

Nonverbal Behavior in Soccer: The Influence of Dominant and Submissive Body Language on the Impression Formation and Expectancy of Success of Soccer Players

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In the present article, we investigate the effects of specific nonverbal behaviors signaling dominance and submissiveness on impression formation and outcome expectation in the soccer penalty kick situation. In Experiment 1, results indicated that penalty takers with dominant body language are perceived more positively by soccer goalkeepers and players and are expected to perform better than players with a submissive body language. This effect was similar for both video and point-light displays. Moreover, in contrast to previous studies, we found no effect of clothing (red vs. white) in the video condition. In Experiment 2, we used the implicit association test to demonstrate that dominant body language is implicitly associated with a positive soccer player schema whereas submissive body language is implicitly associated with a negative soccer player schema. The implications of our findings are discussed with reference to future implications for theory and research in the study of person perception in sport.

Keywords: penalty, person perception, point-light, implicit association test, social cognition

When viewing televised coverage of sport events, it is noticeable to hear commentators frequently refer to the body language of competing players while also speculating on the level of confidence of those performers. For example, one often hears the following statements: “You can tell that the player has given up,” “From looking at their body language one suspects they’ve lost their self-belief,” or “The team look buoyant and really high on confidence.” If we consider that such changes in the body language, or nonverbal behaviors, of sportspeople may also be recognized by the teammates and opponents engaged in the game, then

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understanding on the performance consequences of body language should provide an important and interesting avenue for sport research. It is highly plausible that body language influences the impressions sportspeople form of each other and the subsequent expectations of sporting success (cf. Greenlees, Bradley, Thelwell & Holder, 2005a; Greenlees, Buscombe, Thelwell, Holder, & Rimmer, 2005b).

Nonverbal Behaviors and Impression Formation in Sports

Given that instances of impression formation are replete across many different instances of our daily lives (for a review, see Freeman & Ambady, 2011), it is surprising that until fairly recently, researchers have widely neglected to examine nonverbal behaviors within sport contexts. To address this shortcoming, Greenlees and colleagues (e.g., Greenlees, et al., 2005a; Greenlees, et al., 2005b; Greenlees, Leyland, Thelwell, & Filby, 2008) conducted a series of important studies demonstrating that pre-performance nonverbal behaviors do indeed have a major impact on athletes' impression formations, which, in turn, influence their expected performance outcome. For example, Greenlees et al. (2005a) reported that tennis players formed initial impressions of their opponents while warming up based on the body language of the opponent, which further affected their confidence in beating that opponent. Following the initial work of Greenlees and colleagues, the role of nonverbal behaviors and their influence on person perception has received more attention in sport psychology research. For example, van der Kamp and Masters (2008) demonstrated that the nonverbal posture adopted by a goalkeeper influences the penalty taker's perception of the goalkeeper's size and subsequent shooting behavior (see also Masters, Poolton, & van der Kamp, 2010). Moreover, Moll, Jordet, and Pepping (2010) have provided evidence suggesting that not only the pre-performance nonverbal behaviors, but also certain celebratory post-performance nonverbal behaviors (e.g., raising both arms above the head) of penalty takers have potentially positive effects on teammates during penalty shootouts.

In sum, there has been an increasing number of studies examining the role of both pre- and post-performance nonverbal behaviors in sport contexts demonstrating the important role that such facets of behavior have on performance. In one study that is of particular importance to the present article, Greenlees et al. (2008) examined the impact of two different pre-performance factors—point of gaze and clothing color—on the impressions formed by goalkeepers of outfield players during the penalty kick situation in soccer. Results demonstrated that penalty takers displaying 90% gaze—looking at the goalkeeper for 90% of their pre-performance time before penalty run-up—were judged as being more likely to execute accurate penalty kicks in comparison with penalty takers displaying only 10% gaze. Moreover, penalty takers wearing red clothing were associated with more positive impressions in comparison with white clothing. However, the goalkeepers' expectancy of success in saving penalty kicks was only affected by clothing color when considered in tandem with penalty taker gaze. Specifically, clothing color had no effect for the 90% gaze condition, whereas, in the 10% gaze condition, goalkeepers expected to have greater success against players in the white uniform in comparison with those in red clothing.

Greenlees et al. (2008) speculated that the clothing effects may be culturally influenced given that, in English soccer, the most successful teams have typically worn red (see Attrill, Gresty, Hill & Barton, 2008) and the English national team,

which has a white “home” uniform, has a particularly poor record in penalty shootouts (Jordet, 2009). Interestingly, however, findings elsewhere have also demonstrated the beneficial effects of red clothing in sport. For example, Hill and Barton (2005) observed that Olympic martial arts competitors wearing red were more likely to be successful compared with athletes wearing blue (see also Feltman & Elliot, 2011). Hill and Barton explained their finding from an evolutionary perspective, arguing that the color red is a testosterone-dependent, sexually selected signal of quality and dominance. Such an explanation has been contested elsewhere (Elliot, Maier, Binser, Friedman & Pekrun, 2009; Hagemann, Strauss & Leibing, 2008; Rowe, Harris, & Roberts, 2005) by pointing out alternative mechanisms to explain the effects of the color red in achievement contexts. Taken together, the unequivocal explanations and findings regarding the effect of red clothing suggest that further research is warranted to gain a better understanding of the potential effects of clothing color on impression formation.

