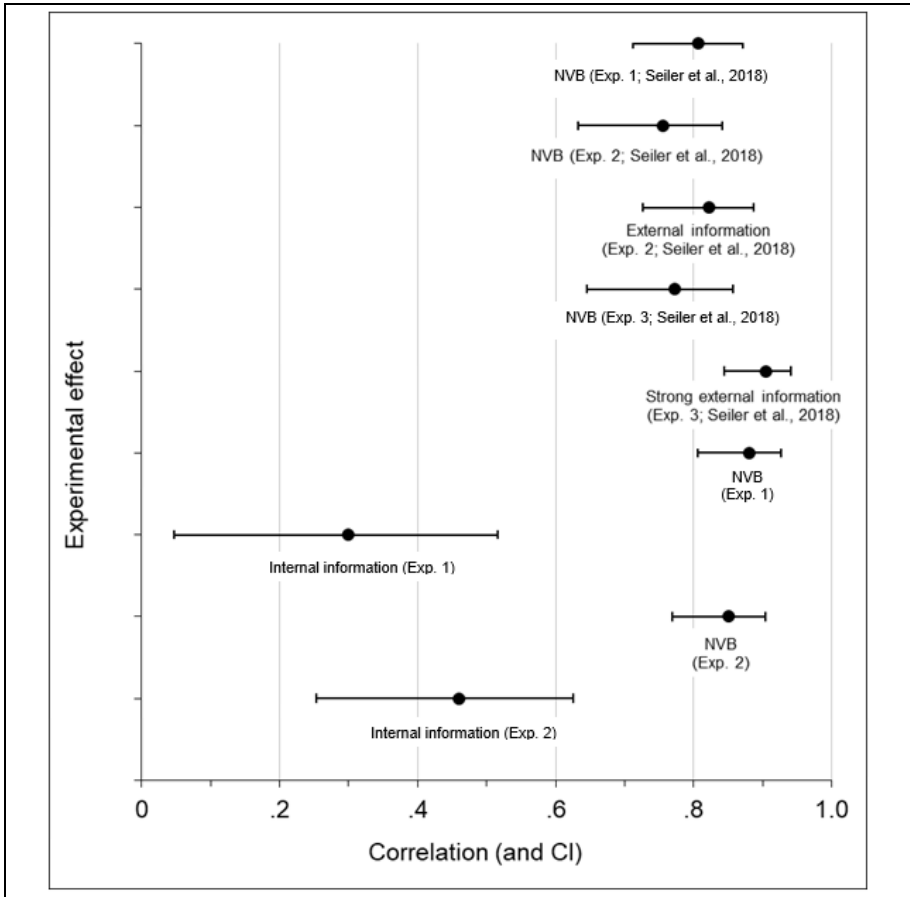


Fig. 3. The effect sizes r and 95% confidence intervals for the experimental effects in Seiler and colleagues' (2018) study and for the two experiments.

Accordingly, the hypothesis that NVB and internal performance information influence a team's outcome confidence was supported, but contradictory to the hypotheses, the NVB effect was not reduced compared to Seiler and colleagues' (2018) findings when additional internal performance information transported through gender stereotypes was given. Further, although the effect size for internal performance information increased from medium to large on a descriptive level when agreement with the stereotype was higher, the confidence intervals for both effect sizes still overlap (Experiment 1 vs. 2 of this study).

Additionally, when the effect sizes of external information (Seiler et al., 2018) are compared with those of internal performance information, i. e., gender stereotypes,

in this study, Figure 3 shows that the confidence intervals do not overlap, meaning that the effect sizes for external information are significantly higher. Thus, the research which we compare in the present study, thus the two experiments on internal performance information and the three experiments on external performance information (Seiler et al., 2018), perceivers are statistically significantly more influenced by external than by internal performance information.

General Discussion

Summary and Theoretical Integration of Results

The aim of the present study was to advance previous research on the importance of NVB and of gender stereotypes in the sports performance setting by conducting an experimental study in which internal performance information, i. e., gender stereotypes, as another factor in addition to NVB influencing the person perception process was added. Thus, we wanted to find out whether internal performance information activated through gender stereotypes could – in contrast to external performance information (Seiler et al., 2018) – reduce the influence of NVB on person perception as gender stereotypes are relevant in sports, especially in soccer (Chalabaev et al., 2008; Chalabaev et al., 2013; Heidrich, & Chiviawowsky, 2015; Hermann, & Vollmeyer, 2016). Using the stimulus material from Seiler et al. (2018), the results of two experiments showed that the NVB effect remained stable even when internal performance information was included. Thus, in agreement with the hypotheses, the non-verbal expression of dominance and submissiveness statistically significantly influenced team outcome confidence. Nevertheless, and in line with the hypotheses and previous research on the importance of gender stereotypes in sports respective soccer (Chalabaev et al., 2008; Chalabaev et al., 2013; Heidrich, & Chiviawowsky, 2015; Hermann, & Vollmeyer, 2016), in both experiments, gender stereotypes also exerted a statistically significant influence on teammates' outcome confidence. This influence seemed on a descriptive level to be higher in Experiment 2 in which the agreement with the stereotype was higher than in Experiment 1. Still, and in contrast to the hypotheses, the influence of internal performance information, i. e., gender stereotypes, did not reduce the NVB effect, a result that is in line with Seiler and colleagues' (2018) results showing that external performance-related information did not reduce the NVB effect, neither.

With the design of this study, we combined previous research on NVB and person perception, as well as gender stereotypes. Regarding NVB research, we add to the previous research on the importance of NVB (Buscombe et al., 2006; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtke, et al., 2012; Furley et al., 2015; Greenlees, Bradley, et al., 2005; Greenlees, Buscombe, et al., 2005; Greenlees et al., 2008; Seiler et al., 2018) by showing that the influence of NVB remains high when internal performance information is added. Importantly, the present study provides added value to previous NVB research because the present findings suggest that the NVB effect stays constantly large even when gender stereotypes as

internal performance information are available. This result is unexpected as, according to research on gender stereotypes, gender stereotypes on the performance abilities of men and women in sports and especially in soccer are strongly internalized and have behavioral consequences in terms of performance decreases (Chalabaev et al., 2008; Heidrich, & Chiviackowsky, 2015; Hermann, & Vollmeyer, 2016). However, although gender stereotypes did not reduce the NVB effect, they still exert a statistically significant influence on a team's outcome confidence, a result that supports the previous results on the importance of gender stereotypes. Concerning person perception, this study empirically confirmed theoretical approaches to person perception which all assume that the person perception process is influenced by several factors (Anderson, 1991; Asch, 1946; Brewer, 1988; Fiske, & Neuberg, 1990; Freeman, & Ambady, 2011; Kunda, & Thagard, 1996). Some authors in this field emphasize stereotypes in addition to individuating information as a single category influencing person perception (see Kunda, & Thagard, 1996, for a review). Thus, by including the influence of gender stereotypes as additional factor, we combined the research on NVB, person perception, and gender stereotypes.

Strengths, Limitations, and Future Directions

A strength of this study is that we integrated theories from several research fields, such as NVB, person perception, and gender stereotypes. These diverse theories contribute to robust and replicable results (Wagenmakers, Wetzels, Borsboom, van der Maas, & Kievit, 2012). By using a completely randomized design, i. e., the presentation of the videos and of the different subsets of stimuli was randomized, we made sure that differences in team outcome confidence were probably caused by differences in NVB and internal performance information, and not by specific stimuli (Wells and Windschitl, 1999), such as general sympathy or personal characteristics, such as size, hair color, or the face itself. Additionally, in this study, we used stimulus material that had been experimentally pre-tested and used by Seiler and colleagues (2018). We also wanted to make sure that the effect sizes of the two experiments in the present study and those in Seiler and colleagues' (2018) study were comparable. Accordingly, we used the same stimulus material, including adhering to one sport, in both experiments. This procedure further reduced the risk of confounding variables. In previous research, in which stimuli from different kinds of sports were used, no differences in the effects of nonverbal displays were found when several team sports were combined (Furley, & Schweizer, 2014).

In addition to the study's strengths, several limitations must be mentioned. First, we did not measure whether the answers concerning agreement with the stereotype were influenced by social desirability. We could have tested this using the social desirability scale (Strahan, & Gerbasi, 1972) or the reaction times participants needed to answer (Banaji, & Hardin, 1996). Concerning the agreement with the stereotype, we further did not specify which soccer level participants had in mind when they answered the question concerning differences in soccer abilities between men and

women. There might be differences in whether participants thought about players' quality in elite sports or in leisure sports or there might be participants whose mind-set consisted of high-level women but low-level men. Future research should control for the mind-sets participants have when they assess gender stereotypes in sports or use alternative methods to assess stereotypes, e. g., the Implicit Association Test (see Greenwald, Poehlman, Uhlmann, & Banaji, 2009, for a meta-analysis). Further, we can only speculate why the stereotype was stronger among the male soccer team compared to the sport science students as we know only that the participants were male soccer players, but we did not know in which other dimensions (e. g., academic background and experiences in watching male and female games) they differed from the sports science students. Still, we do not consider this a major problem as the scope of this study was to examine the influences of stereotypes on team outcome confidence and not to figure out why gender stereotypes in sports are stronger among different groups of our society. As we further observed no big variance in the participants' age, further research is needed with different age and educational groups. In addition, we assessed only the first impressions participants had when they watched potential teammates, but not if and how these impressions influenced overt behavior when being confronted with this person. Still, as gender stereotypes seem to have behavioral consequences (Heidrich, & Chiviacowsky, 2015; Herrmann, & Vollmeyer, 2016), this limitation might be small. Additionally, we used artificially created stimuli, and consequently, we compromised between a highly controlled, experimental design as a strength of the study and the assessment of the NVB effect in a real-world setting.

