

“Get it out the way. The wait’s killing me.” hastening and hiding during soccer penalty kicks

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ARTICLE INFO

Article history:

Received 2 May 2011

Received in revised form

30 January 2012

Accepted 30 January 2012

Available online 8 February 2012

Keywords:

Nonverbal behavior

Impression formation

Penalty kick

Point-light

Goalkeeper

Action

ABSTRACT

Objectives: It has been suggested that hastening and hiding—rushing through penalty preparation and not looking at the goal when preparing the penalty kick—are associated with negative penalty taking performance. In the present study, we investigated how opposing players perceived these nonverbal behaviors, how they affect outcome expectations, and how they affect the behavior of opposing goalkeepers.

Design: The present study employs an experimental research design (Experiment 1: 2 (gaze behavior) × 3 (preparation time) design; Experiment 2: 2 (gaze behavior) × 2 (preparation time) design).

Method: We examined the perception of nonverbal hastening and hiding behavior using the point-light technique during the soccer penalty kick among goalkeepers (Experiment 1a; $n = 20$), and among outfield soccer players (Experiment 1b; $n = 29$). Furthermore, we analyzed how these respective penalty preparation strategies influenced the behavior of high-level goalkeepers ($n = 12$) under *in situ* conditions (Experiment 2).

Results: The results from Experiment 1 demonstrated that penalty takers showing hastening and hiding behaviors are perceived more negatively by both soccer goalkeepers and outfield players: (i) they are considered to possess less positive attributes, (ii) to have less accuracy in their penalties, and (iii) likely to perform less well in penalty situations. Experiment 2 provided first evidence that goalkeepers initiate their movement later following the observation of hastening and hiding behaviors during the penalty preparation.

Conclusions: Our findings demonstrate the importance of investigating nonverbal behavior in sports as these have a major impact on impression formation, expected performance, and actual behavior of opposing players in the soccer penalty situation.

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Think of a soccer player who is about to take a decisive kick in a penalty shootout. The player has either been selected by the coach or has volunteered to take the penalty. As the player walks forward from the half-way line, there must be multiple thoughts running through the player's mind that may vary as a function of personal and situational variables (Jordet, 2009). In some instances, the emotions and associated physiological changes experienced will be unpleasant and thus the player may begin to dread the situation. Indeed, anecdotal evidence from the English soccer player, Steven Gerrard – post 2006 World Cup – would support such claim:

Jesus, I wish I was first up. Get it out the way. The wait’s killing me. (...) I was ready. Elizondo wasn’t. Blow the whistle! F***ing get a move on, ref! Why the wait? I’d put the ball on the spot,

Richardo was on the line. Why do I have to wait for the bloody whistle? Those extra couple of seconds seemed like an eternity, and they definitely put me off (Gerrard, 2006, p. 419–420).

In line with the above example, it has been suggested that waiting for stressful events causes a feeling of discomfort and dread. Such feelings can lead to behavior in which a person aims to get out of the situation as quickly as possible (Loewenstein, 1987). That is, people tend to prefer to get unpleasant events “over and done with”. This is not only because the feeling of dread whilst waiting is so unpleasant, but also because the outcome itself is perceived as more unpleasant, the longer one has waited for it (Berns et al., 2006). For example, Berns et al. (2006) found that, when waiting to receive electric shocks, participants chose to receive a higher voltage shock after a short time rather than waiting for a longer duration and receiving a low voltage shock. Berns et al. interpreted this finding as providing evidence of anticipated dread, which is defined as the forward-looking integral from the present

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unpleasant moment a person is in to the time of the expected outcome. For this reason, the outcome—however unpleasant it might be—is associated with a relief from dread.

In sport, Jordet and Hartman (2008) found preliminary evidence for anticipated dread in soccer penalty shoot-outs. Results demonstrated that penalty takers reduced the time they took preparing the penalty kick when the pressure was extraordinarily high. That is, penalty takers displayed hastening behavior for negative valenced shots (shots where a miss would lead to the team losing) compared to positive valenced shots (shots where a goal would lead to the team winning). Furthermore, Jordet and Hartmann reported that such behavior—which they referred to as avoidance behavior—was correlated with negative penalty taking performance. In the penalty context, such *hastening and hiding*¹ behavior was exemplified by a short preparation speed; measured as the time from the referee's whistle until the penalty taker commenced their run-up, and a negative looking behavior; measured as the frequency with which the penalty taker looked in the direction of the goal/goalkeeper as they walked back to prepare their run-up. The conclusion from the analysis of Jordet and Hartmann was that hastening and hiding is associated with poorer performance in soccer penalty shoot-outs.

The results of Jordet and Hartman (2008) appear somewhat contradictory to alternative explanations of performance in high-pressure situations (e.g., Baumeister, 1984; Baumeister & Showers, 1986; Beilock & Carr, 2001; Masters, 1992). For example, Beilock, Bertenthal, McCoy, and Carr (2004) demonstrated that experienced performers tend to *choke* when they have longer time to execute highly practiced sensorimotor skills (e.g., a golf putt), a finding explained by the *paralysis by analysis* argument. It is argued that explicit attention to skill execution disrupts well-learned skills, because our conscious system is too slow to deal with the real time control of the proceduralized skill and, when given more time, performers increase the explicit monitoring of the skill. Thus, if one considers the evidence for choking in sport, it is not immediately clear what mediating mechanism(s) underpin the pattern of results reported by Jordet and Hartman (2008). One possibility is that the contrasting results of Beilock et al. (2004) and Jordet and Hartman (2008) are accounted for by differences in the respective tasks studied. For example, a major distinction between the execution of a golf putt and a penalty kick is that the performance of the penalty taker is predicated on an interaction with the opposing goalkeeper. That is, there is a *behavioral loop* (cf. Gibson, 1966) between penalty taker and goalkeeper, which is predicated on the mutual exchange of perceptual information between the two players (see, Marsh, Richardson, Baron, & Schmidt, 2006). The mutual relation between penalty taker and goalkeeper implies that the penalty kick, for the most part, is an externally paced task whereas the golf putt in contrast is a comparatively self-paced task. In line with this distinction, in the present paper, we examined how the hastening and hiding behaviors of penalty takers affect both the performance expectancies (Experiment 1) and performance outcomes of goalkeepers (Experiment 2).

Aside from the work of Jordet et al. (e.g., Jordet, 2009; Jordet and Hartman, 2008), an increasing number of researchers have begun to consider the role of nonverbal behaviors (NVBs) on performance in the penalty kick. For example, Greenlees, Leyland, Thelwell, and Filby (2008) reported that penalty takers displaying 10% gaze – looking at the goalkeeper for 10% of the time prior to initiating their

approach to execute the penalty kick – were perceived as being less likely to execute accurate penalty kicks in comparison with penalty takers displaying 90% gaze. Indeed, these authors reported that goalkeepers had increased confidence in saving penalties executed by penalty takers displaying only 10% gaze in comparison with 90% (see also, Furley, Dicks, & Memmert, in press).

A potentially important limitation of the described NVB penalty kick studies is that the respective authors (Furley et al., in press; Greenlees et al., 2008) assessed the attitudes and outcome expectations of goalkeepers using questionnaire and button press measures. This limitation not only holds for penalty kick studies but also the broader domain of person perception studies in sport contexts (Greenlees, Bradley, Holder, & Thelwell, 2005; Greenlees, Buscombe, Thelwell, Holder, & Rimmer, 2005). Such observation is not intended to undermine the value of current work in the sport literature, although it is reflective of the recent arguments of Baumeister, Vohs, and Funder (2007) who suggested the need for a renewed commitment to studying “actual” behavior in social psychology contexts. That is, Baumeister et al. made a convincing case for the necessity of reintegrating studies of behavior into social psychology research as a means of studying the implications of questionnaire based research (for example). Therefore, in order to address this important issue, in the current article we first investigate how hastening and hiding influences the impression formation process of goalkeepers via questionnaire measures (Experiment 1) before studying the behavior of goalkeepers in the penalty kick situation when faced with players displaying different hastening and hiding preparation behaviors (Experiment 2).