In the current study we aim to build on the previous work of Greenlees and colleagues by investigating the effects of pre-performance nonverbal behavior and clothing color in the penalty kick situation. We further examine the clothing color effect found by Greenlees et al. (2008) with a sample of German goalkeepers, who might not hold the aforementioned culturally specific color associations. Moreover, we introduce a point-light (Johansson, 1973) control condition in which no clothing was observable and so surface features (e.g., clothing, hair style, facial features) were kept constant to concentrate specifically on the manipulation of cues pertaining to body language. Point-light videos have been used within ecologically motivated studies of person perception (see Marsh, Richardson, Baron, & Schmidt, 2006, for a review), demonstrating that humans are capable of accurately perceiving the actions of other people through observation of their kinematics alone (see Blake & Shiffrar, 2007, for a recent review). Thus, the findings from Greenlees et al. (2008) may not have been caused by the penalty takers’ gaze direction per se but instead from biological head and body motions that specified dominant and submissive nonverbal behaviors (Carney, Hall, & Smith LeBeau, 2005; Carney, Cuddy, & Yap, 2010). Such rationalization seems plausible in consideration of evolutionary accounts of the function of nonverbal behavior, which is proposed to have evolved in order for animals to communicate emotional information with one another (Tracy & Robins, 2008; Darwin, 1872/2009; Ekman, 2003). Evolutionary accounts of nonverbal behavior propose that social animals are equipped with the ability to reliably produce and perceive nonverbal behavior—such as emotional signals—to communicate important social information (Tracy & Robins, 2008). For example, evidence from evolutionary psychology suggests that the nonverbal expression of dominance and submissiveness has evolved in social animals for fitness reasons to quickly and efficiently signal information about rank and status (de Waal, 1998; Darwin, 1872/2009). Thus, in potentially confrontational situations, sending submissive signals communicates one’s recognition of inferiority to the stronger and thereby means the avoidance of conflict.

Nonverbal behavior and Schema-Driven Person Perception

The findings of Greenlees and colleagues (for a review, see Greenlees, 2007) have largely been explained within the theoretical framework of schema-driven impression formation (Fiske, Lin, & Neuberg, 1999; Fiske & Taylor, 1991). The

main tenet of schema-driven theories is that people, for reasons of efficiency, use cues (e.g., physical appearance, posture, gesture, and clothing) from early instances of social interaction to classify a person into a certain category or *person schema* (Fiske & Taylor, 1991). Person schemas are defined as an individual's knowledge of attributes of a specific type of person and the relationships among these attributes. For example, the results of Greenlees et al. (2008) indicated that the combination of 90% gaze and red uniform triggered a "good" person (i.e., soccer player) schema, while the 10% gaze and white uniform triggered a "bad" penalty taker schema. Moreover, according to Fiske and Taylor (1991), person schemas include evaluations and judgments of the characteristics of the type of person. In this respect, social schema theory proposes that when people see or think about another person, a mental person schema is activated, which in turn has the potential for various cognitive, affective, and behavioral outcomes. This argumentation is supported by research demonstrating generalization effects leaping from momentary observations to enduring dispositions and expectations (Harker & Keltner, 2001; Knutson, 1996; Montepare & Dobish, 2003). In this respect, Asch (1946) demonstrated in a seminal study that attractive individuals are generally thought of as possessing more favorable personalities.

A further posit of social schema theory is that the mere exposure to an image of another person can trigger—by association—the categorization of that person to a specific schema leading to generalization effects that go beyond the information that is actually available (Harker & Keltner, 2001; Knutson, 1996; Montepare & Dobish, 2003). According to Bruner (1957), the main purpose of categorizing stimuli is to predict features of that stimulus. In this regard, a frequently used instrument within social psychology to examine such assumptions is the implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998). The IAT assesses strengths of associations between mental concepts and certain evaluative attributes by comparing reaction times in computer-based categorization tasks. Comparable to the suggestion of Bruner (1957), the simple idea of the IAT is that concepts that are associated by some feature should be easier to group together than concepts that are not associated. In support of such ideas, the IAT has recently proven to be a useful tool for assessing constructs such as implicit stereotypes or person schemas (e.g., Greenwald, Pickrell, & Farnham, 2002; Rudman & Ashmore, 2007). Moreover, and of relevance to the sport domain, the IAT has been successfully adapted to measure implicit components of an exerciser's self-schema (Banting, Dimmock, & Lay, 2009).

The Present Research

Based on the review of literature presented above, we conducted two separate experiments with the combined aim of developing understanding of the applicability of person schemas for the study of impression formation in sport. To build upon the earlier work of Greenlees et al. (2008), we studied the effect of penalty taker nonverbal behaviors on impression formation and outcome expectations of goalkeepers for the penalty kick situation in soccer. In Experiment 1, we studied the effects of gaze levels—90% gaze or 10% gaze—and clothing color—red, white, or no color (i.e., point-light display)—on goalkeeper impression formation and consequent expectancies of success. Following the findings of Greenlees and colleagues, and in line with the evolutionary argumentation concerning the color red (Hill & Barton, 2005), we expected that red jerseys would increase the effect

of dominant nonverbal behavior on impression formation compared with white jerseys. If, on the other hand, the cultural explanation offered by Greenlees et al. (2008) accounted for the effect, then one may not find this effect among German goalkeepers. Although no research exists demonstrating an association between jersey color and soccer performance in Germany, it may be possible that the color white is associated with successful penalty-taking performance because the German national team has predominantly worn white and has been highly successful in major penalty shootouts (Jordet, 2009).

The control (i.e., point-light) condition, which removes both gaze and clothing characteristics from the display, was implemented to investigate the effect of providing goalkeepers with only the kinematic information of penalty takers for the formation of impressions. Thus, inclusion of this condition enabled examination of whether the biological motion information relating to dominant and submissive nonverbal behavior is sufficient for instances of person perception (Marsh et al., 2006).

In Experiment 2, we introduced the IAT as a means of examining schema-driven person perception in sport contexts to test whether the nonverbal behavior of an athlete leads to categorizing that person into a specific person schema. In line with social schema theory, which states that the mere exposure to an image of another person can trigger—by association—the categorization of that person into a specific schema, we expected that nonverbal behaviors signaling dominance are automatically associated with a good soccer player schema, whereas submissive nonverbal behaviors are automatically associated with a negative soccer player schema.

Experiment 1: Dominant and Submissive Nonverbal Behaviors During Penalty Kicks

Method

Participants

Male soccer goalkeepers ($n = 22$; $M_{\text{age}} = 24.3$ years; $SD = 3.4$ years), who had been playing for an average of 14 years at an amateur to semiprofessional level in Germany, took part in the study. Neither age- nor expertise-related differences were evident within the group. Informed consent was obtained from every participant before commencing the experiment. The study was carried out in accordance with the Helsinki Declaration of 1975.

Stimuli

Two sets of stimuli were created for Experiment 1: regular video footage of the penalty preparation and point-light footage of the penalty preparation. Both sets of stimuli were created using the same four actors, who had extensive soccer playing experience.