Conclusion

To summarize, the present research provides added value to existing research on the interpersonal effects of NVB and on gender stereotypes in sports and in soccer revealing that even when internal performance information transported through gender stereotypes is available, NVB remains an important cue that influences teammates' outcome confidence.

References

- Anderson, N. H. (1991). *Contributions to information integration theory, Volume 1: Cognition*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Asch, S. E. (1946). Forming impressions of personality. *Journal of Abnormal and Social Psychology*, 41, 303-314. doi:10.1037/h0055756
- Banaji, M. R., & Hardin, C. D. (1996). Automatic stereotyping. *Psychological Science*, 7(3), 136-141. doi:10.1111/j.1467-9280.1996.tb00346.x
- Boiché, J., Chalabaev, A., & Sarrazin, P. (2014). Development of sex stereotypes relative to sport competence and value during adolescence. *Psychology of Sport and Exercise*, 15(2), 212-215. doi:10.1016/j.psychsport.2013.11.003
- Brewer, M. B. (1988). A dual process model of impression formation. In T. K. Srull & S. Wyer, Jr. (Eds.), *Advances in social cognition, Vol. 1. A dual process model of impression formation* (pp.1-36). Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc.

- Buscombe, R., Greenlees, I., Holder, T., Thelwell, R., & Rimmer, M. (2006). Expectancy effects in tennis: The impact of opponents' pre-match non-verbal behavior on male tennis players. *Journal of Sports Science*, 24(12), 1265–1272. doi:10.1080/02640410600598281
- Chalabaeu, A., Sarrazin, P., Fontayne, P., Boiché, J., & Clément-Giolloin, C. (2013). The influence of sex stereotypes and gender roles on participation and performance in sport and exercise: Review and future directions. *Psychology of Sport and Exercise*, 14(2), 136–144. doi:10.1016/j.psychsport.2012.10.005
- Chalabaeu, A., Sarrazin, P., Stone, J., & Cury, F. (2008). Do achievement goals mediate stereotype threat? An investigation on females' soccer performance. *Journal of Sport and Exercise Psychology*, 30, 143–158. doi:10.1123/jsep.30.2.143
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. (2nd ed.). Hillsdale: Lawrence Erlbaum Associates.
- Cumming, G. (2012). *Understanding the new statistics: Effect sizes, confidence intervals, and meta-analysis*. New York, NY: Routledge.
- Csizma, K. A., Wittig, A. F., & Schurr, K. T. (1988). Sport stereotypes and gender. *Journal of Sport and Exercise Psychology*, 10, 62–74. doi:10.1123/jsep.10.1.62
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behaviour Research Methods*, 39(2), 175–191. doi:10.1002/0470013192.bsa491
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). New York: Academic Press. doi:10.1016/S0065-2601(08)60317-2
- Fransen, K., Kleinert, J., Dithurbide, L., Vanbeselaere, N., & Boen, F. (2014). Collective efficacy or team outcome confidence? Development and validation of the Observational Collective Efficacy Scale for Sports (OCESS). *International Journal of Sport Psychology*, 45, 121–137. doi:10.7352/IJSP2014.45.121
- Fransen, K., Mertens, N., Feltz, D., & Boen, F. (2017). "Yes, we can!" – A review on team confidence in sports. *Current Opinion in Psychology*. Advance online publication. Doi: 10.1016/j.copsyc.2017.05.024
- Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review*, 118(2), 247–279. doi:10.1037/a0022327
- Furley, P., & Dicks, M. (2012). "Hold your head high". The influence of emotional versus neutral nonverbal expressions of dominance and submissiveness in baseball. *International Journal of Sport Psychology*, 43, 294–311. Retrieved from https://www.researchgate.net/profile/Philip_Furley/publication/234082101_Hold_your_Head_high_The_influence_of_emotional_vs_neutral_nonverbal_expressions_of_dominance_and_submissiveness_in_baseball/links/09e4150ef193e8ff0b000000.pdf
- Furley, P., Dicks, M., & Memmert, D. (2012). Nonverbal behavior in soccer: The influence of dominant and submissive body language on the impression formation and expectancy of success of soccer players. *Journal of Sport and Exercise Psychology*, 34(1), 61–82. doi:10.1123/jsep.34.1.61
- Furley, P., Dicks, M., Stendtk, F., & Memmert, D. (2012). "Get it out that way. The wait's killing me." Hastening and hiding during soccer penalty kicks. *Psychology of Sport and Exercise*, 13(4), 454–465. doi:10.1016/j.psychsport.2012.01.009
- Furley, P., Moll, T., & Memmert, D. (2015). "Put your hands up in the air"? The interpersonal effects of pride and shame expressions on opponents and teammates. *Frontiers*, 6(1361), 1–20. doi:10.3389/fpsyg.2015.01261
- Furley, P., & Schweizer, G. (2014). "I'm pretty sure that we will win!" The influence of score-related nonverbal behavioral changes on the confidence in winning a basketball game. *Journal of Sport and Exercise Psychology*, 36(3), 316–320. doi:10.1123/jsep.2013-0199
- Greenlees, I. A., Bradley, A., & Holder, T. P., & Thelwell, R. C. (2005). The impact of two forms of opponents' non-verbal communication on impression formation and outcome expectations. *Psychology of Sport and Exercise*, 6(1), 103–115. doi:10.1016/j.psychsport.2003.10.002
- Greenlees, I. A., Buscombe, R., Thelwell, R. C., Holder, T. P., & Rimmer, M. (2005). Impact of opponents' clothing and body language on impression formation and outcome expectations. *Journal of Sport and Exercise Psychology*, 27(1), 39–52. doi:10.1123/jsep.27.1.39

- Greenlees, I. A., Leyland, A., Thelwell, R. C., & Filby, W. (2008). Soccer penalty takers' uniform colour and pre-penalty kick gaze affect the impressions formed of them by opposing goalkeepers. *Journal of Sports Sciences*, 26(6), 569–576. doi:10.1080/02640410701744446
- Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the implicit association test: III. meta-analysis of predictive validity. *Journal of Personality and Social Psychology*, 97(1), 17–41. doi:10.1037/a0015575
- Heidrich, C., & Chiviacowsky, S. (2015). Stereotype threat affects the learning of sport motor skills. *Psychology of Sport and Exercise*, 18, 42–46. doi:10.1016/j.psychsport.2014.12.002
- Hermann, J. H., & Vollmeyer, R. (2016). «Girls should cook, rather than kick!» – Female soccer players under stereotype threat. *Psychology of Sport and Exercise*, 26, 94–101. Doi: 10.1016/j.psychsport.2016.06.010
- Inquisit 5.0 [online computer software] (2016). Seattle, WA: Millisecond Software.
- Kunda, Z., & Thagard, P. (1996). Forming Impressions from stereotypes, traits, and behaviors: A parallel-constraint-satisfaction theory. *Psychological Review*, 103(2), 284–308. doi:10.1037/0033-295X.103.2.284
- Madon, L. J., Jussim, L., Keiper, S., Eccles, J., Smith, A., & Palumbo, P. (1998). The accuracy and power of sex, social class, and ethnic stereotypes: A naturalistic study in person perception. *Personality and Social Psychology Bulletin*, 24(12), 1304–1318. doi:10.1177/01461672982412005
- Moll, T., Jordet, G., & Pepping, G.-J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of Sport Sciences*, 28(9), 983–992. doi:10.1080/02640414.2010.484068
- Myers, N. D., Feltz, D. L., & Short, S. E. (2004). Collective efficacy and team performance: A longitudinal study of collegiate football teams. *Group Dynamics: Theory, Research, and Practice*, 8(2), 126–138. doi:10.1037/1089-2699.8.2.126
- Seiler, K., Schweizer, G., & Seiler, R. (2018). Do the effects of nonverbal behaviour on team outcome confidence in team sports depend on the availability of additional performance information? *Psychology, of Sport & Exercise*, 36, 29–40. doi:10.1016/j.psychsport.2017.12.007
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797–811. doi:10.1037/0022-3514.69.5.797
- Strahan, R. & Gerbasi, K. C. (1972). Short, homogeneous versions of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology*, 28, 191–193. doi:10.1002/1097-4697(197204)28:2<191::AID-JCLP2270280220>3.0.CO;2-G
- Stone, J., & McWhinnie, C. (2008). Evidence that blatant versus subtle stereotype threat cues impact performance through dual processes. *Journal of Experimental Social Psychology*, 44(2), 445–452. doi:10.1016/j.jesp.2007.02.006
- Wagenmakers, E.-J., Wetzels, R., Borsboom, D., van der Maas, H. L., & Kievit, R. A. (2012). An agenda for purely confirmatory research. *Perspectives on Psychological Science*, 7(6), 632–638. doi:10.1177/1745691612463078
- Warr, P. B., & Knapper, C. (1968). *The perception of people and events*. London: Wiley.
- Wells, G. L., & Windschitl, P. D. (1999). Stimulus sampling and social psychological experimentation. *Personal and Social Psychology Bulletin*, 25(9), 1115–1125. doi:10.1177/01461672992512005
- Wheeler, S. C., & Petty, R. E. (2001). The effects of stereotype activation on behaviour: A review of possible mechanisms. *Psychological Bulletin*, 127(6), 797–826. doi:10.1037/0033-2909.127.6.797