Person perception and impression formation

As impression formation has an important function in many daily situations (for a review, see Freeman & Ambady, 2011), it is appropriate that researchers have started to examine the impact of NVBs on impression formation within sport contexts (Furley et al., in press; Greenlees, Bradley et al., 2005; Greenlees, Buscombe et al., 2005; Greenlees et al., 2008). As a framework for extant research, the cited studies have drawn upon schema driven explanations of social cognition which propose that people, for reasons of efficiency, use information (e.g., NVB, physical appearance 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. Activated schemas are considered to induce immediate affective reactions, such as anxiety, irritation and concern (Dijker, 1987). Thus, Greenlees (2007) argued that classifying an opponent might lead to either positive or negative emotions, which in turn, might potentially influence performance. Indeed, a topic of continued research and debate in sport psychology contexts concerns the effects of emotions – debilitating or otherwise – on performance (see Woodman & Hardy, 2003). Moreover, and particularly pertinent to the findings of Jordet and Hartman (2008), besides influencing affective reaction, person schemas are also believed to have the potential of influencing behavior. For example, in gambling, Langer (1975) demonstrated that the perceived competence of an opponent is strongly influenced by clothing and other contextual cues. Specifically, participants placed bets of greater money when gambling against an opponent who behaved in a nervous manner and who was poorly dressed in comparison with a confident and well-dressed opponent.

In sport, Furley et al. (in press) demonstrated that during penalty kick preparation, the relative kinematic motions of penalty takers specifying dominant and submissive NVBs (Carney, Cuddy, & Yap, 2010; Carney, Hall, & Smith LeBeau, 2005) are associated with positive and negative athlete schemas, respectively. Thus, it follows

¹ We thank an anonymous reviewer for bringing our attention to the point that the term avoidance behavior has a surplus meaning in the literature. Thus, in order to ensure that we do not add to such surplus meaning, in the present article, we refer to the behaviors in question as *hastening and hiding*.

that the hastening and hiding behaviors described by Jordet and Hartman (2008) may influence the performance expectations of opposing goalkeepers by activating a negative athlete schema in a manner akin to the preperformance behaviors studied by Furley et al. (see also, Greenlees et al., 2008). Based on the findings of Jordet and Hartman (2008), this information may include preparation speed and looking behavior. The implication is that a hastening and hiding behavior may be associated with an *incompetent* or *anxious* player schema for the penalty kick situation. Thus, a goalkeeper may perceive the player to be less likely to achieve success once this information is observed. Following the suggestion of Greenlees (2007), it is plausible that the classification of an opponent to a particular person schema may, in turn, influence the goalkeeper's own perceived competence in successfully competing against the penalty taker, and thus influence the performance of the goalkeeper.

The present research

Following the above rationale, in Experiment 1a, we tested the assumption that hastening and hiding, manipulated by the preparation speed and the direction the penalty taker faces as they walk back to prepare their run-up, would (i) influence the impressions formed of the penalty taker; and (ii) influence the outcome expectations of goalkeepers. The footage of the penalty takers was created using the point-light technique (Johansson, 1973). The experimental approach has accumulated a large body of evidence, which demonstrates 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). Indeed, of relevance to the current study, it has been suggested that the detection of kinematic information may have evolved for fitness reasons in social animals in order to efficiently communicate emotional information with one another (Bente, Leuschner, Al Issa, & Blascovich, 2010; Blakemore & Decety, 2001; Burgoon, Burgoon (1996); Darwin, 1872/2009). Based on the findings of Jordet and Hartman (2008), we hypothesized that penalty takers would be perceived as being least competent if they did not face the goalkeeper when walking back to prepare their run-up and preparation time was minimal. Moreover, we hypothesized that penalty takers would be perceived most competently when they walked back backwards, facing the goalkeeper and took their time in preparing the penalty kick. In Experiment 1b, we extended Experiment 1a in order to ascertain whether the domain specific experience of goalkeepers may bias impression formation processes (e.g., see Cañal-Bruland & Schmidt, 2009). That is, we studied whether preparatory penalty taker behaviors are perceived and understood in a similar manner for outfield soccer players and goalkeepers.

In Experiment 2, we investigate whether hastening and hiding behaviors during penalty preparation influence the behavior of goalkeepers when attempting to save penalty kicks. To our knowledge, none of the recent studies that have investigated NVB (e.g., Furley et al., in press; Greenlees, Bradley et al., 2005; Greenlees, Buscombe et al., 2005; Greenlees et al., 2008) in sports have investigated the behavioral consequences of findings from questionnaire measures. That is, although NVB has been shown to significantly influence the impression formation process and the outcome expectancy beliefs of athletes, there is currently no evidence if and how the observation of certain NVBs affects the behavior of the perceiver. It has been suggested that self-reports based on introspection are fairly bad predictors of future behavior (e.g., Nisbett & Wilson, 1977; West & Brown, 1975), therefore we believe it is essential to take an important step toward studying the behavioral consequences of findings derived from questionnaires (Baumeister et al., 2007).

Experiment 1a

Method

Participants

Male goalkeepers ($n = 20$; $M = 25.25$; $SD = 2.6$) took part in the study, who had been playing for an average of 16.8 years at an amateur to semi-professional level in Germany. 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

The filming took place in a sports hall where almost all ambient light was blocked. The point-light footage was recorded using a Canon HG21 digital video camera mounted on a tripod at a height of 1.85 m, 11 m from a penalty spot. Two halogen spotlights were positioned in front of the camera directed at the actor preparing the penalty kick run-up. Four actors were recruited to create the stimulus material. They all received the same instructions on how to prepare the penalty kick when being filmed.

The actors wore black tight fitting clothes and headwear. The reflective tape was placed on the clothes (Fig. 1) following the procedures outlined by Atkinson, Dittrich, Gemmel, and Young (2004). Two-cm-wide stripes of reflective tape were placed around each ankle, knee, elbow, shoulder, hip and hand. Furthermore, one piece of reflective tape was placed as a headband around the head. The ankle, knee, elbow, and hand tapes completely encircled the limb.

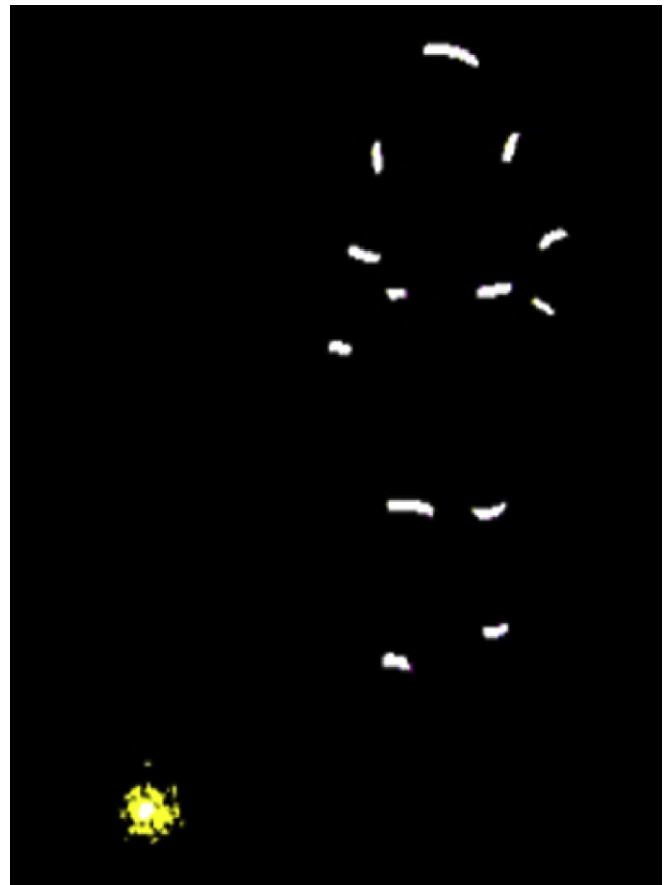


Fig. 1. Example frame from the stimuli used in the study.