Video Stimuli. The video stimuli were prepared following the procedures of Greenlees et al. (2008). All footage was filmed with a tripod-mounted Canon HG21 digital video camera from a distance of exactly 11 m, and set to a height of 1.85 m. The filming took place on a standard-sized soccer pitch with the camera

positioned on the goal line. Actors received the same instructions on how to prepare the penalty kick when being filmed. They were instructed to start the preparation of the penalty from a predefined spot holding the ball in front of their stomach, 2 m behind the penalty spot. Each clip involved the actor approaching the penalty spot, placing the ball, walking back to a predefined mark—2.5 m back and 1 m to the left of the goal, representing a typical run-up for a right-footed player—and finally commencing the run-up. All players practiced this procedure several times to ensure that it was approximately the same for each player.

Nonverbal Behavior Manipulation. Nonverbal behavior was manipulated in accordance with procedures used by Greenlees et al. (2005a, 2005b, 2008) and Carney et al. (2005). In the dominant body language condition, the actors were asked to (i) stand and walk with an erect posture that involved pulling the shoulders back and pushing the chest out; (ii) slightly spread the limbs from the torso to occupy more space; (iii) hold the head up with the chin parallel to the ground so that their eyes were looking directly at the camera; and (iv) to look directly at the camera for 90% of the time. For the negative, submissive body language condition, the actors were asked to (i) adopt a slouched posture with the head and chin pointing down; (ii) limbs touching the torso and thereby minimizing the occupied space by collapsing the body inward; (iii) shoulders hanging to the front; and (iv) the eyes looking down for 90% of time and only briefly glancing at the goalkeeper/camera.

Color Manipulation. As per standard soccer attire, the uniforms included knee-length socks, shorts, and a short-sleeve top. The uniforms—either completely white or completely red—were both manufactured specifically for soccer—as opposed to generic sportswear—and were selected as they were absent of any visible badges, logos, or branding that could be associated with specific soccer teams.

Point-Light Stimuli. The only difference between the point-light condition and the video condition was that the filming for the point-light videos took place in a sports hall with ambient light removed. Two halogen spotlights, mounted on a tripod, were positioned in front of the camera directed at the actor preparing the penalty kick run-up. In the point-light condition, the actors wore black tight-fitting clothes and headwear. Reflective tape was placed on the clothes (Figure 1) following the procedure of Atkinson, Dittrich, Gemmel, and Young (2004). The reason we choose strips over points of light was that these are better visible from different angles and thereby allow the actors more freedom of movement without the reflection disappearing when creating the point-light videos (Atkinson et al., 2004).

Stimuli Selection. Each actor was filmed in the two different body language conditions three times, and then two independent raters selected one video from each condition that was—except for the experimental manipulation—most similar, as described in the following. The independent raters were asked to rate each video on two 7-point Likert scales assessing the body language of the actors as *not at all dominant* (1) or *very dominant* (7), and *not at all submissive* (1) and *very submissive* (7). For every actor, the video clip with the largest rated difference between the dominant and submissive Likert scale was selected. The average difference for the clips selected for the dominant condition was 4.3 and 4.6 for the submissive condition. No differences between the point-light (mean difference, 4.5) and video conditions (mean difference, 4.4) were evident. This ensured that the 16 videos (i.e.,

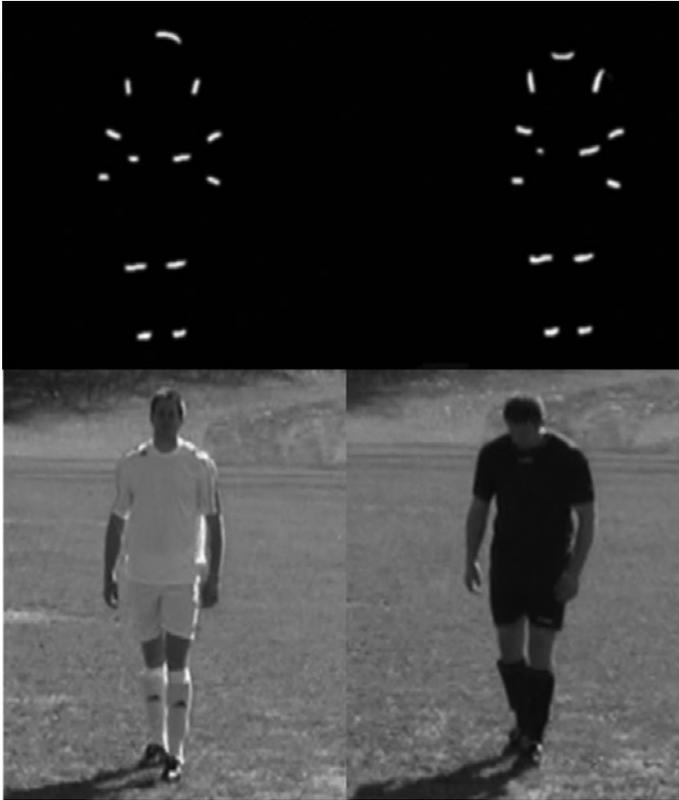


Figure 1 — Single frames from the point-light and video stimuli showing dominant (left panel) and submissive (right panel) body language.

four actors filmed in two body language conditions and two presentation conditions [point-light and video] used as the experimental stimuli) differed only according to the experimental manipulation. Hence, body language and presentation mode were manipulated within subjects and clothing color was manipulated between subjects. Thus, every participant viewed point-light videos and, depending on which group they were in, either only penalty takers dressed in white or in red. The software E-Prime 2.0 Professional (Psychological Software Tools, 2007) was used to present the stimuli and collect the judgments on a 19-inch computer screen placed 60 cm away from the subjects. Every participant viewed 16 videos in a random order—8 point-light videos and 8 regular videos—including all actors in both nonverbal behavior conditions.

Measures

After every video, participants rated the player on several computer-generated 11-point digital semantic differential scales (Greenlees et al., 2005a, 2005b, 2008). To give their ratings, participants had to move a mouse cursor from the middle of

the scale toward either end of the scale and provide their rating by clicking the left mouse button. The E-prime software transformed the ratings into a value (with 3 decimals) between 0 reflecting the left end of the scale and 1 reflecting the right end of the scale. The used scales were continuous, ranging from 0.000 to 1.000 and were visually presented as 11 points to assist participants in providing a clear indication of their ratings. All of the following measures were computerized versions of the measures used by Greenlees et al. (2008) and were distributed in the order outlined below.