10.3 Publication 3: NVB and performance in a real-world scenario

Abstract

The aim of this research is to investigate the influences of nonverbal behaviour (NVB) on outcome expectations and performance (accuracy and speed) in a real-world football penalty shootout. We conducted an experimental field study ($N = 47$, 20 kicks per penalty taker) in which we manipulated the NVB (dominant vs. submissive) of two goalkeepers to test our hypotheses that (i) a dominant goalkeeper is perceived as stronger, ii) a goalkeeper's dominant NVB reduces penalty takers' outcome expectations and iii) a goalkeeper's dominant NVB increases the speed and accuracy of the kick. The results partly support our hypotheses. The dominant goalkeeper is perceived as stronger. However, concerning outcome expectations no significant influence of NVB was found, but a main effect of goalkeeper. Further, the analyses revealed no significant effects with regard to speed and accuracy. Contrarily to previous laboratory research, the high importance of NVB in the sport performance setting was not supported in a real-world scenario. Thus, further research examining the transferability of laboratory results to the field is needed.

Keywords: person perception; emotional expression; dominance and submissiveness; field study

Seiler, K., Schweizer, G., & Seiler, R. (2018). *Influences of nonverbal behaviour on outcome expectations and performance variables in a real-world football penalty scenario*. Unpublished manuscript.

Introduction

In recent years, an increasing number of football matches during the knock-out stage of important tournaments like the European Championships is decided by penalty kicks. The outcome of this high-pressure one-against-one situation is decisive for the final outcome of the game and thus often has major emotional consequences for the teams and millions of spectators. This importance of penalty shootouts increased the interest of sport psychologists in investigating the antecedents of (non-)successful shootouts, both from the penalty taker's and the goalkeeper's perspective. Consequently, research focuses, for example, on penalty taker strategies (Kuhn, 1988; Navarro, van der Kamp, Ranvaud, & Savelsbergh, 2013; van der Kamp, 2011; Wood, & Wilson, 2010a), choking under pressure (e. g. Jordet, 2009; Jordet, & Hartman, 2008), emotions (e. g. Rathschlag & Memmert, 2013) and nonverbal behaviour (NVB; e. g. Furley, Dicks, & Memmert, 2012; Furley, Moll, & Memmert, 2015; Moll, Jordet, & Pepping, 2010).

NVB seems to play a particularly important role during shootouts, as laboratory studies have shown large effects of (penalty takers') NVB on (goalkeepers') emotions and outcome expectations (Furley, Dicks, et al., 2012; Furley, Dicks, Stendtke, & Memmert, 2012; Furley et al., 2015; Greenlees, Leyland, Thelwell, & Filby, 2008) which might strongly influence subsequent performance (Myers, Feltz, & Short, 2004; Myers, Payment, & Feltz, 2004). However, research on NVB so far has neglected to consider the potential influences of the goalkeeper's NVB on performance in a real-world penalty shootout. Therefore, and following the calls from Baumeister, Vohs, and Funder (2007), as well as from Furley and colleagues (2015) – with specific regard to NVB research – to conduct more studies on the behavioural consequences of the findings derived from questionnaires, we, for the first time aim to conduct a field study in the NVB-research (i. e. a real-world football penalty scenario). Furthermore, we want to measure not only subjective outcome expectations but also the influences of NVB on objective performance variables (i. e. accuracy and speed of the penalties).

Theoretical Perspectives on Nonverbal Behaviour

Two theories are relevant for this study, as they both focus on the interpersonal effects of NVB, thus, in the present research, on the emotional and behavioural consequences of a penalty taker being confronted with a goalkeeper and his NVB: The first theory is the two-stage model of emotional expression (Shariff, & Tracy, 2011) which proposes an evolutionary perspective on NVB. The second theory is the emotions as social information model (EASI; van Kleef, 2009) which is rooted in a social-functional approach to emotions.

Following Darwin's *The Expression of Emotions in Man and Animals* (Darwin, 1972), Shariff and Tracy (2011) state that according to evolutionary accounts, humans have the innate capacity to recognise some basic emotions and emotional expressions have adaptive functions. However, later on in evolution, this human innate capacity

developed to serve as an opportunity to nonverbally communicate social intentions. Humans can recognise and reliably interpret emotions and status signals transported through nonverbal expressions, meaning that nonverbal expressions, such as dominance and submissiveness (Mehta, Jones, & Josephs, 2008), effectively display the emotions of others.

The second model, the EASI model (van Kleef, 2009), puts even more emphasis on the process of how emotional displays affect observers' emotions and behaviour. More precisely, this model focuses on the observer's information processing and on social-relational factors which moderate the observer's affective reactions and inferences when facing an emotional expression, e. g. watching the goalkeeper and being directly confronted in the one-against-one-penalty situation. These mechanisms finally influence the observer's behaviour. Consequently, in this competitive situation, both inferential processes, e. g. inferring goalkeepers' weakness when confronted with a submissive goalkeeper, and affective processes (van Kleef et al., 2010) influence the penalty taker's behaviour, i. e. performance. Thus, this model is important for our study, as it assumes that the observation of emotional expressions, i. e. the goalkeepers' NVB, influences not only penalty takers' cognitions but also their direct behaviour, i. e. not only outcome expectations but also performance.

Relevance of NVB in the Sports Setting

Previous Research on the Importance of NVB in Sports

Several studies in the sports setting have addressed the importance of NVB in an artificial penalty shootout from the goalkeeper's perspective, manipulating the penalty takers' NVB and assessing different subjective outcome variables, such as the goalkeepers' associated emotions, perceptions or outcome expectations. All studies reveal high effect sizes for the influence of NVB, meaning that independent of the way how NVB was manipulated during the preparation phase for the penalty, e. g. by hastening and hiding behaviour (Furley, Dicks, Stendtke et al., 2012), by amount of gaze (and clothing colour; Greenlees et al., 2008), by dominance and submissiveness (Furley, Dicks, et al., 2012) or by pride and shame (Furley et al., 2015), NVB significantly influenced the goalkeeper's perceptions when watching the penalty takers. The study of Furley, Dicks and colleagues (2012) is of particular relevance to the present research, as (i) it manipulates dominance and submissiveness, and (ii) it differentiates precisely different subjective outcome variables which are highly relevant in a real-world penalty shootout. Using video material and the point-light stimuli¹ of football players showing dominant or submissive NVB during the preparation for a penalty, the authors showed that goalkeepers more positively perceived (e. g. more focused and more assertive) a penalty taker showing dominant NVB compared to a

1 The point-light technique (Johansson, 1973) is a method frequently used in NVB research because it allows researchers to manipulate solely body language cues whilst keeping constant surface features, such as clothing or facial features.

penalty taker showing submissive NVB. Further, the goalkeepers' confidence in saving the ball was higher against a submissive than against a dominant penalty taker and goalkeepers expected more powerful shots against a dominant than against a submissive penalty taker. The influence of NVB on the expected penalty accuracy was only marginally significant.

Even more laboratory studies on the importance of NVB which are not conducted in an artificial penalty shootout reveal high effect sizes for the influence of NVB on related outcome variables, e. g. expectancies of success, perception of the opponent's performance and personal characteristics of the opponent (Buscombe, Greenlees, Holder, Thelwell, & Rimmer, 2006; Furley, & Dicks, 2012; Greenlees, Bradley, Holder, & Thelwell, 2005; Greenlees, Buscombe, Thelwell, Holder, & Rimmer, 2005; Seiler, Schweizer, & Seiler, 2018). However, all these studies were conducted in artificial laboratory settings, and only subjective measures as outcome variables were used. Thus, for our study, which aims to examine the interpersonal effects of NVB in a real-world penalty shootout, examining research on penalty shootouts in depth seems to be important for two reasons. First, in contrast to NVB research, these studies focus on the penalty taker's perspective and thus the influence of the goalkeeper's behaviour on the penalty taker's performance, and second, they partly use behavioural outcome measures and not only subjective outcome variables.