The actors were instructed to start the preparation of the penalty in a neutral stance (feet–shoulder–width apart, facing the camera) 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 on the mark, walking back to a predefined mark before commencing their run-up. The predefined mark was 2.5 m back and 1 m to the left of the penalty spot, representing a typical run-up for a right-footed player in the penalty situation. All actors practiced this approach behavior several times to ensure that there was minimal variation between each player. In order to control for other cues in the penalty situation, all actors were asked to show a positive body language (see Greenlees, Bradley et al., 2005; Greenlees, Buscombe et al., 2005 for the body language instructions) when placing the ball and preparing the penalty kick. Each clip was terminated after the first step of the run-up.

Our experimental manipulation was derived from Jordet and Hartman (2008) and involved the looking behavior and the duration of the preparation time once players stood before they commenced the run-up. In order to investigate the effects of looking behavior and preparation time on the impressions formed of the penalty taker, the outcome expectation against the penalty taker and the perceived competence of the penalty taker we utilized a 2 (gaze behavior) \times 3 (preparation time) experimental design. Looking behavior was manipulated by having the penalty taker either walk backwards (facing the goal) to a predefined spot after placing the ball on the penalty line or having the actor turn around (not facing the goal), walk back to the predefined starting point of the run-up, and once he reached that point, turn around again to start the run-up. We used exactly the same three timing categories as in Jordet and Hartman (2008) video analysis: (i) in the quick category the actor immediately—waiting time .2–.5 s (cf. quick category: Jordet and Hartman (2008))—started the run-up after reaching the starting point; (ii) in the intermediate category the actor waited for 1 s—mean duration of the intermediate category in Jordet and Hartman (2008)—before starting the run-up after reaching the starting point; (iii) in the slow category the actor waited for 4 s—mean duration of the slow category in Jordet and Hartman (2008)—before starting the run-up after reaching the starting point.

Each actor was filmed twice in the six different experimental conditions. Two independent raters chose those videos that were; (a) except for the experimental manipulation most similar to one another; (b) the experimental timing manipulation was identical, as indicated by the number of video frames and; (c) no other factors were evident that distinguished the target players from each other. This ensured that the 24 point-light videos—four actors filmed in six different conditions—used as the experimental stimuli, only differed due to the experimental manipulations.

Measures

All of the following measures were computerized versions of the measures used in Greenlees et al. (2008).

Perception of target player

The first seven items were derived from Greenlees et al. (2008) and were utilized to measure the perceived impressions toward the target penalty taker. The dimensions were: assertive – not assertive; competitive – non-competitive; experienced – novice; confident – unconfident; composed – on edge; focused – not focused; and relaxed – tense. Scores for each scale 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

We asked participants to rate their expectancy of the power of the penalty shot along the dimensions; very weak – very powerful, with low scores reflecting weak penalties. The scores potentially ranged from 0 to 1.

Accuracy of penalty

We asked participants to rate their expectancy of the accuracy of the penalty shot along the dimensions; very inaccurate – very accurate, with low scores reflecting inaccurate penalties. The scores potentially ranged from 0 to 1.

Outcome expectancy

The last five items assessed how sure participants were that they would save at least: 1 out of 5; 2 out of 5; 3 out of 5; 4 out of 5; and 5 out of 5 penalties along the dimensions; very sure (1) – not at all sure (0). A single outcome expectancy score was computed from the five items by summing up the individual scores. The expectancy scores for each category were then added together in order to attain a greater reflection of the outcome expectations of the participants. The scores potentially ranged from 0 to 5.

Procedure

Each goalkeeper was tested individually. Participants were instructed that they had to rate soccer penalty takers based solely on each point-light video. E-prime professional (Version 2.0; Psychological software, 2007) was used to present the stimuli and collect the judgments on 19 inch computer screen placed 60 cm away from the subjects. Prior to testing, participants performed two practice trials with the aim of familiarizing them with the procedure. After familiarization, the 24 experimental clips were presented in a random order. After viewing each video, participants rated the player on several 11-point digital semantic differential scales (similar to Greenlees, 2007; Greenlees, Bradley et al., 2005; Greenlees, Buscombe et al., 2005; Greenlees et al., 2008). These scales were the same for every item in the experiments. In order to give their ratings, participants had to move a mouse cursor from the middle of the scale toward either pole of the scale and log in their rating by clicking the left mouse button. The software transformed the ratings into a value (with 3 decimals) between 0 reflecting the left pole of the scale and 1 reflecting the right pole of the scale. After completing the testing protocol, participants were informed about the purpose of the experiment.

Data analysis

We ran a series of 4 two-factor univariate analysis of variance (ANOVA) with repeated measures on both within subject independent variables (gaze behavior; preparation time) to examine the effects on impression formation, outcome expectation, perceived penalty taking accuracy and power (cf. Greenlees et al., 2008). Where, the assumption of sphericity was violated, the *p*-values for main effects were computed using the conservative Greenhouse–Geisser method with corrected degrees of freedom.

Results and discussion

Impact of looking behavior and preparation speed on impression formation

The Cronbach alpha coefficient for the perception of target player scale was satisfactory ($\alpha = .83$). The descriptive statistics of Experiment 1 are shown in Table 1. The 2 (looking behavior) \times 3 (preparation time) ANOVA on the player perception scale revealed significant main effects for both looking behavior ($F(1,$

Table 1
Goalkeepers' mean ratings of soccer penalty takers as a function of preparation time and gaze direction.

		Timing condition					
		Short		Intermediate		Long	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Perception of target	Turn	2.80	1.0	4.39	.90	4.29	.79
	No turn	3.78	1.2	4.74	.83	4.86	.85
Outcome expectancy	Turn	2.83	.59	2.53	.37	2.67	.34
	No turn	2.60	.51	2.37	.41	2.54	.45
Expected precision	Turn	.25	.24	.57	.20	.57	.18
	No turn	.45	.26	.67	.19	.69	.21
Expected speed	Turn	.73	.26	.61	.18	.57	.21
	No turn	.60	.21	.68	.14	.61	.20

19) = 10.465, $p = .004$, $\eta^2 = .355$) and preparation time ($F(1.529, 29.044) = 19.372$, $p = .0001$, $\eta^2 = .505$). This result indicates that a negative person schema of a penalty taker is activated by goalkeepers when the player turns his back toward them after placing the ball before initiating their run-up or does not take their time to prepare the run-up. Follow-up Bonferroni corrected pairwise comparisons revealed significant differences between the short condition and both the intermediate and long conditions ($p < .01$). These findings indicate that taking one's time seems to reach a plateau fairly quickly and that penalty takers are not perceived as being more competent the longer they take preparing the penalty. This pattern of results supports our hypothesis that both preparation speed and looking behavior have the potential of influencing the impression formed of the opposing penalty taker by goalkeepers independent of one another. Hastening and hiding seems to be interpreted by the goalkeepers as a sign of insecurity and weakness in the penalty takers, whereas longer preparation times and approach looking seem to have the opposite affect.

Furthermore, the ANOVA revealed a significant interaction between looking behavior and preparation time on the perception of the target player ($F(2, 38) = 3.360$, $p = .045$, $\eta^2 = .150$). This interaction was caused by the actors being perceived more positively in the long preparation time condition compared to the intermediate condition when facing the goal, whereas they were perceived slightly negatively in the long condition compared to the intermediate condition when turning their back toward the goalkeeper.

Impact of looking behavior and preparation speed on expected success

The 2 (looking behavior) \times 3 (preparation time) ANOVA on the expected success scales revealed a significant main effect for looking behavior ($F(1, 19) = 4.649$, $p = .044$, $\eta^2 = .197$) revealing that goalkeepers were more confident in saving penalties against a penalty taker that turned their back toward them when preparing the penalty kick. The ANOVA also revealed a significant main effect for preparation time ($F(2, 38) = 4.265$, $p = .021$, $\eta^2 = .183$). Thus, goalkeepers were also more confident in saving penalties against penalty takers that rush through their penalty preparation. Follow-up Bonferroni corrected pairwise comparisons only revealed significant differences between the intermediate and the short condition ($p < .05$), whereas the difference between the short and long condition only approached significance ($p = .1$). Again, the pattern of results support our hypothesis that both preparation speed and looking behavior influence the expected success against the opposing penalty taker by goalkeepers as they seem to associate hastening and hiding with expectations of poor performance. The interaction between looking behavior and preparation time on the expected success of goalkeepers was not significant ($p = .79$).