Perception of Target Player. The first seven measures provided data on the perceived impressions toward the target penalty taker. The dimensions were (i) *not assertive – assertive*; (ii) *noncompetitive – competitive*; (iii) *novice – experienced*; (iv) *unconfident – confident*; (v) *on edge – composed*; (vi) *not focused – focused*; and (vii) *tense – relaxed*. Scores for each of the seven *perception of target* scales were summed to give a measure of the impression formed for the target player (from 0 to 7), with low scores indicating less-positive impressions.

Power of Penalty. Participants rated their expectancy of the power of the penalty kick along the dimensions *very weak – very powerful*, with low scores reflecting weak penalties.

Accuracy of Penalty. Participants rated their expectancy of the accuracy of the penalty kick along the dimensions *very inaccurate – very accurate*, with low scores reflecting inaccurate penalties.

Expectancy of Success. The last five items assessed how confident participants were that they would save at least 1 out of 5, 2 out of 5, 3 out of 5, 4 out of five, and 5 out of 5 penalties along the dimensions *very sure – not at all sure*. A single expectancy of success score was computed from the five items: every single score was multiplied by the amount of saves they expected in the question and added together at the end. This was done so that a higher certainty of five saves would have a greater weight than one save, thus reflecting the outcome expectations of the participants. The scores potentially ranged from 0 to 15.

Procedure

Participants were instructed that they had to rate soccer penalty takers based solely on the pre-performance penalty footage that was presented to them in the video or point-light displays. Before commencing the experiment, participants filled out a questionnaire gathering demographic data. Every participant was tested individually on a standard 17-inch notebook. Participants first performed two practice trials—one video and one point-light video—to familiarize themselves with the procedure before viewing the 16 experimental clips, which were presented in random order. After completing the experiment, participants were informed about the purpose of the study.

Data Analysis

We calculated a mixed-design MANOVA with repeated measures on the within-subject independent variable body language (dominant vs. submissive) and presentation mode (point-light vs. video) and the between-subject independent variable

jersey color (red vs. white) in which all dependent variables were treated as a general index of the overall impression formed of the target player. We followed up the MANOVA with a series of equivalent univariate ANOVAs to examine the effect on the single dependent variables of player perception, outcome expectation, perceived penalty taking accuracy and power (cf. Greenlees et al., 2008). Where the assumption of sphericity was violated, the p -values were computed using the conservative Greenhouse–Geisser method with corrected degrees of freedom.

Results

The Cronbach alpha coefficient for the person perception scale was good ($\alpha = .89$). The descriptive statistics of Experiment 1 are presented in Table 1. The 2 (dominant vs. submissive body language) \times 2 (point-light vs. video) \times 2 (red vs. white jersey color) MANOVA using Pillai's trace revealed a significant main effect of body language on overall impression formation, $V = .605$, $F(4, 17) = 6.509$, $p = .002$, $\eta^2_p = .605$, power = .99. This result demonstrates that irrespective of presentation mode or jersey color, the display of a dominant body language appears to trigger a positive athlete schema and results in an overall positive impression of the penalty taker. The MANOVA revealed no other significant main effects: color, $V = .146$, $F(4, 17) = 0.728$, $p = .585$, $\eta^2_p = .146$, power = .23; presentation mode, $V = .305$, $F(4, 17) = 1.866$, $p = .163$, $\eta^2_p = .305$, power = .56; or interactions.

A follow-up ANOVA on perception of the target player revealed a main effect of body language, $F(1, 20) = 21.253$, $p = .0001$, $\eta^2_p = .515$, power = .99, indicating that, irrespective of the presentation mode, goalkeepers had a more positive impression of players demonstrating a dominant body language compared with players showing a submissive body language. No other main effects, jersey color, $F(1, 20) = 1.702$, $p = .207$, $\eta^2_p = .078$, power = .25; presentation mode, $F(1, 20) = .595$, $p = .449$, $\eta^2_p = .029$, power = .12; or interactions were evident. Thus, in contrast to the previous findings of Greenlees et al. (2008), but in support of the suggestion of cultural differences, the present results indicated that penalty takers dressed in red soccer clothing were not perceived more positively than players dressed in white or indeed, the neutral point-light condition, by experienced goalkeepers.

The follow-up ANOVA on confidence in saving penalties against the target player again showed a main effect for body language, $F(1, 20) = 8.070$, $p = .01$, $\eta^2_p = .287$, power = .79, indicating that goalkeepers had greater confidence in the likelihood of saving penalties against the target player if he demonstrated a submissive body language. Penalty taker submissive body language seems to be interpreted by the goalkeepers as a sign of insecurity and weakness, which leads the goalkeepers to feeling more confident in the likelihood of saving penalties. The main effect of presentation mode was significant, $F(1, 20) = 5.058$, $p = .036$, $\eta^2_p = .202$, power = .59, indicating higher scores for the point-light condition. It is possible that the dynamic information revealed in the point-light condition provides a clearer expression of the body language of the penalty takers that is otherwise weakened by the contextual (e.g., clothing) effects in the respective video displays. Again, no differences were evident between the different jersey colors, $F(1, 20) = 0.920$, $p = .349$, $\eta^2_p = .044$, power = .16.