Previous Research on Penalty Shootouts with Relation to NVB

Several studies on penalty shootouts are relevant to the present research, as they show that the goalkeeper and the penalty taker influence each other during the shootout. Indeed, these studies do not exactly manipulate dominant and submissive NVB in a similar way as other studies in NVB research do (Greenlees, Bradley et al., 2005; Furley & Dicks, 2012; Seiler et al., 2018). Nevertheless, they reveal the impact of the goalkeeper's demeanour on the penalty taker's behaviour and thus provide added value for our research. The results of these studies show that penalty takers' performance is influenced by the goalkeeper's existence (vs. non-existence; Navarro et al., 2013), his behaviour (moving vs. non-moving; Masters, van der Kamp, & Jackson, 2007; Weigelt, Memmert, & Schack, 2012), his gestures (pointing with the arm; Weigelt et al., 2012), as well as by his (perceived) size (Masters, Poolton, & van der Kamp, 2010; van der Kamp & Masters, 2008). The results of these studies are important for the present research, as they show that the goalkeeper's demeanour might affect the penalty taker's perceptions and, consequently, his behaviour.

The Present Research

The goal of the present study is to investigate whether the NVB of goalkeepers has an influence on the goalkeeper's perceived strength², on penalty takers' outcome expectations and on their shooting performance, i. e. the penalty's accuracy and

2 The term 'goalkeeper's perceived strength' refers to the penalty takers' perception of the goalkeeper's ability.

speed. Thus, we extend previous research i) by conducting a real-world study on the effects of NVB and ii) by measuring not only subjective outcome expectations but also the objective behavioural consequences of NVB.

Both research on NVB and on football penalties provides an important starting point for our study, as laboratory NVB research has shown that NVB strongly influences cognitions of capability and outcome expectations among goalkeepers watching the NVB of penalty takers. More specifically, penalty takers showing dominant NVB (vs. athletes showing submissive NVB) are ascribed higher qualities, and the expected penalty power is higher for players with dominant (vs. submissive) NVB (Furley, Dicks et al., 2012). With these results transferred to penalty takers' perspective, dominant goalkeepers (vs. submissive goalkeepers) should be ascribed a higher quality. This means that following a meta-analysis of the performance qualities of successful goalkeepers from Ziv and Lidor (2011), better goalkeepers, i. e. the dominant one in our study, are assumed to be more agile, have faster reactions, are more powerful and are stronger than worse goalkeepers, i. e. the submissive one in the present study. Thus, we hypothesised that when confronted with a dominant (better) goalkeeper whilst aiming to score a goal, a penalty taker feels forced to shoot faster and more precisely, i. e., to place the ball further away from the goalkeeper, than when confronted with a submissive (worse) goalkeeper. Additionally, research on penalty shootouts has shown that from the penalty taker's perspective, a goalkeeper's demeanour, e. g. his size, gestures, and position, might influence the penalty taker's perceptions and his objective shooting behaviour. However, previous research has neglected to examine the effects of goalkeepers' dominant and submissive NVB on goalkeepers' perceived strength, penalty takers' outcome expectations and objective performance variables (accuracy and speed) in a real-world penalty shootout.

Thus, according to the reviewed literature, we hypothesised that penalty takers perceive dominant goalkeepers stronger than submissive goalkeepers and that their outcome expectations are lower and the accuracy and speed are higher when shooting against a dominant goalkeeper. The opposite was hypothesised when penalties are taken against a submissive goalkeeper.

To test our hypotheses, we conducted an experimental field study in which the participants had to shoot penalty kicks on two goalkeepers showing either dominant or submissive NVB. The perceived goalkeeper's strength, the outcome expectations of the penalty takers, and the accuracy and speed of the penalties were measured.

Method

A power analysis was run prior to data collection with G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2007). To ensure that the study was adequately powered, we chose a small-to-medium effect size of $\eta_p^2 = .04$ (Cohen, 1988). Furthermore, a power of .80 and an α error of .05 were assumed, revealing the optimal sample size to be $N = 40$.

Participants

A total of $N = 47$ male participants with an average age of $M_{age} = 22.09$ ($SD = 2.19$) participated in the study. All penalty takers were experienced football players, i. e. they were playing for at least three years in a football club in Switzerland. The average football experience was $M_{exp} = 10.83$ years ($SD = 4.98$), and the average level was the fifth highest league. The participants were sport science students and received course credits in return. Institutional ethical approval was obtained and written informed consent was gathered from every participant before the experiment was commenced.

Apparatus

The study was conducted on a university's football field with synthetic turf. The size of the goal (732 cm x 244 cm), the distance of the penalty spot from the goal (11 m) and the ball were in line with FIFA rules. On one the side of the goal and behind the goal, two GoPro Hero2 video cameras were placed in order to assess accuracy and speed of the kicks. The camera behind the goal to assess accuracy was positioned 5 m frontal behind the goal, so that the whole goal was visible as large as possible. The camera on the side of the goal was positioned on the goal line, 7,50 m to the right side of the goal, so that the whole scenario needed to measure the speed of the kicks was visible. Further, a table was placed 4 m to the front and 6m to the right side of the goal. This was the starting point for the goalkeepers to walk inside the goal in their dominant or submissive role as well as the place where they could find their individual instructions (especially jumping right or left). A second table was 3m behind and 2 m to the left of the penalty mark and was used by the participant when filling in the questionnaire on perceived strength and outcome expectations. Finally, there was a depot 7 m on the left side of the penalty mark, where all 20 balls were disposed.

Design

A repeated within-measures design was used. The participants took totally 20 penalty kicks, against two alternating goalkeepers, A and B, for a total of 10 penalties against each goalkeeper. More precisely, the participants were shooting against a dominant and against a submissive goalkeeper, but per participant, one goalkeeper was either dominant or submissive. We also alternated for each participant which goalkeeper was dominant and which was submissive, and we randomised which goalkeeper was in the goal during the first shot. This led to 10 kicks per condition. The reactions of the goalkeepers, i. e. jumping to the left or to the right, were randomised using Inquisit software 5.0 (Online computer software, 2016). This design allowed us to consider sequence effects and the influence of fatigue or habituation.

Procedure

Procedure for the Participants

Before the penalty shootout commenced, on a separate field, each participant was personally welcomed, filled out informed consent, received information about the upcoming procedure and answered a questionnaire on their demographic data (age, years of football experience and level of playing). Afterwards, they warmed up and had the opportunity to take five practice kicks on an empty goal. Subsequently, the participants were accompanied to the football field where they saw the goalkeepers for the first time, already positioned in the dominant or submissive posture. With this procedure, we ensured that the participants could neither watch the previous participant nor the goalkeepers in their conversed role (dominant instead of submissive and vice versa). The participants were instructed to perform the 20 upcoming shots as best as they can, thus trying to score a goal, but avoiding trick shots, penalties consciously in the centre of the goal and inrun deceleration. Before the first shot, the participants were guided to the table behind the penalty mark where they were instructed to fill out the second part of the questionnaire, i. e. the strength of both goalkeepers when facing the two goalkeepers and their outcome expectations for the upcoming shootout. Before filling out the questionnaire, both in written and spoken forms, the participants were asked to look at the goal to make them aware of the A and the B on the goalkeepers' jerseys. This awareness was necessary because for the following questionnaire, the participants had to know that they had to answer the same questions twice but that in the first part, the questions were related to goalkeeper A, and in the second part, to goalkeeper B. After the questionnaire was finished, the procedure was the same for all 20 kicks. The participants put the ball on the penalty mark on their own and prepared for the inrun before each penalty was released with a whistle. After each kick, a staff member collected the ball so that both penalty takers could focus on their main task. Thus, the participants took a new ball for each shot and saw one goalkeeper leaving the goal and the other one walking inside the goal in their corresponding role.

Procedure for the Goalkeepers

Two goalkeepers were confederates and were trained before the study on how to behave in the dominant and submissive condition. Besides having several years' experience as a goalkeeper, one important precondition when choosing the goalkeepers was that they should be as similar as possible in height and built. Both goalkeepers received the same instructions on how to behave during the shootout. The NVB instructions were standardised and directly derived from the experimental manipulations of dominance and submissiveness used by Greenlees, Bradley, and colleagues (2005), by Furley and Dicks (2012) and by Seiler and colleagues (2018). In the dominant NVB condition, the actors were asked to (i) walk and stand with an erect posture (shoulders back and chest out), (ii) spread the limbs from the torso to occupy more space and (iii) hold the head up (chin parallel to the ground) so that the eyes looked

directly at the penalty taker for prolonged periods of time. Instructions for the submissive NVB condition consisted of adopting a slouched posture with (i) the head and chin pointing down and the shoulders hanging to the front, (ii) the limbs touching the torso to minimise the occupied space and (iii) the eyes looking down or briefly glancing at the penalty taker. Both goalkeepers wore the same dress (black trousers and the identical blue jersey). The goalkeepers were instructed to stick to their role throughout the whole shootout, from the moment a participant arrived until the moment the participant left the field, except for the time after the whistle blows and after the direct reaction to the kick. In this phase, they were allowed to take a neutral, tensed position in which they could save the penalty as they would normally do. Importantly, they were told to stand directly in the middle of the goal, as previous research has shown that the goalkeeper's position on the goal line affects goal-side selection (Weigelt et al., 2012). After jumping to the right or left corner, the goalkeepers were told to directly retake the dominant or submissive posture and to leave the goal towards the starting position without caring about the ball. In this starting position, too, the goalkeepers had to stick to their corresponding role. Before the participants walked inside the goal for a new kick, a sheet of paper which could not be seen by the participants informed the goalkeepers about their randomised reaction (jumping to the left or right corner). They were instructed to walk inside the goal when the participant was placing a new ball on the penalty mark. This moment was chosen, as several training sessions with different penalty takers showed that this was the moment during which the penalty takers faced the goalkeeper most of the time.