Impact of looking behavior and preparation speed on expected penalty quality

Penalty quality can be characterized along the dimensions of precision and speed (Greenlees et al., 2008). As these two dimensions were not correlated with one another, we treated them as separate, single-item variables. The two-way ANOVA on expected penalty taking precision revealed both significant main effects for looking behavior ($F(1, 19) = 8.497$, $p = .009$, $\eta^2 = .309$) and preparation time ($F(2, 38) = 17.359$, $p = .0001$, $\eta^2 = .477$). Follow-up Bonferroni corrected pairwise comparisons revealed significant differences between the short condition and both the intermediate and long conditions ($p < .01$).

The two-way ANOVA on expected penalty speed did not reveal any main effects. There was only a significant interaction between looking behavior and preparation speed ($F(2, 38) = 4.165$, $p = .023$, $\eta^2 = .180$) indicating that turning the back toward the goal in the short condition led goalkeepers to expect a faster penalty compared to the short facing the goal condition (Table 1).

The results obtained in Experiment 1 support the suggestion that the findings of Jordet and Hartman (2008) may have been caused by similar incidents of person perception between the penalty taker and opposing goalkeeper as reported by Greenlees et al. (2008). Our experimental manipulation was quite different from Greenlees et al. as we eliminated both the gaze behavior and clothing of the penalty takers using the point-light technique. Thus, the present results extend current understanding on impression formation by demonstrating that the kinematic information alone of the penalty taker is sufficient in guiding the perception of others (see also, Furley et al., in press). This finding is in line with a large body of research motivated from an ecological perspective highlighting the accuracy of human perception based on the kinematic information contained within point-light displays (for a review, see Marsh et al., 2006). Goalkeepers associated the hastening and hiding behavior of penalty takers with inferior penalty taking abilities in comparison with players that take their time and face the goalkeeper when preparing to execute penalty kicks. A remaining question however is whether the pattern of results obtained was due to the specific experiences of soccer goalkeepers or if the affect found is also applicable to experienced soccer players. That is, the domain specific experience of goalkeepers may have biased or preceded the impression formation results revealed in Experiment 1a (e.g., see Cañal-Bruland & Schmidt, 2009).

Experiment 1b

Method

Participants

Male soccer players ($n = 29$; $M = 25.76$; $SD = 2.9$) took part in the study, who had been playing for an average of 19 years at an amateur to semi-professional level in Germany. 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, stimuli and procedure

Except for the participants and the outcome expectancy measure, everything was exactly the same as in Experiment 1. This time the last five items assessed how sure participants were that the target player would score 1 out of 5; 2 out of 5; 3 out of 5; 4 out of 5; and 5 out of 5 penalties along the dimensions; very sure – not at all sure. We ran the same analysis as in Experiment 1a.

Results and discussion

Impact of looking behavior and preparation speed on impression formation

The Cronbach alpha coefficient for the *perception of target player* scale was satisfactory ($\alpha = .91$). The descriptive statistics of Experiment 1b are shown in Table 2. Generally speaking, the results from experienced outfield players replicate those reported in Experiment 1a. The 2 (looking behavior) \times 3 (preparation time) ANOVA on the player perception scale revealed significant main effects for both looking behavior ($F(1, 28) = 7.970, p = .009, \eta^2 = .222$) and preparation time ($F(2, 56) = 16.560, p = .0001, \eta^2 = .372$). Follow-up Bonferroni corrected pairwise comparisons revealed significant differences between the short condition and both the intermediate and long conditions ($p < .01$). This result suggests that the described hastening and hiding behavior is not specific to the experience of goalkeepers. Hastening and hiding penalty taker behavior seems to be interpreted as a sign of less competent penalty taking ability in comparison with players that take their time and face the goal prior to kick execution.

The ANOVA revealed a significant interaction between looking behavior and preparation time on the perception of the target player ($F(2, 56) = 4.235, p = .019, \eta^2 = .131$). The hybrid interaction indicated that the penalty takers were perceived more competently in the long preparation time condition compared to the intermediate condition when facing the goal. Moreover, the penalty takers were perceived as being less competent in the long condition compared to the intermediate condition when turning their back toward the goal.

Impact of looking behavior and preparation speed on expected success of the target

The 2 (looking behavior) \times 3 (preparation time) ANOVA on the expected success of the target player scales revealed significant main effects for both looking behavior ($F(1, 28) = 7.431, p = .011, \eta^2 = .210$) and preparation time ($F(2, 56) = 18.680, p = .0001, \eta^2 = .400$). Follow-up Bonferroni corrected pairwise comparisons

revealed significant differences between short and both the intermediate and the long condition ($p < .01$). The pattern of results further supports the finding that hastening and hiding penalty taker behavior influences the expected performance of the player displaying the behavior.

Impact of looking behavior and preparation speed on expected penalty quality

The two-way ANOVA on expected penalty taking precision revealed both significant main effects for looking behavior ($F(1, 28) = 6.215, p = .019, \eta^2 = .182$) and preparation time ($F(2, 56) = 15.644, p = .0001, \eta^2 = .358$). Follow-up Bonferroni corrected pairwise comparisons revealed significant differences between the short condition and both the intermediate and long conditions ($p < .01$).

The two-way ANOVA on expected penalty speed did not reveal any main effects. There was only a significant interaction between looking behavior and preparation speed ($F(2, 56) = 6.663, p = .003, \eta^2 = .192$). The interaction indicated that turning the back toward the goal in the short and intermediate condition led outfield players to expect a faster penalty compared to the short and intermediate facing the goal condition, whereas they expected slower penalties in the long turn around condition compared to the long facing goal condition.

Between group comparison

When factoring in the between group independent variable (goalkeepers/players) the two-way mixed ANOVA did not reveal any between group main effects or interactions (all $p > .3$ for the player perception, shot precision and shot power scales). The between group comparison on the expected outcome was not feasible with the two-way mixed ANOVA since the goalkeeper scale measured how confident they were in saving penalties compared to the player scale that measured how sure they were that the target player would score. Nevertheless, the dependent variables were affected in a similar way by the experimental manipulation. Thus, it seems reasonable to conclude that hastening and hiding behavior seems to have a strong generic effect on impression formation and outcome expectation of both soccer players and goalkeepers.

A further interesting point that emerged from the data of Experiments 1a and 1b was that the preparation speed analysis did not reveal significant differences between the intermediate and long conditions. Rather, the biggest effect was seen in comparisons with the short condition, which suggests that there may be boundary conditions for the impact of preparation speed on impressions and likely performance. Thus, the influence of speed on impression formation does not seem to be linear. The results indicate that extremely short preparation times are perceived negatively, but they do not necessarily imply that the longer the preparation time, the more positive the impression. Moreover, the

Table 2
Players' mean ratings of soccer penalty takers as a function of preparation time and gaze direction.

		Timing condition					
		Short		Intermediate		Long	
		M	SD	M	SD	M	SD
Perception of target	Turn	3.16	1.1	4.31	.88	4.36	1.0
	No turn	4.04	.97	4.67	.84	4.50	1.1
Outcome expectancy	Turn	2.52	.73	3.12	.53	3.10	.66
	No turn	2.96	.72	3.23	.79	3.32	.80
Expected precision	Turn	.38	.23	.60	.16	.60	.19
	No turn	.52	.18	.67	.17	.61	.20
Expected speed	Turn	.71	.23	.64	.16	.54	.17
	No turn	.63	.16	.60	.19	.65	.17

significant interactions between NVB and preparation time on player perception indicated that the long condition was interpreted differently according to whether or not the target player turned their back after placing the ball. Player perception was more negative in the long condition compared to the intermediate condition when the player turned their back toward the goal, whereas it was more positive in the long condition compared to the intermediate condition when facing the goal.