A further follow-up ANOVA on the dependent variable expected penalty accuracy did not reveal any main effects, jersey color, $F(1, 20) = 2.299$, $p = .145$,

Table 1 Goalkeepers' Mean Ratings of Soccer Penalty Takers as a Function of Viewing Condition, Body Language, and Jersey Color

	Condition											
	Video						Point-Light					
	Dominant Body Language			Submissive Body Language			Dominant Body Language			Submissive Body Language		
	Red	White	White	Red	White	White	Red	White	White	Red	White	White
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Perception of Target	4.11	.89	4.27	.84	3.42	.54	3.60	.70	4.48	.58	3.46	1.06
Expectancy of Success	6.91	2.48	7.99	1.63	7.94	3.01	8.10	1.50	7.66	2.6	9.01	2.1
Penalty Accuracy	.53	.21	.58	.21	.47	.11	.49	.08	.61	.17	.54	.19
Penalty Power	.67	.15	.67	.14	.59	.13	.60	.16	.63	.15	.58	.20

$\eta^2_p = .103$, power = .31; presentation mode, $F(1, 20) = 2.432$, $p = .135$, $\eta^2_p = .108$, power = .33; or interactions. This time, the effect of body language only approached significance, $F(1, 20) = 3.187$, $p = .089$, $\eta^2_p = .137$, power = .41. The ANOVA on expected shot power did reveal a main effect of body language, $F(1, 20) = 4.952$, $p = .038$, $\eta^2_p = .198$, power = .58, indicating that goalkeepers expected more powerful shots from players demonstrating a dominant body language. No other main effects, jersey color, $F(1, 20) = 0.027$, $p = .870$, $\eta^2_p = .001$, power = .17; presentation mode, $F(1, 20) = 1.019$, $p = .325$, $\eta^2_p = .048$, power = .33; or interactions were evident.

Control Condition

To corroborate the body language findings and the somewhat surprising results concerning jersey color among goalkeepers, we ran the same experiment with a control group of German outfield soccer players with no previous competitive penalty-saving experience. The domain specific experience of goalkeepers may have biased or preceded the impression formation results revealed in our analysis (e.g., see Cañal-Bruland & Schmidt, 2009). However, it is also plausible that the expectancies of success of outfield players in penalty shootout scenarios are underpinned by the same mediating mechanisms as goalkeepers. That is, the confidence of success of penalty takers may be decreased or buoyed relative to the observation of opposing players revealing demonstrative signs of dominant or submissive body language (Moll et al., 2010). Except for the participants (male outfield players [$n = 30$; $M = 23.8$; $SD = 2.4$]; amateur to semiprofessional level in Germany) and the expectancy of success measure (“how sure are you that the target player will score 1 out of 5, 2 out of 5, 3 out of 5, 4 out of five, and 5 out of 5 penalties”), everything was exactly the same as in the goalkeeper study.

The pattern of results was almost identical (Table 2) to those obtained with goalkeepers, and a mixed MANOVA with the additional between-group independent variable (goalkeepers/players) did not reveal any between-group main effects or interactions (all $p > .8$). The 2 (dominant vs. submissive body language) \times 2 (point-light vs. video) \times 2 (red vs. white jersey color) MANOVA using Pillai’s trace revealed only a significant main effect of body language on overall impression formation, $V = .414$, $F(4, 25) = 4.421$, $p = .008$, $\eta^2_p = .414$, power = .96. The follow-up ANOVAs again revealed only significant main effects for body language on the perception of target player scales, $F(1, 28) = 7.695$, $p = .01$, $\eta^2_p = .216$, power = .78; on the outcome expectation scales, $F(1, 28) = 15.924$, $p = .0001$, $\eta^2_p = .363$, power = .98; on the expected penalty-taking accuracy, $F(1, 28) = 6.526$, $p = .016$, $\eta^2_p = .189$, power = .70; and on expected shot power, $F(1, 29) = 6.331$, $p = .018$, $\eta^2_p = .184$, power = .70. Thus, our results are supportive of the findings of Moll et al. (2010) that nonverbal behaviors of penalty takers have potentially important effects on the performance of outfield players during penalty shootouts.

Discussion

On the whole, the results obtained in Experiment 1 are supportive of the claim that nonverbal behaviors are an important early cue in the soccer penalty situation, which triggers particular person schemas and thus influences the impression formation process of soccer players. Furthermore, in contrast to previous findings (Greenlees

Table 2 Player's Mean Ratings of Soccer Penalty Takers as a Function of Viewing Condition, Body Language, and Jersey Color

	Condition											
	Video						Point-Light					
	Dominant Body Language			Submissive Body Language			Dominant Body Language			Submissive Body Language		
	Red	White	White	Red	White	White	Red	White	White	Red	White	White
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Perception of Target	3.70	.91	4.33	1.04	3.75	.54	3.42	1.21	4.28	.83	3.74	.87
Expectancy of Success	6.32	2.56	8.22	1.35	6.21	2.15	6.38	1.85	7.70	2.1	7.03	2.3
Penalty Accuracy	.47	.22	.58	.20	.54	.16	.64	.12	.59	.15	.49	.19
Penalty Power	.64	.14	.63	.16	.58	.14	.54	.16	.63	.11	.56	.20

et al., 2008) and other person perception studies (Feltman & Elliot, 2011), in the present experiment, body language was the only factor influencing impression formation whereas the clothing color of the players did not impact on the impressions of goalkeepers. Previously, Greenlees and colleagues (2008) have suggested that their results may be explained by cultural and/or sport-specific associations in contrast to innate factors (Hill & Barton, 2005). Thus, it seems feasible that the English participants in the study of Greenlees et al. (2008) associated red with successful soccer performance and white with poor penalty-kick performances by the English National team (Jordet, 2009). Interestingly, such suggestion was indirectly supported by the results in the present experiment, as clothing color did not have any effect on impression formation with a subset of German participants. Most notably, the playing strip of the German National team is white and the German team has an unprecedented record of success in penalty shootouts (Jordet, 2009). However, if cultural effects do have an overriding influence on impression formation, then perhaps one would have expected us to observe a significant effect for white clothing in the present experiment. Clearly, future research is warranted in this area to gain further understanding on the relationship between cultural differences and person perception in sport contexts. Indeed, such research has important implications if one also factors in the role that cultural stereotypes might play in impression formation (e.g., Stone, Perry, & Darley, 1997).

Finally, the comparison between the point-light and the video condition demonstrated that nonverbal behaviors reflecting dominance and submissiveness are judged in a similar manner despite the absence of contextual clothing and gaze. In all three displays, the information that participants appeared to base their judgments on was the movement kinematics of the actors. This finding is in line with ecological accounts of person perception that have argued that accurate perceptual judgments are predicated on the dynamics of motion specified within the movement kinematics of another person (Runeson & Frykholm, 1983; for a review, see Marsh et al., 2006). Moreover, previous studies have also demonstrated that observers have no trouble judging the emotional implications of behaviors shown in point-light displays (Clarke et al., 2005).