Measures

Subjective Measures

Two subjective measures were taken before the start of the shootout after the participants watched both goalkeepers walking at the same time into and then standing inside the goal in either the dominant or the submissive NVB role. First, the participants had to rate the strength of both goalkeepers on a seven-point Likert scale, ranging from not at all strong (1) to totally strong (7). Second, and also prior to the first kick, outcome expectations were assessed following the guidelines from Feltz and Chase (1998) and according to other authors in NVB research (Furley, & Dicks, 2012; Greenlees, Buscombe, et al., 2005). According to these guidelines and to avoid a single item-measurement of NVB, the participants were asked to indicate with 'yes' or 'no' for each shot against goalkeeper A and against goalkeeper B how many times out of 10 they would score a goal. For each response, they should further rate how sure they were with their 'yes' or 'no' answer from 1 (not at all sure) to 10 (absolutely sure). The total outcome expectation score (from 0 to 100) was calculated by summing up the certainty scores for all 'yes' answers. With this method, a certainty for making 10 goals has a greater weight than a certainty for making one goal (Feltz, & Chase, 1998).

Objective Performance Measures

Penalty taking performance was assessed with the accuracy and speed of each kick, both analysed with the video recordings by using Kinovea Motion analysis software. This software allows an offline analysis of each shot by locating the position of the ball, i. e. setting the markers in the middle of the ball, with reference to the goal area (for measuring accuracy) or with reference to the whole area from the penalty mark to the goal (for measuring speed) via frame-by-frame analysis. More precisely, accuracy was assessed with the camera behind the goal measuring the distance from the ball when crossing the goal line to the inner post. On this position, a marker was set with an x, y coordinate (marker 1). Speed was measured with the side camera by determining the speed from the moment the ball left the player's foot (marker 2) to the position 20 frames (one frame = one millisecond) after marker 1 (marker 3). In this speed measure, all penalties could be analysed, as marker 3 was always before the moment the goalkeeper saved the ball. Notably, marker 3 was not set in the air when the ball flew, but orthogonally to the original point on the floor. This was necessary because for assessing speed, the analyses of the covered distance would be distorted when the markers are set in the air.

Data Analysis

Subjective Measures (Strength and Outcome Expectations)

Two paired *t*-tests were calculated to test whether the dominant goalkeeper was perceived as stronger than the submissive goalkeeper³. We compared the strength ratings of goalkeepers A and B in the case that i) A is dominant and B is submissive (*t*-test 1) and ii) B is dominant and A is submissive (*t*-test 2). Furthermore, two *t*-tests with independent variables were calculated to test whether the goalkeepers were perceived as stronger in their dominant compared with their respective submissive condition. Thus, we tested whether goalkeeper A is perceived as stronger when he was dominant compared with the condition in which he was submissive (*t*-test 3) and whether goalkeeper B was perceived as stronger when he was dominant compared with the condition in which he was submissive (*t*-test 4).

Two additional paired *t*-tests were calculated to determine the participants' outcome expectations before the shootout, ranging from 0 to a maximum of 100. In the first *t*-test, we wanted to test whether the participants had higher outcome expectations against goalkeeper B when goalkeeper A was dominant and goalkeeper B was submissive (*t*-test 5). Conversely, in the second *t*-test, we wanted to test whether the participants' outcome expectations were higher against goalkeeper A when goalkeeper B was dominant and A was submissive (*t*-test 6). One participant did not fill

3 The underlying hypotheses could also be tested using a mixed-model ANOVA with goalkeeper as the within factor (goalkeeper A vs. goalkeeper B) and order as the between factor (A dominant and B submissive vs. B dominant and A submissive). Doing so reveals the same pattern of results. We chose to report the results of the *t*-tests, as we considered these the more straightforward approach.

out the questionnaire on outcome expectations, so these analyses were only conducted with $N = 46$ instead of $N = 47$ participants.

Objective Measures (Performance)

For the analyses of accuracy and speed, two $2 \times 2 \times 2$ (NVB [dominant vs. submissive] $\times$ goalkeeper [first shot against goalkeeper A, i. e. A 1st vs. first shot against goalkeeper B, i. e. B 1st] $\times$ (condition [first shot against the dominant goalkeeper, i. e. Dom 1st, vs. first shot against the submissive goalkeeper, i. e. Sub 1st])) repeated measures univariate ANOVAs were calculated. Including the goalkeeper and condition factor, we ensured that the differences in the effects of NVB on the outcome variables were not caused by sequence effects. This means that we controlled for the potential influence of whether the first penalty was against goalkeeper A or B (sequence of the goalkeepers) and of whether the first penalty was against the dominant or the submissive goalkeeper (sequence of condition). Accordingly, when presenting the results, we report only those data which are relevant to our research question, which were the main effect of NVB, the interaction between NVB and condition and the interaction between NVB and goalkeeper, as well as the main effects of condition and goalkeeper.

For the analyses of speed, all 940 cases were included. For the analyses of accuracy, we excluded those penalties which were saved or deflected by the goalkeeper, as for these shots, determining the marker on the goal line (marker 1) was not possible. Moreover, because of technical problems with the camera behind the goal, the penalties of two participants had to be totally excluded. Thus, for the analysis of accuracy, a total of 705 penalties were included in the analysis. Notably, those shots that missed the goal were not excluded from the analysis, as accuracy and speed did not depend on whether the shot was a hit or a miss. Furthermore, as the reaction (jumping left or right) of the goalkeeper was randomised, whether a penalty resulted in a hit or a miss happened by chance. Consequently, we did not analyse the influence of NVB on the number of hits and misses, and we did not examine the influence of NVB on accuracy and speed separately for hits and misses.

Finally, for each participant separately for the dominant and submissive condition, the mean scores for speed and accuracy were built, each consisting of totally at least eight and up to ten penalties per participant per scale.

Two independent raters set the markers for all 940 shots, and the inter-rater reliability was revealed to be 88.18% for speed, and 77.15% for accuracy. When conducting the analyses, we calculated the tests for both raters to check whether the results were influenced by the raters' estimates. As the results did not differ for both raters, in the results section, we will only report the results of rater 1.

Results

Subjective Measures (Goalkeepers' Strength and Outcome Expectations)⁴

First, regarding the goalkeepers' strength, we compared each goalkeeper in his dominant position with the other goalkeeper in his submissive position, resulting in two comparisons (see Fig. 1 for an overview). When goalkeeper A is dominant, he is not rated significantly stronger than goalkeeper B when he is submissive, $t(23) = 1.48$, $p = .15$, $r = .29$ (t -test 1). When goalkeeper B is dominant, he is rated significantly stronger than goalkeeper A when he is submissive, $t(22) = 2.87$, $p = .01$, $r = .52$ (t -test 2).

Second, we compared each goalkeeper's dominant position with his own submissive position. Both goalkeepers A and B are perceived as slightly stronger when in a dominant than when in a submissive position. The results of the t -tests for independent variables indicate that goalkeeper A is perceived as stronger in his dominant than in his submissive posture. However, this difference is not significant, $t(45) = 1.58$, $p = .12$, $r = .23$ (t -test 3). Furthermore, goalkeeper B is perceived as significantly stronger in his dominant than in his submissive posture, $t(45) = 2.11$, $p = .04$, $r = .30$ (t -test 4).

The results on the ratings for outcome expectations (see Fig. 2 for an overview) show that neither for goalkeeper A nor for goalkeeper B do outcome expectations depend on their NVB. However, independent of their NVB, the outcome expectations against goalkeeper A are substantially higher than those against goalkeeper B. Therefore, the outcome expectations are significantly higher against goalkeeper A than against goalkeeper B, both when goalkeeper A is dominant and B is submissive, $t(22) = 4.53$, $p < .001$, $r = .69$ (t -test 5) and when goalkeeper B is dominant and A is submissive, $t(22) = 5.61$, $p < .001$, $r = .77$ (t -test 6).

⁴ A box-plot analysis revealed five outliers. Removing the outliers did not change the results. Therefore, the outliers remained in our analysis.