Taken together, a potentially important applied finding that emerged in the results of Experiment 1a and 1b was the effect that the experimental manipulation had on the expected precision of penalty kicks (cf. Fig. 2, top panel). That is, when a penalty taker displays hastening and hiding behaviors, they are expected to

execute less precise kicks in comparison with a penalty taker who looks toward the goal and takes his/her time preparing the penalty kick. Such suggestion is partly supported by the findings of Wood and Wilson (2010) who reported that the gaze behavior of penalty takers before the initiation of the run-up has a direct influence on shot accuracy. That is, the location that a penalty taker looks toward during the preparatory phase of the penalty kick appears to be closely related to final kick location. During instances of hastening and hiding preparatory behaviors, penalty takers only give themselves minimal time to look toward the goal and thus the accuracy of their kick direction may be somewhat impeded as a consequence. Moreover, when situated information pertaining to the looking direction of the penalty taker is available – as opposed to being

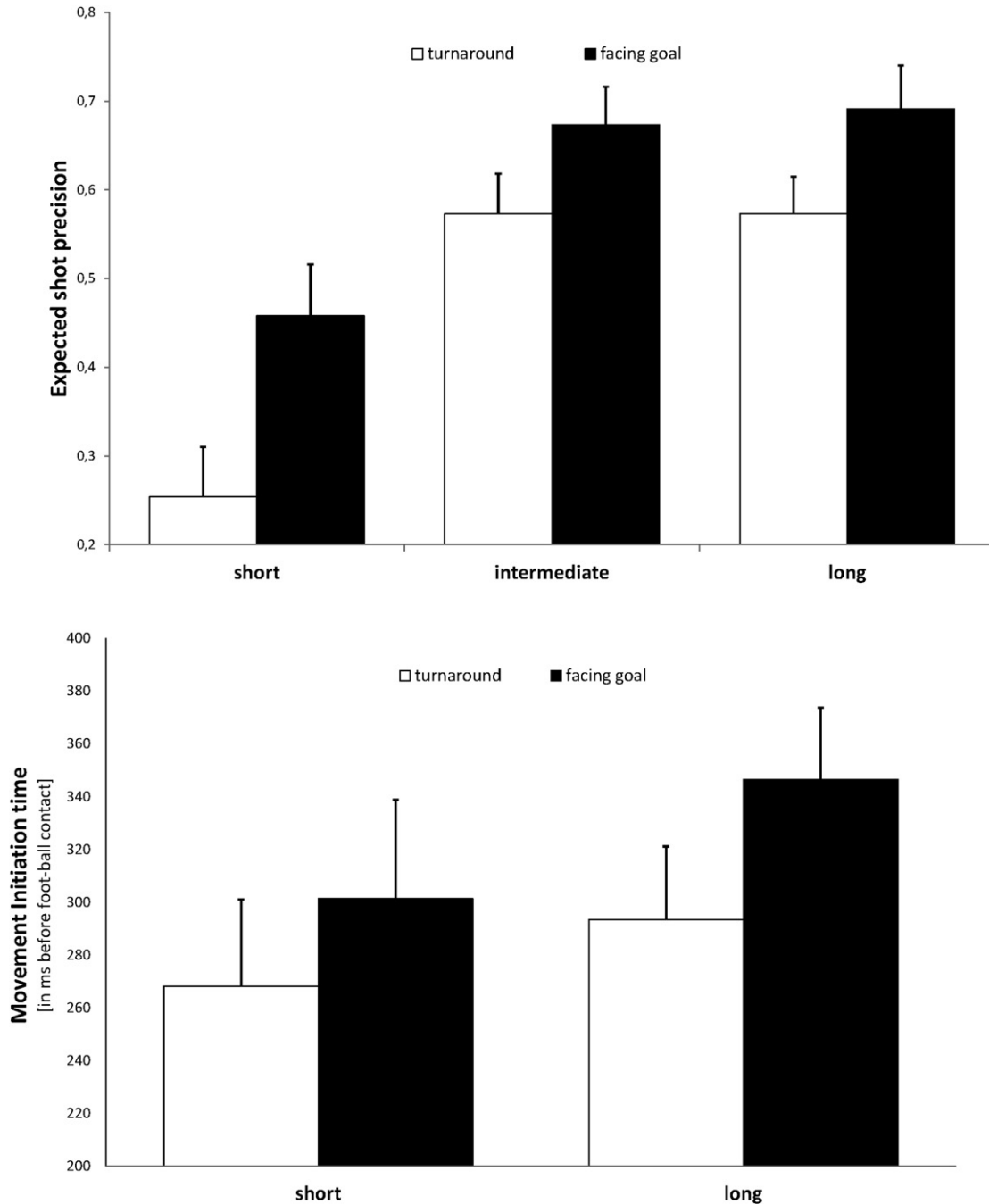


Fig. 2. Top panel. Mean ratings of the expected penalty precision of goalkeepers as a function of penalty preparation strategy of the penalty taker. Error bars represent standard errors. Bottom panel. Mean movement initiation times of goalkeepers as a function of penalty preparation strategy of the penalty taker. Error bars represent standard errors.

occluded – research shows that goalkeepers time their own diving actions earlier (Dicks, Button, & Davids, 2010a). Goalkeepers therefore appear to use situated information including the looking direction and angle of approach of penalty takers to control their own actions. The combined implications are that when penalty takers utilize a hastening and hiding preparatory behavior, they are likely to execute a less accurate penalty kick (Wood & Wilson, 2010) and as a further associated consequence, goalkeepers are likely to produce a later movement response (Dicks, Button, & Davids, 2010a). We examined such suggestion in Experiment 2.

Experiment 2

Research suggests that highly-skilled goalkeepers are capable of utilizing kinematic information from the penalty taker's run-up to visually anticipate the kick direction prior to the moment of penalty taker foot-ball contact (Dicks, Button, & Davids, 2010b; Franks & Harvey, 1997; Savelsbergh, Van der Kamp, Williams, & Ward, 2005). Relevant to such instances of visual anticipation, Jordet and Hartman (2008) reported that exceptional pressure leads to changes in the preparatory behaviors of penalty takers. That is, during unsuccessful kicks, penalty takers display hastening and hiding behaviors, which are a consequence of ensuring that the pressurized situation is over and done with. Indeed, in Experiment 1, our results indicated that this preperformance behavior leads goalkeepers to expect a not very precise penalty. Given the mutual interaction that is present between goalkeeper and penalty taker, this finding implies that manipulating the NVBs of penalty takers prior to penalty kick execution will lead to goalkeepers adapting their own behavior in the penalty situation. In Experiment 2, we tested this prediction *in situ* and hypothesized in line with the findings from Experiment 1 that when goalkeepers observe the described hastening and hiding behaviors during the penalty preparation, they will adapt their strategy by initiating their movement later as a function of NVB.

Method

Participants

Twelve highly-skilled soccer goalkeepers (age: $M = 25.2$ years, $SD = 6.4$ years) competing between the first and fifth league (professional to semi-professional status) in Germany were recruited as participants. Participants reported a mean of 14.63 years ($SD 3.6$ years) competitive soccer experience as goalkeepers. Four penalty takers competing at a semi-professional level were recruited to execute the penalty kicks. The goalkeepers had no prior experience of facing penalty kicks executed by one of the four penalty takers. 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 apparatus

All penalty kicks were executed outside on a regular soccer pitch with a full-size soccer goal (7.32 m \times 2.44 m). A standard size 5 soccer ball was used for the testing. Kicks were taken from a distance of 11 m in accordance with standard FIFA regulations. Goalkeepers wore identical soccer jerseys when being tested.

Goalkeeping performance was recorded with an external, high-speed 100 Hz digital video camera (Basler 602FC; capturing 100 frames per second with a resolution of 640 \times 480 pixels) placed 3 m behind and 1.5 m to the left side of the penalty spot facing parallel to the goal-line. This set-up ensured that the camera captured the entire goal, the goalkeeper, and the penalty taker, enabling us to record the goalkeeper's action relative to the moment of penalty taker foot-ball contact. Following data capture, the goalkeepers'

movement behaviors were subjected to a frame-by-frame analysis with ELAN (www.lat-mpi.eu/tools/tools/elan), which is an open-source, multimodal tool for digital audio and video media. For the present analysis, ELAN was especially suitable as the software permits accurate millisecond timing data as a function of the frame-by-frame analysis.