In sum, the results show that dominant and submissive nonverbal behaviors influence impression formation and outcome expectation of soccer players—even in the absence of gaze and color cues—as they appear to trigger associated person schemas as hypothesized. In Experiment 2, we attempted to test this assumption more directly by measuring the automatic associations between submissive and dominant nonverbal behaviors and attributes characterizing either a “bad soccer player” or a “good soccer player.” In line with the argumentation of Greenlees (2007) that nonverbal behavior has the potential to implicitly activate a corresponding athlete schema, we hypothesized that dominant nonverbal behavior would automatically trigger a positive athlete schema whereas submissive nonverbal behavior would automatically trigger a negative athlete schema.

Experiment 2: Implicit Association Test

A limitation to the design used in Experiment 1 and the studies conducted by Greenlees and colleagues (e.g., 2008) is the dependency of different ratings, given one after the other, for one and the same presentation. That is, the results do not

provide sufficient evidence for the assumption that certain nonverbal behaviors trigger a certain athlete schema and may instead demonstrate a person's need to avoid *cognitive dissonance* (Festinger, 1957). Specifically, it would be odd if participants formed a negative impression of a target player and then subsequently rated the player as being more likely to score a penalty. Therefore, to address this limitation and to test whether the pattern of results found in Experiment 1 can be explained further within the schema/category-driven theory of impression formation (Fiske & Taylor, 1991; Kunda, 1999), we used the IAT (Greenwald et al., 1998). In Experiment 2, we aimed to measure the implicit association between nonverbal behaviors signaling dominance or submissiveness and attributes associated with a "good" or "bad" soccer player.

The IAT rests on the premise that it should be easier to make the same behavioral response (a key press) to concepts that are strongly associated to one another compared with concepts that are only weakly, or not associated (Greenwald et al., 1998). The simple idea of the IAT is that concepts that are associated by some feature should be easier to put together than concepts that are not associated and has therefore recently been shown to be a useful tool for assessing constructs such as implicit stereotypes or person schemas (e.g., Greenwald, Pickrell, & Farnham, 2002; Rudman & Ashmore, 2007). Following initial research in the field of sport that has successfully used the IAT to measure the implicit component of an exerciser's self-schema (Banting et al., 2009), we aimed to further the application of the IAT by testing whether certain nonverbal behaviors implicitly trigger particular athlete schemas. If nonverbal behavior signaling dominance is automatically associated with a positive athlete schema and nonverbal behavior signaling submissiveness with a negative athlete schema as we argue above, then this should be measurable with the IAT. Specifically, it should be easier to categorize pictures displaying dominant nonverbal behavior and attributes associated with a "good soccer player" with one key press and pictures displaying submissive nonverbal behavior and attributes associated with a "bad soccer player" with another key. On the other hand, it should be harder to categorize dominant nonverbal behavior and "bad soccer player" with one key and submissive nonverbal behavior and "good soccer player" with another key.

Method

Participants

Male soccer players ($n = 32$; $M = 27.4$; $SD = 18.1$), who had been playing for an average of 6 years at an amateur level in Germany, took part in the study. Neither age- nor expertise-related differences were evident within the group. Informed consent was obtained from every participant before commencing the experiment. The study was carried out in accordance with the Helsinki Declaration of 1975.

Materials and Stimuli

Figure 2 gives an illustration of the IAT used in Experiment 2. To investigate whether a dominant body language is implicitly associated with a schema of a "good soccer player," we paired the *target concept* of body language with an *attribute dimension*

of good vs. bad soccer players, as is standard procedure when using the IAT. For the initial *target concept discrimination* (Figure 2, second column), we created six different images from the point-light videos used in Experiment 1 showing a dominant body language and six images showing a submissive body language. All 12 images clearly depicted either a dominant or a submissive body language as verified by two independent raters. For the *associated attribute discrimination*, two independent soccer experts (both in possession of the second highest UEFA coaching license) rated a list of adjectives as being associated with a good soccer player or with a bad soccer player. Following the expert ratings, we produced a list of 12 attributes, of which 6 were associated with a good soccer player and 6 with a bad soccer player (see third column of the last row in Figure 2).

Procedure

All participants were seated individually in front of a standard 19-inch desktop computer and provided all their responses via a computer keyboard. Participants were informed that the experiment involved a simple reaction time test and were blind to the actual purpose of the experiment. The procedure used was identical to that of Greenwald et al. (1998, see also Greenwald, Nosek, & Banaji, 2003 for further detail on the IAT procedure) and is illustrated in Figure 2. The IAT consisted of five blocks of trials with the first experimental block (Block 3) combining the stimuli from the concept category—for example, positive image of penalty taker—with the attribute category—for example, the attribute “quick”—(Figure 2, 3rd column), whereas the second experimental block (Block 5) reversed this combination (Figure 2, 5th column). Blocks 1, 2, and 4 were practice blocks in which participants could learn the associations between the different stimuli and the respective keys. Depending on the experimental condition, the first experimental block was either congruent concerning our hypothesis (i.e., dominant nonverbal behavior paired with good player attributes, and submissive paired with bad player attributes) and the second experimental trial incongruent (i.e., dominant nonverbal behavior paired with bad player attributes, and submissive paired with good player attributes), whereas in the other experimental condition we switched this order to exclude potential order effects. In addition, the order of Blocks 2 and 4 were changed according to the experimental condition to match the attribute categorization of the subsequent experimental Blocks 3 and 5. If the target categories of body language are differentially associated with the attribute dimension (good vs. bad player) as hypothesized, then participants will respond faster for the congruent block in comparison with the incongruent block.