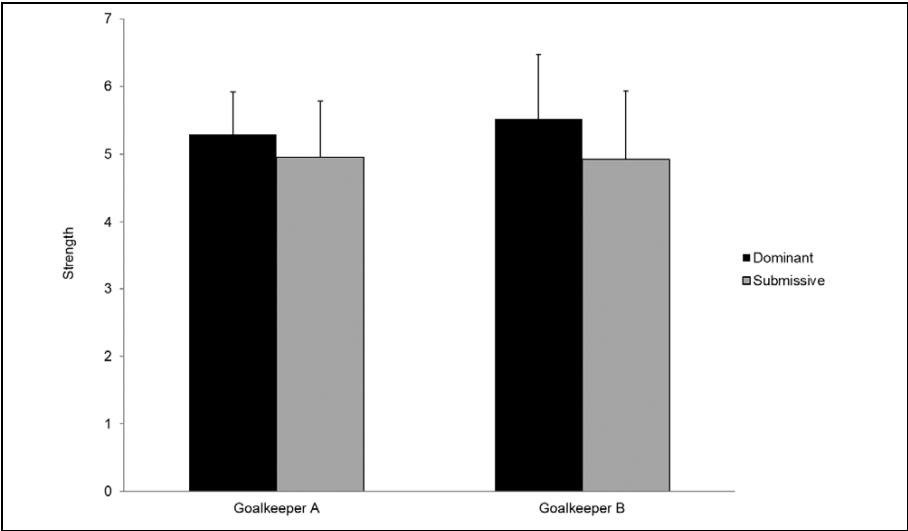


Fig. 1. Mean strength ratings as a function of NVB and the goalkeeper. The error bars represent standard deviations.

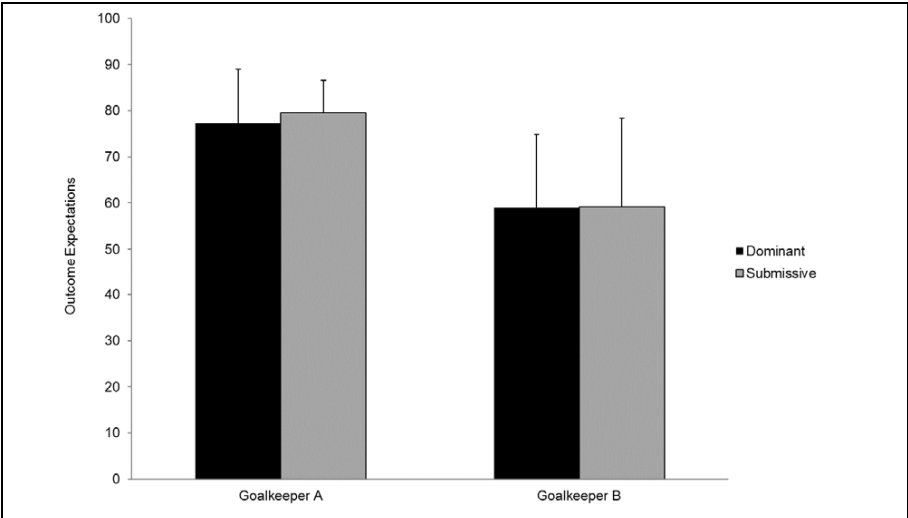


Fig. 2. Mean outcome expectation ratings as a function of NVB and the goalkeeper. The error bars represent standard deviations.

*Objective Measures (Accuracy and Speed)*⁵

The analysis revealed no significant main effect for the influence of NVB on speed ($F[1, 43] = 1.49, p = .23, \eta^2_p = .03$). Additionally, neither the interaction effect between NVB and the goalkeeper ($F[1, 43] = 1.03, p = .32, \eta^2_p = .02$) nor the interaction effect between NVB and the condition ($F[1, 43] = 1.38, p = .25, \eta^2_p = .03$) was significant, meaning that the influence of NVB did not depend on whether the first penalty was against a dominant or submissive goalkeeper, nor did it depend on whether the first penalty was against goalkeeper A or B. Furthermore, neither the main effect for the condition ($F[1, 43] = 1.18, p = .28, \eta^2_p = .03$) nor for the goalkeeper ($F[1, 43] = .08, p = .78, \eta^2_p = .02$) was significant, meaning that differences in the results were not caused by sequence effects.

Nearly the same results were shown when analysing the influence of NVB on accuracy. This means that the analysis again revealed neither a significant main effect for NVB ($F[1, 41] = 1.36, p = .25, \eta^2_p = .03$) nor a significant interaction between NVB and condition ($F[1, 41] = .001, p = .98, \eta^2_p = .00$) or between NVB and goalkeeper ($F[1, 41] = 3.73, p = .06, \eta^2_p = .08$). Additionally, the main effects of condition ($F[1, 41] = .03, p = .86, \eta^2_p = .00$) and goalkeeper did not reach significance ($F[1, 41] = .24, p = .63, \eta^2_p = .01$).

Discussion

Summary and Theoretical Integration of the Results

The aim of this study was to foster research on NVB in the sport performance setting by conducting a field study, i. e. a football penalty shootout, measuring not only subjective variables, i. e. perceived strength and outcome expectations, but also objective performance variables, i. e. accuracy and speed of penalty kicks. Concerning the subjective variables, the results partly support our hypothesis that dominant goalkeepers are perceived as stronger than submissive goalkeepers and that the outcome expectations of penalty takers are higher when facing a submissive goalkeeper compared to a dominant goalkeeper. More precisely, we found that in line with previous research (Furley, Dicks et al., 2012; Buscombe et al., 2006; Greenlees, Bradley et al., 2005; Seiler et al., 2018), dominant goalkeepers are perceived as stronger than submissive goalkeepers. Notably, this effect was stronger for goalkeeper B than for goalkeeper A. Furthermore, with regard to strength, the results indicate that goalkeeper B's manipulations of NVB, i. e. playing the dominant and the submissive roles, were clearer than those of goalkeeper A, as he is perceived as significantly stronger in his dominant than in his submissive role, whereas for goalkeeper A, there is only a tendency that he is perceived as stronger in his dominant than in his submissive demeanour. Additionally, the influence of NVB seems to depend on the goalkeeper

⁵ A box-plot analysis revealed five outliers. Removing the outliers did not change the results. Therefore, the outliers remained in our analysis.

and thus on whether a penalty taker is confronted with goalkeeper A or B. This tendency is supported by the results on outcome expectations, as NVB did not significantly influence the penalty takers' outcome expectations before the shootout, but the goalkeepers themselves did. More precisely, the goalkeepers' posture, their acting behaviour and their demeanour, in general, but not their NVB, seemed to significantly influence the participants' outcome expectations in such a way that these outcome expectations are significantly higher against goalkeeper A, irrespective of the manipulation of NVB.

Summarising the results of the objective measures, no significant influence of NVB on objective performance measures could be found. Thus, our results do not support our hypotheses that accuracy and speed are higher when shooting against a dominant goalkeeper.

Thus, according to our results, the high influence of NVB on several outcome variables found in previous experimental research could not be transferred to the field and there was no evidence for behavioural consequences of NVB on shooting performance. However, our results are partly in line with previous research on NVB and on penalty shootouts. Relating to the NVB-field, Furley, Dicks and colleagues (2012) in their experimental study only found a marginal significant effect of dominance and submissiveness on the expected accuracy of the penalty while the effect sizes were large in all other effects, i. e., perception of opponent, expected power, and expectancy of success. Thus, the results of this study might be interpreted in a way that finding the effects of NVB on accuracy could be difficult, even when only experimentally measuring the *expected* accuracy and not the *actual* accuracy in the field and without considering the consequences of NVB on the *observer's*, i. e. the penalty taker in our study, performance qualities. Effects in the field are usually smaller and are more difficult to be found. This might be the reason why in our study, we did not only find no effects of NVB on accuracy but no effects on power respective speed neither. Likewise, Furley, Dicks, and colleagues (2012) found smaller effects for the condition in which the participants saw videos of the whole player than for the condition in which they saw only the point-light displays. This might also be a sign that the larger is the gap between the highly controlled laboratory framework and the field in which several environmental factors might play a crucial role, the easier it is to find effects of NVB.

Additionally, according to the studies by van der Kamp and Masters (2008) and Masters and colleagues (2007), the implicitly perceived size of a goalkeeper might influence the penalty taking accuracy. This result agrees with our findings that it was the taller goalkeeper (goalkeeper B) against whom the outcome expectations were smaller and the perceived strength was bigger, meaning that personal characteristics, such as size (Masters et al., 2010) and hair colour (Hess, 2016), might even have a greater influence on perceivers than aspects of the demeanour, such as NVB, have. This might be an explanation for the result that goalkeeper B is consistently rated stronger and that outcome expectations are consistently smaller when shooting

against goalkeeper B. Indeed, we considered the potential influence of the goalkeeper's size when planning the study, but completely excluding this factor was not possible. Furthermore, referring to the penalty shootout literature, Navarro and colleagues (2013) mention that the keeper independent strategy, during which the 'penalty kicker chooses the aim before the run-up and holds that choice during the run-up and kick. Any action of the goalkeeper is ignored' (Navarro et al., 2013, p. 921), might be the more successful strategy in penalty kicks than the keeper-dependent strategy (Navarro et al., 2013; Nöel, & van der Kamp, 2012; Wood, & Wilson, 2010a). Our participants were possibly using this strategy, especially when considering that nowadays, more and more athletes work together with professional sport psychologists with whom they establish psychological tools that help them focus on themselves and the upcoming task, i. e. the penalty kick, and not on the task itself or irrelevant stimuli, i. e. the goalkeeper's demeanour.