Experimental manipulation

This comprised manipulations on the preparatory behaviors of penalty takers prior to kick execution. To ensure sufficient shots per condition for every goalkeeper and given that the intermediate and long timing condition had similar effects, we utilized a 2 \times 2 experimental design involving the two independent variables looking behavior and preparation time with two levels respectively. Looking behavior was manipulated by having the penalty taker either walk backwards (facing the goal) to a predefined mark after placing the ball on the penalty spot or having the player turn around (not facing the goal), walk back to the predefined starting point of the run-up, and once the player reached that point, turn around again to start the run-up. Following the findings reported in Experiment 1, in this instance, the preparation time manipulation only involved two levels, a quick and a long condition. In the quick condition, the penalty takers were instructed to commence the run-up immediately after reaching their predefined starting point which was marked with a piece of tape. In the long condition, the penalty takers were instructed to wait for 2 s (to ensure this, the participants were asked to silently count the numbers 21 and 22) and then commence the run-up. Prior to testing, every penalty taker practiced the respective penalty preparation conditions under the supervision of the experimenter. The penalty takers were instructed that the aim of the study was to investigate the influence of different run-up strategies on goalkeeping behavior. The penalty takers were not informed about the experimental hypotheses or of the results from previous research (e.g., Experiment 1, Greenlees et al., 2008; Jordet & Hartman, 2008).

Penalty kick procedure

Two penalty takers took turns taking penalties against one goalkeeper at a time. The penalty takers followed a test script which included detailed instruction about which part of the goal to aim each kick (e.g., right) and which preparation behavior (e.g., turn around, long) to use. A research assistant informed the designated penalty taker of the required penalty kick strategy before each kick. While one player executed the penalty kick, the other player was instructed on the strategy for their next penalty.

Procedure

Goalkeepers were instructed that they were facing 40 penalties – 20 from each of the two penalty takers – and that their goal was to save as many penalties as possible. Furthermore, they were informed that this was an explorative study attempting to distinguish between successful and unsuccessful attempts to save penalty kicks. The only other constraint goalkeepers faced was that they were instructed to attempt to save penalties starting from a central goal location (see, Masters, van der Kamp, & Jackson, 2007). Furthermore, every goalkeeper wore the same dark gray jersey. Prior to testing, each goalkeeper undertook a self-selected warm-up.

An Experimental trial started when a player approached the penalty spot holding the ball in front of their stomach 2 m behind the penalty spot. After placing the ball on the spot, an experimenter blew the whistle and the penalty taker initiated the predefined preparation for the respective experimental trial. An experimental trial ended after successful or unsuccessful execution of the

penalty. The next trial started once the goalkeeper was ready standing on the marked middle point of the goal.

Every goalkeeper faced 32 experimental trials—8 for every experimental condition: (i) facing, short; (ii) facing, long; (iii) turn, short; (iv) turn, long—and 8 trials in which penalty takers were free-to-choose how to execute the penalty. These trials were included to eliminate the goalkeepers' awareness of the study design. Performance was not analyzed for these additional 8 trials. The order of penalties was randomized (utilizing a randomization procedure from www.random.org) for every goalkeeper. Testing took place on three separate days. Each session took about 25 min per goalkeeper. The testing for each goalkeeper was divided into two sessions, which ensured that the goalkeeper had the opportunity to rest for a self-selected period prior to the second half of the testing period.

Data analysis

We computed two dependent measures from the frame-by-frame analysis: (i) the movement initiation time of the goalkeeper; and (ii) a penalty saving performance score. The time of response initiation was computed by the ELAN software (www.lampy.eu/tools/tools/elan) and was operationalized in accordance with Dicks, Button, & Davids (2010b) as the first observable movement made by the goalkeeper when attempting to save the ball relative to the moment of foot-ball contact by the penalty taker. For every goalkeeper and condition (8 shots per condition per goalkeeper), we computed the median movement initiation time in order to reduce the risk of the data being distorted by outliers at the extreme of the data set (e.g., Ratcliff, 1993). As goalkeepers may choose not to initiate a movement at all and remain in the middle of the goal (especially when facing 40 penalty kicks in a research scenario) until the ball was kicked, we did not consider the mean an adequate measure of central tendency for the experimental conditions and thus choose the median to be more representative of the central tendency in the population.

Goalkeeping performance was assessed in accordance with previous research (Dicks, Button, & Davids, 2010a). Besides assessing penalty taking performance as the mean number of penalty kicks saved, we also used the categorized performance scale developed by Dicks et al. to provide greater sensitivity. Performance for each experimental trial was scored on a 0 to 5 point scale: 5 points were warranted if the goalkeeper successfully saved the kick; 4 points when the goalkeeper dived in the correct direction and contacted the ball without saving it; 3 points when the goalkeeper dived in the correct direction but failed to make contact with the ball; 2 points when the goalkeeper made a movement in the correct direction but did not dive and failed to make contact with the ball; 1 point if the goalkeeper did not move from the center of the goal; and 0 points if the goalkeeper made any final movement to the side of the goal opposite to the final ball location. We computed a penalty saving performance score for every goalkeeper and experimental condition by summing the individual penalty scores per condition.

We ran two separate two-factor univariate analysis of variance (ANOVA) with repeated measures on both within subject independent variables (looking behavior; preparation time) to examine the effects on movement initiation times and penalty saving performance.

Results and discussion

Of the 480 penalty kicks taken (384 kicks in the four experimental conditions and 96 free-to-choose kicks), 336 kicks (70%) were scored, 89 (18.5%) were saved and 53 (11.5%) missed the goal. Performance of the individual goalkeepers ranged from 10% saved

penalties to 35% (SD 7%). The smallest percentage of penalties scored against one of the goalkeepers was 57% and the largest 80% ($SD = 5.7\%$). In this respect, the sample is representative of previous observations of penalty taking performance in soccer, which have reported that approximately 20–35% of penalty kicks are missed (Franks & Harvey, 1997; Kuhn, 1988). Neither expertise nor any other demographic variables significantly influenced the pattern of results.

Altogether, we analyzed 384 penalty kicks: eight penalties in every experimental condition for every goalkeeper. A 2 (looking behavior) \times 2 (preparation time) ANOVA on penalty velocity as measured by the ball flight times (duration between foot-ball contact and net-contact of the successful penalty kicks) did not reveal any main effects for looking behavior ($p = .43$), rushing ($p = .59$) nor an interaction ($p = .80$; $M_{\text{turn, long}} = 569$ ms; $SD = 59$ ms; $M_{\text{turn, short}} = 578$ ms; $SD = 53$ ms; $M_{\text{no turn, long}} = 579$ ms; $SD = 45$ ms; $M_{\text{no turn, short}} = 582$ ms; $SD = 59$ ms). Fig. 2 shows the mean movement initiation times of goalkeepers as a function of the experimental manipulation. The two-way ANOVA on the movement initiation time of goalkeepers revealed both significant main effects for looking behavior ($F(1, 11) = 12.090$, $p = .005$, $\eta^2 = .524$) and preparation time ($F(1, 11) = 5.391$, $p = .040$, $\eta^2 = .329$) indicating that goalkeepers initiate their movement to attempt to save the ball later when the penalty taker shows the described hastening and hiding behavior. The interaction was not significant ($F(1, 11) = .510$, $p = .490$, $\eta^2 = .044$). This finding is in line with our hypothesis derived from the results on expected penalty precision of Experiment 1. That is, when players turn their back toward the goal and do not take their time when preparing the kick goalkeepers expect penalty takers to produce less precise penalty kicks (Wood & Wilson, 2010) and as a further consequence, goalkeepers are likely to produce a later movement response (Dicks, Button, & Davids, 2010a), a point we will discuss further in the General discussion.