Results and Discussion

Figure 3 displays the mean latencies between the congruent block of the IAT ($M = 893.38$; $SD = 187.37$) and the incongruent block ($M = 1505.03$; $SD = 622.92$). A mixed design ANOVA on the reaction times of participants with repeated measures on the within-subject factor congruency (*congruent*: dominant nonverbal behavior and positive player attributes and submissive and bad player attributes vs. *incongruent*: dominant nonverbal behavior and negative player attributes and submissive nonverbal behavior and positive player attributes) and the between-subject factor

Sequence	1	2	3	4	5
Task description	Initial target-concept Discrimination	Associated attribute discrimination	Initial combined task	Reversed target-concept Discrimination	Reversed combined task
Task instructions	Dominant Body language Press“q” Submissive Body Language Press“p”	Good player Press“q” Bad player Press“p”	Dominant Body language or good player Press“q” Submissive Body Language or bad player Press“p”	Submissive Body Language or good player Press“q” Dominant Body language Press“p”	Submissive Body Language or good player Press“q” Dominant Body language or bad player Press“p”
Sample stimuli	  	<ul style="list-style-type: none"> •Quick •Athletic •motivated •Good at tackling •Good finishing •Assertive 	<ul style="list-style-type: none"> •Slow •Unathletic •Insecure •Distractable •Prone to injury •Poor finishing 	  	<ul style="list-style-type: none"> •Insecure •Poor finishing

Figure 2 — Schematic description and illustration of the implicit association test (IAT) with the sequence order congruent before incongruent) used in Experiment 2.

sequence order (*congruent* before *incongruent* vs. *incongruent* before *congruent*) revealed only a significant main effect for congruency, $F(1, 30) = 30.924, p = .0001, \eta^2_p = .508, \text{power} = .99$. Both the main effect for sequence order ($p = .728, \eta^2_p = .004, \text{power} = .20$) and the interaction between congruency and sequence order ($p = .130, \eta^2_p = .075, \text{power} = .60$) failed to reach significance. That is, reaction times did not significantly differ irrespective of whether incongruent presentation manipulations preceded congruent presentation manipulations or vice versa. Follow-up dependent t tests revealed large effect sizes for both the congruent-before-incongruent condition, $t(16) = -4.912, p = .0001$, two-tailed, $d = 1.33, \text{power} = .99$, and the incongruent-before-congruent condition, $t(14) = -3.704, p = .002$, two-tailed, $d = 1.40, \text{power} = .97$. An additional ANOVA on reaction times with repeated measures on the within-subject factors congruency (*congruent* vs. *incongruent*) and stimulus material (body language image vs. player attributes) revealed only a main effect for congruency, $F(1, 31) = 28.653, p = .0001, \eta^2_p = .480, \text{power} = .99$, indicating that the IAT effect was evident for both player attributes (*congruent*: $M = 872.37, SD = 142.66$ vs. *incongruent*: $M = 1537.97, SD = 760.02$) and body language images (*congruent*: $M = 914.39, SD = 310.79$ vs. *incongruent*: $M = 1472.08, SD = 646.47$).

The IAT procedure used in Experiment 2 demonstrates a strong automatic association between body language and soccer skill. For example, participants responded significantly faster when pairing attributes associated with good soccer players with pictures showing a dominant body language (congruent) in comparison with pairing positive attributes with pictures showing a submissive body language (incongruent). This finding supports the argument of Greenlees (2007), who suggested that a dominant body language is automatically associated with a good soccer player schema. To our knowledge, this was the first study to provide direct evidence for this assumption. Thus, the result from Experiment 2 is supportive of social schema theory by showing that certain nonverbal behaviors are automatically associated with further information, which is linked to certain athlete schemas.

General Discussion

The general pattern of results found across the experiments is in line with person schema accounts of nonverbal behaviors, indicating that dominant and submissive facets of behavior are automatically associated with certain athlete schemas and outcomes. In Experiment 1, results indicated that penalty takers who displayed a dominant body language were perceived more positively and were expected to perform better than penalty takers showing a submissive body language by both soccer goalkeepers and players. This effect was evident both for video and point-light displays of the soccer penalty situation, indicating that these nonverbal behaviors are potentially used to signal dominance (e.g., confidence) or submissiveness (e.g., anxiety) in sport. In this respect, the actual gaze behavior of penalty takers may not be as important in forming impressions as initially reported by Greenlees and colleagues (2008). Rather, the biological motion information that depicts looking behavior may be sufficient for guiding our perception of others, as only this information was present in the point-light condition. A large body of research motivated from an ecological perspective has highlighted the accuracy of human perception based on the biological motion information contained within point-light displays (Marsh et al., 2006). Even though the ecological approach has been influential in