Nevertheless, our research still provides added value to psychological research, in general, and NVB research, in particular, as we were responding to the call by Baumeister and colleagues (2007) to conduct field studies and the call by Furley and colleagues (2015) to measure not only subjective but also objective performance variables. Importantly, we showed that the results of experimental, laboratory-controlled studies should be interpreted cautiously and are not always generalizable to the field where further environmental factors might have an influence on perceptions. This influence of environmental factors might actually lead to differences in the results between experimental, laboratory studies and field studies, as mentioned by Mann, Williams, Ward and Janelle (2007) and Kareláia and Hogarth (2008) in two meta-analyses on perceptual expertise and human judgement.

Strengths, Limitations and Future Research Directions

The present research has several strengths. First, we advance previous research on the importance of NVB (Buscombe et al., 2006; Furley, & Dicks, 2012; Furley, Dicks, & Memmert, 2012; Furley, Dicks, Stendtkke, et al., 2012; Furley et al., 2015; Greenlees, Buscombe et al., 2005; Greenlees, Bradley et al., 2005; Greenlees et al., 2008), research in the field of football penalty shootouts and the general debate on the transferability of experimental results to the field (Baumeister et al., 2007; Dicks et al., 2010; Mann et al., 2007; Kareláia, & Hogarth, 2008).

Second, we were conducting, for the first time, a field study in NVB research, and we measured not only subjective outcome variables, i. e. perceived strength and outcome expectations, but also objective performance variables, i. e. accuracy and speed of the penalties. When designing the study, we tried to transfer the manipulation of NVB, the within-subjects design, and outcome expectations as one subjective outcome variable – all approved in previous laboratory studies – to our experimental field study to keep new and unproven materials to a minimum. Thus, our study was, on the one hand, a field study in a realistic scenario, as i) both goalkeepers and participants were male, ii) our confederates were real goalkeepers, and, thus, they

knew how to behave as goalkeepers, iii) the goalkeepers were allowed to try to save the ball as they would normally do, iv) the participants were instructed to perform as best as they can and v) participants were exclusively experienced football players. On the other hand, the study was conducted in an experimentally controlled procedure by i) ensuring that the participants did not know the goalkeepers in advance and by controlling for that anyway, ii) giving the goalkeepers standardised and previously tested instructions on how to behave in the dominant and submissive NVB to avoid the influence of any confounding variables, such as physical activity, iii) ensuring that the participants saw the goalkeepers only in the dominant or the submissive behaviour, iv) randomising the goalkeepers' reaction (jump to the right or to the left, v) switching which goalkeeper begins, vi) randomising which goalkeeper shows which behaviour and vii) having 20 kicks (10 per condition) to reduce variations in the kicks that solely occur by chance. Using this design and procedure, we tried to achieve an adequate combination of both a field study in a real-world scenario and an experimentally controlled study in order to maximise the probability that the differences in our outcome variables are caused by differences in NVB and not by other stimuli (Wells, & Windschitl, 1999). Furthermore, the objective measurement of speed and accuracy allowed us to not only measure the first impressions that the participants had when watching an opponent, as this was done by most of previous studies, but to also assess the impact of these impressions on subsequent behaviour.

Third, we used an adequate setting to operationalise our research question, as football penalties offer an appropriate opportunity to assess in a 'relatively controlled setting' how athletes manage to 'coordinate their actions to those of their opponents' (Navia, van der Kamp, & Ruiz, 2013, p. 235) and in which athletes are close enough to one another to attend and interpret the body language of their opponent.

Fourth, our study is of high external validity, and the penalty scenario allows the generalisability of results to different sports in which one-against-one situations or similar confrontations of opponents occur, e. g. handball, ice hockey, beach volleyball, tennis and badminton.

Fifth, by taking the perceived goalkeepers' strength as the dependent variable and not as a manipulation check, we avoided any kinds of demand effects, especially as our manipulations of dominance and submissiveness have widely been used and tested in previous studies (Greenlees, Bradley et al., 2005; Furley, & Dicks, 2012; Seiler et al., 2018). Furthermore, as the results show an effect of NVB on strength, we could conclude that the participants perceived differences in NVB between the two goalkeepers.

Nevertheless, some limitations of this study need to be considered. First, from a methodological perspective, the assessment of speed and accuracy might have caused some variance in the results, as the markers for each penalty had to be set manually. However, different from other studies in which only a few penalties were rated by two raters (Wood, & Wilson, 2010b), in the present study, two raters rated all 940 penalties independently and following the same instructions. As we found no

differences in the results between the two raters, we do not think that our results are caused by errors in the treatment of the original data, i. e. in setting the markers for the analysis of accuracy and speed.

Second, for the analysis of accuracy, we excluded those penalties which were saved or deflected by the goalkeeper. Consequently, we might have possibly excluded the less-precise and less-fast penalties. However, as the reaction (jumping left or right) of the goalkeeper was randomised, it happened by chance whether a penalty was saved or not. Thus, there should be no distortion in the number of hits and misses/saves across conditions.

Third, by measuring accuracy as the distance from the inner post to the point the ball crossed the goal line, we were assessing the actual ball placement but not whether the penalty taker also aimed to place the ball there. However, as our participants were highly experienced soccer players, we could assume that they were sufficiently skilled to place the ball where they intended to.

Fourth, we did not induce special pressure on the participants, which might have made it easy for them not to take the shootout seriously and to stay focused on themselves without being influenced by the goalkeepers' behaviour. Thus, pressure might be a potential moderator in this context, and it should be considered in further research. Additionally, assessing a measure of task importance to control for motivational factors might be helpful.

Fifth, a limitation that is caused by the fact of conducting a field study is that the goalkeepers indeed were similar concerning size and posture; nevertheless, one goalkeeper (B) was taller than the other one (goalkeeper A). Consequently, stimuli other than NVB which we could not exclude from our study might have had an influence on the participants' behaviour, such as sympathy for one goalkeeper or personal characteristics, e. g. size (Masters et al., 2010; van der Kamp, & Masters, 2008), hair colour or the face itself (Hess, 2016). Thus, future research might control for the influence of personal characteristics when watching goalkeepers' or opponents' behaviour, in general.

Despite the fact that we could confirm our hypotheses only to a limited extent, our results have practical implications for athletes, coaches and applied practitioners. As approximately only 20%–25% of all penalties are missed or saved, in general (Jordet, Hartman, Vischer, & Lemmink, 2007), adopting a positive body language might influence the penalty taker's behaviour. Thus, goalkeepers could try to adopt a positive body language even when they do not feel confident in saving a goal. Additionally, from the penalty takers' perspective, it might be useful to foster awareness of the implicit influence of the goalkeeper's demeanour on the penalty taking strategy and, accordingly, to establish a routine which allows staying focused on the main task, i. e. scoring a goal, and not to be distracted by the goalkeeper's (faked) NVB or his general posture.

Conclusion

In summary, this study highlights the importance of conducting field studies in the NVB research field, with the aim of shedding more light on the transferability of laboratory results to the field and on the behavioural, performance-related consequences of the subjective outcome variables often used in experimental, laboratory studies.