The mean penalty saving performance scores using the sums of the individual penalty scores on Dicks, Button, & Davids (2010a) categorized performance scale were: $M_{\text{turn, long}} = 13.67$; $SD = 4.6$; $M_{\text{turn, short}} = 16.2$; $SD = 4.8$; $M_{\text{no turn, long}} = 15.17$; $SD = 8.1$; $M_{\text{no turn, short}} = 15.1$; $SD = 5.8$. The two-way ANOVA on the penalty saving performance of goalkeepers did not reveal any main effects for looking behavior ($F(1, 11) = .013$, $p = .910$, $\eta^2 = .001$) and preparation time ($F(1, 11) = .504$, $p = .493$, $\eta^2 = .044$) nor any interaction ($p = .253$). We did not find a correlation between movement initiation times of goalkeepers and performance ($r = .08$; ns). Thus, there was no effect of the experimental manipulation on the penalty saving performance of goalkeepers. The difference in findings between our Experiment and that of Jordet and Hartman (2008) may be attributable to the likely differences in anxiety levels experienced by the players in the respective settings. That is, Jordet and Hartmann argued that the exceptional pressure that defines high-stake penalty situations leads players to display hastening and hiding behavior during the penalty preparation and that this behavior, in turn, leads to negative penalty taking performance (see also, Wood & Wilson, 2010). Nonetheless, the findings of Experiment 2, when considered alongside Experiment 1, show that changes in the preparatory behaviors of penalty takers not only impact upon the performance expectations of goalkeepers, but also the timing of goalkeeper actions when facing penalty kicks. As we did not manipulate anxiety in the present *in situ* Experiment, it remains plausible that the subsequent changes in performance accuracies of penalty takers may only occur under conditions of high anxiety.

General discussion

In the present study, we investigated the effect of nonverbal preparatory behaviors on person perception, expected success and expected penalty quality on penalty saving behavior in the soccer

penalty kick. In Experiment 1, results demonstrated that penalty takers showing hastening and hiding behavior are considered more likely to: (i) possess less positive attributes; (ii) to perform less well in penalty situations; and (iii) to have less accuracy in their penalties. In this respect, we provided evidence for our hypothesis that turning one's back to the goalkeeper when walking back to prepare the run-up and rushing through the penalty preparation are associated with negative athlete schemas. This affect does not seem to be specific to the prior experience of goalkeepers in the penalty situation (Experiment 1a) but seems applicable to all experienced soccer players (Experiment 1b) which is in line with the assumption that communicating emotional information non-verbally seems to be readily recognized and understood among humans (Burgoon, 1996).

In Experiment 2, we provided primary evidence which suggests that hastening and hiding behaviors do not only influence the impression formation of goalkeepers, but also their behavior. First, we should highlight that we did not find any association between penalty preparation behavior and penalty kick success. As such, it is possible that this finding, which is in contrast to the study of Jordet and Hartman (2008), is attributable to the effects of anxiety on performance, which was not manipulated in the current study. Nevertheless, it is interesting to note that the timing of goalkeeper action was directly influenced by the preperformance behaviors of penalty takers. In the visual anticipation literature, researchers have demonstrated that goalkeepers utilize the kinematic information available during the penalty taker's run-up to anticipate kick direction (Dicks, Button, & Davids, 2010a; Dicks, Button, & Davids, 2010b; Savelsbergh et al., 2005). The present results have important implications for such literature as we found that the timing of goalkeeper actions are also influenced by situated information that emerges prior to the moment that the penalty taker initiates their run-up. Thus, it appears that during instances of interpersonal perception and action, the information that sportspeople utilize to guide their actions appears to be utilized over different time-scales (e.g., Abernethy, Gill, Parks, & Packer, 2001).

Data demonstrated that when penalty takers display hastening and hiding penalty behaviors, goalkeepers produce earlier movement responses. In the present study, this manipulation did not lead to performance improvements in goalkeeping. Despite the absence of such an effect, increasing research evidence now demonstrates that initiating an earlier movement relative to penalty taker football contact leads to less successful goalkeeping performance and increased susceptibility to deception (Dicks, Davids, & Button, 2010). Thus, any strategy, which leads to earlier movement times by goalkeepers, may have performance benefits for the penalty taker. When penalty takers take their time during penalty kick preparation, they also increase the goalkeeper's exposure to situated information (e.g., looking behavior: see, Wood & Wilson, 2010). The results of the present study suggest that the increased exposure to situated information appears to increase the likelihood that goalkeepers will use this information to control their ensuing behavior. In contrast, when a penalty taker shows hastening and hiding preperformance behavior, it appears that goalkeepers utilize the information revealed during the penalty takers run-up to guide their action, which leads to a later movement response (see Dicks, Button, & Davids, 2010a). In summary, the results indicate that when penalty takers change their preparatory behavior, they are also manipulating the perceptual information available to the opposing goalkeeper. Therefore, we suggest that if the penalty taker faces the goalkeeper and takes his time during penalty preparation, he is likely to increase his chance of successful performance (see also, discussion of psychological skills below).

A further, explanation of how the preparatory behaviors affected penalty taking performance in the study of Jordet and

Hartman (2008) may be that the resulting longer wait of goalkeepers affected the penalty taking performance. In this regard, previous research has provided a distinction between two different penalty taking strategies, which are said to be goalkeeper-dependent or goalkeeper-independent (van der Kamp, 2006; Kuhn, 1988). In the goalkeeper-dependent strategy, it is proposed that the penalty taker anticipates where to aim the penalty based on the movements of the goalkeeper. In the goalkeeper-independent strategy, the penalty taker does not anticipate the intentions of the goalkeeper. Kuhn (1988) reported that the majority (approximately three-quarters) of penalty takers use a keeper-dependent strategy. Therefore, in line with literature discussed above, goalkeepers will improve their chances of saving a penalty kick by initiating their action as late as possible against a keeper-dependent strategy. A study by van der Kamp (2006) supports this idea by demonstrating that participants require a certain amount of time to alter the direction of the kick before ball contact and even if they are successful in redirecting the ball late in their run-up this was at the expense of decreased accuracy. Therefore, if a goalkeeper initiates his/her movement later, then the penalty taker will have insufficient time to alter their kicking direction based on the goalkeeper's actions (van der Kamp, 2006). This might explain why penalty performance did not suffer in Experiment 2 as penalty takers had a predefined script of how to shoot each penalty and were not allowed to use a keeper-dependent strategy in the experimental trials. Whilst the findings from the present study may be interpreted in this manner, further work is warranted to better understand the interaction between the intentional strategies utilized by players and the subsequent performance implications.

In the introduction we considered that the pattern of results of Jordet and Hartman (2008) appear somewhat contradictory to the *paralysis by analysis* (e.g., Beilock, Bertenthal, Hoerger, & Carr, 2008; Beilock et al., 2004) argument of performance deterioration in high-pressure situations. For example, Beilock et al. provided evidence that golf putting performance declined in pressure situations if experienced golfers had too much time before commencing the putt, which they explain by the *explicit monitoring hypothesis*. One possible explanation for the contrasting findings may be that performance in the soccer penalty kick situation is predicated on an interaction with a goalkeeper, which is not the case for golf putting performance. The present results suggest that the opposing goalkeeper has a more positive impression of penalty takers who take their time, whereas the work of Beilock et al. (2008) demonstrate that players who take their time increase the likelihood of overanalyzing the upcoming shot. However, one has to be careful about drawing over simplistic conclusions from the present study with reference to the work of Beilock et al. That is, taking one's time before executing a complex sensorimotor skill cannot generally be recommended as a beneficial preperformance strategy. Based on the results of the present study, it would be beneficial for a penalty taker to give the impression that they are in control, whilst taking their time to prepare the kick, providing that the extra time is not utilized to consciously monitor (overanalyze) the step-by-step execution of the sensorimotor skill. In this regard, it may be beneficial for performers to utilize psychology skills during their preperformance routine including relaxation, imagery and self-talk in order to prevent the likelihood of such debilitating conscious monitoring (Thelwell, Greenlees, & Weston, 2006).

In Experiment 2, we followed recent calls in the social psychology literature (Baumeister et al., 2007) and studied the behavioral consequences of person perception findings previously derived from questionnaire measures. It is possible that such methodological steps can raise questions of experimental control.

For example, the instructions provided to the penalty takers in Experiment 2 may have indirectly led to changes in their respective run-up and kicking actions. Therefore, future research is warranted whereby such potentially confounding factors are accounted for so as to shed further light on the behavioral consequences of person perception. Despite such concern, in the visual anticipation literature, the move away from rigorously controlled laboratory-based tasks has led to furthering understanding on the mechanisms that underpin expertise in sport (e.g., Dicks, Button, & Davids, 2010b). Therefore, in line with approaches in other domains of psychology (e.g., Kingstone, Smilek, & Eastwood, 2008), we believe that future research in sport person perception will benefit from the integrated utilization of both systematic and representative experimental designs. That is, at this stage it is perhaps important not to rule out either approach as researchers move forward in developing current understanding on this topic.