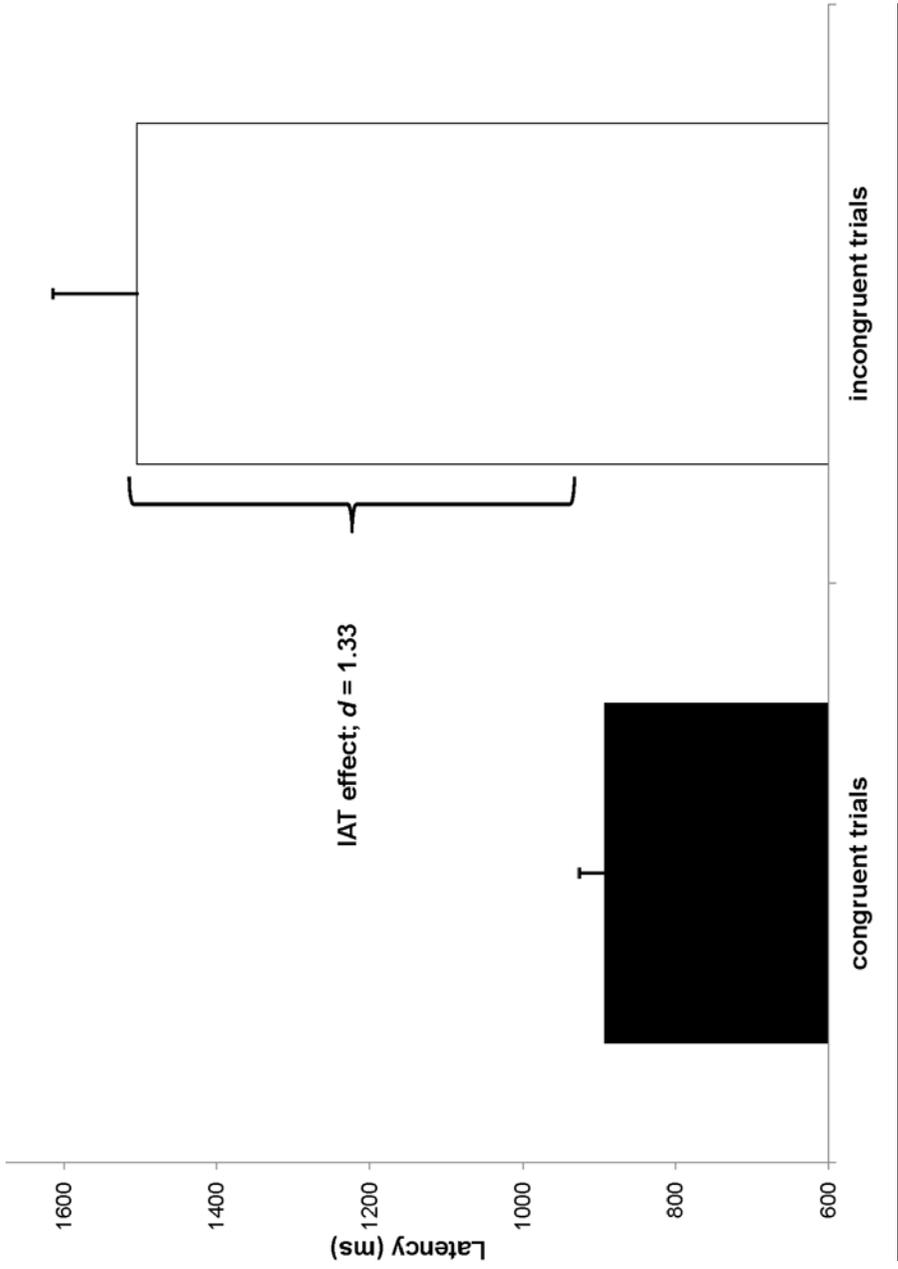


Figure 3 — Mean latency results from Sequences 3 and 5 of Experiment 2. Error bars represent standard errors.

improving understanding in the sports visual anticipation literature (e.g., van der Kamp, Rivas, van Doorn, & Savelsbergh, 2008), to date, only a small number of researchers have studied person perception in sport from an ecological perspective (e.g., Weast, Shockley, & Riley, 2011). Thus, as an alternative to schema accounts of person perception, a fruitful avenue for future research may be to examine person perception from an ecological perspective.

In Experiment 2, we directly tested the assumption that nonverbal behavior has the potential of implicitly triggering an athlete schema (Greenlees, 2007). The results of the IAT demonstrated that the depicted dominant body language is implicitly associated with a positive soccer player schema, whereas submissive body language is implicitly associated with a negative soccer player schema. This result is in line with previous findings in social psychology demonstrating generalization effects leaping from momentary observations to enduring dispositions and expectations (Harker & Keltner, 2001; Knutson, 1996; Montepare & Dobish, 2003). In combination with Experiment 1, the results are supportive of schema-driven accounts of social cognition (Fiske & Taylor, 1991). Nevertheless, Freeman and Ambady (2011) have argued that neither solely schema/category-driven nor solely data-driven impression formation perspectives are sufficient in explaining person perception in everyday contexts. Instead, they propose that person perception should also be regarded as a constant interaction among high-level categories, stereotypes, and the low-level processing of facial and bodily cues. While the findings from the current study may be interpreted as providing support for person schema approaches (e.g., Greenlees, 2007), much work is needed to advance current theoretical and empirical understanding. For example, it has recently been questioned whether confined laboratory experiments that use questionnaire measures adequately capture the behaviors that many social psychology empiricists are aiming to understand (Baumeister, Vohs, & Funder, 2007). Thus, in line with advances made in other areas of sport psychology research (e.g., Dicks, Button & Davids, 2010), attempts should be made to study behavior using actual sport settings to gain further understanding on the role that nonverbal behaviors have on impression formation and sport performance.

In Experiment 1, results indicated that, in contrast to previous work, we found no support for the assumption that clothing color influences person perception in sport (Feltman & Elliot, 2011; Greenlees et al., 2008). In contrast to Greenlees et al. (2008), we manipulated jersey color between subjects, which might account for the nonsignificant effect of jersey color. Therefore, red might only lead to more positive impressions when it can be directly compared with other colors as in a within-subject design. However, an interesting finding that supported an earlier suggestion of Greenlees and colleagues is that cultural and/or sport-specific associations might explain the different results between the respective studies. Specifically, the German participants might have associated the white uniforms in the videos with the successful penalty taking performance of the German national team (Jordet, 2009). Whereas such cultural interpretation is speculative in regards to the present analysis, it does appear to be a particularly promising research avenue for the future, not least because of the literature that has demonstrated the effects of cultural background on various facets of person perception, including facial judgments (Anzures, Ge, Wang, Itakura, & Lee, 2010).

As we did not assess actual sporting performance, the implications on sporting performance remain speculative. Moll et al. (2010) have provided initial evidence

that demonstrates that certain post-performance nonverbal behaviors of penalty takers actually affect the performance of goalkeepers, and in consideration of previous work, it seems plausible that the pattern of results obtained here might influence an athlete's performance in sport. For example, research has shown that activated schemas can induce immediate affective reactions, such as anxiety, irritation, and concern (Dijker, 1987). Greenlees (2007) argued that classifying an opponent based on their nonverbal behavior might lead to either positive or negative emotions, which, in turn, have the potential to influence performance. Moreover, the observation of specific nonverbal behaviors such as dominance or submissiveness may in turn influence a soccer goalkeeper's own perceived competence in successfully competing against the penalty taker. Evidence from investigations on self-efficacy theory (see Bandura, 2001 for a recent review) demonstrates that expectancy of success beliefs can potentially influence performance in sport settings (Feltz, Short, & Sullivan, 2008).

In summary, this article adds to the growing body of literature that demonstrates the importance of studying nonverbal behavior in sport situations, demonstrating that nonverbal behaviors are readily interpreted, leading to the attribution of dispositional judgments and outcome expectations. Taken together, these results have important practical implications for athletes, coaches, and applied practitioners. Coaches and practitioners should assist athletes in the development of positive self-presentation techniques, especially in situations of high stress or when the opponent seems to have the momentum on their side to potentially induce a desired impression of oneself to an opposing player.

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