References

- Barrett, L. F. (2011). Was Darwin wrong about emotional expression? *Current Directions in Psychological Science*, 20(6), 400–406. doi:10.1177/0963721411429125
- Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science*, 2(4), 396–403. doi:10.1111/j.1745-6916.2007.00051
- Buscombe, R., Greenlees, I., Holder, T., Thelwell, R., & Rimmer, M. (2006). Expectancy effects in tennis: The impact of opponents' pre-match non-verbal behavior on male tennis players. *Journal of Sports Science*, 24(12), 1265–1272. doi:10.1080/02640410600598281
- Darwin, C. (1872). *The expression of emotions in man and animals*. London: Murray.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6(3), 169–200. doi:10.1080/02699939208411068
- Feltz, D. L., & Chase, M. A. (1998). The measurement of self-efficacy and confidence in sport. In J. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 65–80). Morgantown, WV: Fitness Information Technology.
- Forgas, J. P. (1995). Mood and judgement: The affect infusion model (AIM). *Psychological Bulletin*, 117, 39–66.
- Furley, P., & Dicks, M. (2012). "Hold your head high". The influence of emotional versus neutral nonverbal expressions of dominance and submissiveness in baseball. *International Journal of Sport Psychology*, 43, 294–311.
- Furley, P., Dicks, M., & Memmert, D. (2012). Nonverbal behavior in soccer: The influence of dominant and submissive body language on the impression formation and expectancy of success of soccer players. *Journal of Sport and Exercise Psychology*, 34(1), 61–82. doi:10.1123/jsep.34.1.61
- Furley, P., Dicks, M., Stendtko, F., & Memmert, D. (2012). "Get it out that way. The wait's killing me." Hastening and hiding during soccer penalty kicks. *Psychology of Sport and Exercise*, 13(4), 454–465. doi:10.1016/j.psychsport.2012.01.009
- Furley, P., Moll, T., & Memmert, D. (2015). "Put your hands up in the air"? The interpersonal effects of pride and shame expressions on opponents and teammates. *Frontiers*, 6(1361), 1–20. doi:10.3389/fpsyg.2015.01261
- Furley, P., & Schweizer, G. (2013). The expression of victory and loss: Estimating who's leading or trailing from nonverbal cues in sports. *Journal of Nonverbal Behavior*, 38(1), 13–29. doi:10.1007/s10919-013-0168-7
- Furley, P., & Schweizer, G. (2014). "I'm pretty sure that we will win!" The influence of score-related nonverbal behavioral changes on the confidence in winning a basketball game. *Journal of Sport and Exercise Psychology*, 36(3), 316–320. doi:10.1123/jsep.2013-0199
- Greenlees, I. A., Bradley, A., & Holder, T. P., & Thelwell, R. C. (2005). The impact of two forms of opponents' non-verbal communication on impression formation and outcome expectations. *Psychology of Sport and Exercise*, 6(1), 103–115. doi:10.1016/j.psychsport.2003.10.002
- Greenlees, I. A., Buscombe, R., Thelwell, R. C., Holder, T. P., & Rimmer, M. (2005). Impact of opponents' clothing and body language on impression formation and outcome expectations. *Journal of Sport and Exercise Psychology*, 27(1), 39–52. doi:10.1123/jsep.27.1.39
- Greenlees, I. A., Leyland, A., Thelwell, R. C., & Filby, W. (2008). Soccer penalty takers' uniform colour and pre-penalty kick gaze affect the impressions formed of them by opposing goalkeepers. *Journal of Sports Sciences*, 26(6), 569–576. doi:10.1080/02640410701744446

- Hess, U. (2016). Nonverbal communication. In: H. S. Friedman (Ed.), *Encyclopedia of mental health* (2nd edition, Vol. 3) (pp. 208–218). Waltham, MA: Academic Press.
- Inquisit 5.0 [online computer software]. (2016). Seattle, WA: Millisecond Software.
- Jordet, G. (2009). When superstars flop: Public status and “choking under pressure” in international soccer penalty shootouts. *Journal of Applied Sport Psychology*, 21(2), 125–130. doi:10.1080/10413200902777263
- Jordet, G., & Hartman, E. (2008). Avoidance motivation and choking under pressure in soccer penalty shootouts. *Journal of Sport and Exercise Psychology*, 30, 450–457. doi:10.1123/jsep.30.4.450
- Jordet, G., Hartman, E., Visscher, C., & Lemmink, K. A. P. M. (2007). Kicks from the penalty mark in soccer: The roles of stress, skill, and fatigue for kick outcomes. *Journal of Sports Sciences*, 25, 121–129. doi:10.1080/02640410600624020
- Kareláia, N., & Hogarth, R. M. (2008). Determinants of linear judgement: A meta-analysis of lens model studies. *Psychological Bulletin*, 134, 404–426. doi:10.1037/0033-2909.134.3.404
- Kuhn, W. (1988). Penalty-kick strategies for shooters and goalkeepers. In T. Reilly, K. Davids, W. J. Murphy, & A. Lees (Eds.), *Science and football* (pp. 489–492). London: E. & F. N. Spon.
- Mann, D. T. Y., Williams, A. M., Ward, P., & Janelle, C. M. (2007). Perceptual cognitive expertise in sport: A meta-analysis. *Journal of Sport and Exercise Psychology*, 29, 457–478. doi:10.1123/jsep.29.4.457
- Masters, R., Poolton, J., & van der Kamp, J. (2010). Regard and perceptions of size in soccer: Better is bigger. *Perception*, 39, 1290–1295. doi:10.1068/p6746
- Masters, R. S. W., van der Kamp, J., & Jackson, R. C. (2007). Imperceptibility off-center goalkeepers influence penalty-kick direction in soccer. *Psychological Science*, 18, 222–223. doi:10.1111/j.1467-9280.2007.01878
- Mehta, P. H., Jones, A. C., & Josephs, R. A. (2008). The social endocrinology of dominance: Basal testosterone predicts cortisol changes and behavior following victory and defeat. *Journal of Personality and Social Psychology*, 94(6), 1078–1093. doi:10.1037/0022-3514.94.6.1078
- Meyers-Levy (1989). Gender differences in information processing: A selectivity interpretation. In P. Cafferata & A. Tybout (Eds.), *Cognitive and affective responses to advertising* (pp. 219–260). MA: Lexington Books.
- Moll, T., Jordet, G., & Pepping, G.-J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of Sport Sciences*, 28(9), 983–992. doi:10.1080/02640414.2010.484068
- Myers, N. D., Feltz, D. L., & Short, S. E. (2004). Collective efficacy and team performance: A longitudinal study of collegiate football teams. *Group Dynamics: Theory, Research, and Practice*, 8(2), 126–138. doi:10.1037/1089-2699.8.2.126
- Myers, N. D., Payment, C. A., & Feltz, D. L. (2004). Reciprocal relationships between collective efficacy and team performance in women's ice hockey. *Group Dynamics: Theory, Research, and Practice*, 8(3), 182–195. doi:10.1037/1089-2699.8.3.182
- Navarro, M., van der Kamp, J., Ranvaud, R., & Savelsbergh, G. J. P. (2013). The mere presence of a goalkeeper affects the accuracy of penalty kicks. *Journal of Sports Sciences*, 31(9), 921–929. doi:10.1080/02640414.2012.762602
- Navia, J. A., van der Kamp, J., & Ruiz, L. M. (2013). On the use of situation and body information in goalkeeper actions during a soccer penalty kick. *International Journal of Sport Psychology*, 44, 234–251. doi:10.7352/IJSP2013.43.000
- Nöel, B., & van der Kamp, J. (2012). Gaze behaviour during the soccer penalty kick: An investigation of the effects of strategy and anxiety. *International Journal of Sport Psychology*, 43(4), 326–345.
- Rathschlag, M., & Memmert, D. (2013). The influence of self-generated emotions on physical performance: An investigation of happiness, anger, anxiety, and sadness. *Journal of Sport & Exercise Psychology*, 35, 197–210. doi:10.1123/jsep.35.2.197
- Seiler, K., Schweizer, G., & Seiler, R. (2018). Do the effects of nonverbal behaviour on team outcome confidence in team sports depend on the availability of additional performance information? *Psychology of Sport & Exercise*, 36, 29–40. doi:10.1016/j.psychsport.2017.12.007
- Shariff, A. F., & Tracy, J. L. (2011). What are emotion expressions for? *Current Directions in Psychological Science*, 20(6), 395–399. doi:10.1177/09637214111424739

- Van der Kamp, J. (2011). Exploring the merits of perceptual anticipation in the soccer penalty kick. *Motor Control*, 15, 342–358. doi:10.1123/mcj.15.3.342
- Van der Kamp, J., & Masters, R. S. W. (2008). The human Muller-Lyer illusion in goalkeeping. *Perception*, 37, 951–954. doi:10.1068/p6010
- Van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social information (EASI) model. *Current Directions in Psychological Science*, 18(3), 184–188. doi:10.1111/j.1467-8721.2009.01633
- Warr, P. B., & Knapper, C. (1968). *The perception of people and events*. London: Wiley.
- Weigelt, M., Memmert, D., & Schack, T. (2012). Kick it like Ballack: The side effects of goalkeeping gestures on goal-side selection in experienced soccer players and soccer novices. *Journal of Cognitive Psychology*, 24(8), 942–956. doi:10.1080/20445911.2012.719464
- Wells, G. L., & Windschitl, P. D. (1999). Stimulus sampling and social psychological experimentation. *Personal and Social Psychology Bulletin*, 25(9), 1115–1125. doi:10.1177/01461672992512005
- Wood, G., & Wilson, M. R. (2010a). Gaze behaviour and shooting strategies in football penalty kicks: Implications of a 'keeper-dependent' approach. *International Journal of Sport Psychology*, 41, 293–312.
- Wood, G., & Wilson, M. R. (2010b). A moving goalkeeper distracts penalty takers and impairs shooting accuracy. *Journal of Sports Sciences*, 28, 937–946. doi:10.1080/02640414.2010.495995
- Ziv, G., & Lidor, R. (2011). Physical characteristics, physiological attributes, and on-field performances of soccer goalkeepers. *International Journal of Sports Physiology and Performance*, 6, 509–524. doi:10.1123/ijsp.6.4.509

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