In conclusion, the findings of Experiment 1 build upon the earlier work of Greenlees et al. (2008) and Jordet and Hartman (2008) by experimentally showing that penalty takers who show hastening and hiding behavior during shot preparation are perceived more negatively, and that this is also associated with higher self-efficacy beliefs of goalkeepers to successfully perform against the penalty taker. The results of Experiment 1 have clear practical implications for athletes, coaches and applied practitioners. Coaches should assist athletes to develop positive self-presentation techniques in order to potentially induce a desired impression of themselves during interpersonal perception and action (e.g., Hackfort & Schlattmann, 2002). The results from Experiment 2 offer a further explanation of how the hastening and hiding behaviors may have affected performance in the study of Jordet and Hartman (2008) by demonstrating that goalkeepers move later when the penalty takers turned their back toward the goal and took minimal time before commencing their run-up. Future research is needed to further examine this finding and investigate how anxiety and preparatory behavior impacts upon interpersonal perception and action.

Acknowledgments

Special thanks go to Udo Hoffmann, Ben Ziemens, and Wolfgang Walther for helping with the data collection and programming in this study. The contributions from the second author were made while he was supported by a grant (number 446-10-128) from the Netherlands Organisation for Scientific Research (NWO) and the Marie Curie Cofund Action.

References

- Abernethy, B., Gill, D. P., Parks, S. L., & Packer, S. T. (2001). Expertise and the perception of kinematic and situational probability information. *Perception, 30*, 233–252. doi:10.1068/p2872.
- Atkinson, A. P., Dittrich, W. H., Gemmel, A. J., & Young, A. W. (2004). Emotion perception from dynamic and static body expressions in point-light and full-light displays. *Perception, 33*, 717–746. doi:10.1068/p5096.
- Baumeister, R. F. (1984). Choking under pressure: self-consciousness and paradoxical effects of incentives on skillful performance. *Journal of Personality and Social Psychology, 46*, 610–620. doi:10.1037/0022-3514.46.3.610.
- Baumeister, R. F., & Showers, C. J. (1986). A review of paradoxical performance effects: choking under pressure in sports and mental tests. *European Journal of Social Psychology, 16*, 361–383. doi:10.1002/ejsp.2420160405.
- 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*, 396–403. doi:10.1111/j.1745-6916.2007.00051.x.
- Beilock, S. L., Bertenthal, B. I., Hoerger, M., & Carr, T. H. (2008). When does haste make waste? Expertise, speed vs. accuracy instructions, and the tools of the trade. *Journal of Experimental Psychology: Applied, 14*, 340–352. doi:10.1037/a0012859.
- Beilock, S. L., Bertenthal, B. I., McCoy, A. M., & Carr, T. H. (2004). Haste does not always make waste: expertise, direction of attention, and speed versus accuracy in performing sensorimotor skills. *Psychonomic Bulletin & Review, 11*, 373–379.
- Beilock, S. L., & Carr, T. H. (2001). On the fragility of skilled performance: what governs choking under pressure. *Journal of Experimental Psychology, 130*, 701–725. doi:10.1037/0096-3445.130.4.701.
- Bente, G., Leuschner, H., Al Issa, A., & Blascovich, J. (2010). The others: universals and cultural specificities in the perception of status and dominance from nonverbal behavior. *Consciousness and Cognition, 19*, 762–777. doi:10.1016/j.concog.2010.06.006.
- Berns, G. S., Chappelow, J., Cekic, M., Zink, C. F., Pagnoni, G., & Martin-Skurski, M. E. (2006). Neurobiological substrates of dread. *Science, 312*, 754–758. doi:10.1126/science.1123721.
- Blake, R., & Shiffrar, M. (2007). Perception of human motion. *Annual Review of Psychology, 58*, 47–73. doi:10.1146/annurev.psych.57.102904.190152.
- Blakemore, S. J., & Decety, J. (2001). From the perception of action to the understanding of intention. *Nature Reviews Neuroscience, 2*, 561–566.
- Burgoon, J. K. (1996). Nonverbal signals. In Knapp, M. L., & Miller, G. R. (Eds.), (1996). *Handbook of interpersonal communication, Vol. 2* (pp. 344–390). Beverly Hills, CA: Sage.
- Cañal-Bruland, R., & Schmidt, M. (2009). Response bias in judging deceptive movements. *Acta Psychologica, 130*, 235–240. doi:10.1016/j.actpsy.2008.12.009.
- Carney, D., Cuddy, A., & Yap, A. (2010). Power posing: brief nonverbal displays affect neuroendocrine levels and risk tolerance. *Psychological Science, 21*, 1363–1368. doi:10.1177/0956797610383437.
- Carney, D. R., Hall, J. A., & Smith LeBeau, L. (2005). Beliefs about the nonverbal expression of social power. *Journal of Nonverbal Behavior, 29*, 105–123. doi:10.1007/s10919-005-2743-z.
- Darwin, C. (2009). *The expression of the emotions in man and animals*. New York, NY: Oxford. (Original work published 1872).
- Dicks, M., Button, C., & Davids, K. (2010a). Availability of advance visual information constrains association-soccer goalkeeper performance during penalty kicks. *Perception, 39*, 1111–1124. doi:10.1068/p6442.
- Dicks, M., Button, C., & Davids, K. (2010b). Examination of gaze behaviors under in situ and video simulation task constraints reveals differences in information pickup for perception and action. *Attention, Perception, & Psychophysics, 72*, 706–720. doi:10.3758/APP.72.3.706.
- Dicks, M., Davids, K., & Button, C. (2010). Individual differences in the visual control of intercepting a penalty kick in association soccer. *Human Movement Science, 29*, 401–411. doi:10.1016/j.humov.2010.02.008.
- Dijker, A. J. M. (1987). Emotional reaction to ethnic minorities. *European Journal of Social Psychology, 17*, 305–325. doi:10.1002/ejsp.2420170306.
- Fiske, S. T., & Taylor, S. E. (1991). *Social cognition*. Reading, MA: Addison-Wesley.
- Franks, I. M., & Harvey, T. (1997). Cues for goalkeepers: high-tech methods used to measure penalty shot response. *Soccer Journal, 42*, 30–38.
- Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review, 118*, 247–279. doi:10.1037/a0022327.
- Furley, P., Dicks, M., & Memmert, D. Nonverbal behavior in soccer: the influence of dominant and submissive body language on the impression formation and outcome expectation of soccer players. *Journal of Sport and Exercise Psychology*, in press.
- Gerrard, S. (2006). *Gerrard: My autobiography*. London: Transworld Publishers.
- Gibson, J. J. (1966). *The senses considered as perceptual systems*. Boston, MA: Houghton Mifflin.
- Greenlees, I. A. (2007). Person perception in sport. In S. Jowett, & D. Lavalley (Eds.), *Social psychology of sport* (pp. 195–208). Champaign, IL: Human Kinetics.
- Greenlees, I. A., Bradley, A., Thelwell, R. C., & Holder, T. P. (2005). The impact of opponents' non-verbal behaviour on the first impressions and outcome expectations of table-tennis players. *Psychology of Sport and Exercise, 6*, 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*, 39–52.
- 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*, 569–576. doi:10.1080/02640410701744446.
- Hackfort, D., & Schlattmann, A. (2002). Self-presentation training for top athletes. *International Journal of Sport Psychology, 33*, 61–71.
- Johansson, G. (1973). Visual perception of biological motion and a model for its analysis. *Perception & Psychophysics, 14*, 201–211. doi:10.3758/BF03212378.
- Jordet, G. (2009). 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., & Hartman, E. (2008). Avoidance motivation and choking under pressure in soccer penalty shootouts. *Journal of Sport and Exercise Psychology, 30*, 450–457.
- van der Kamp, J. (2006). A field simulation study of the effectiveness of penalty kick strategies in soccer: late alterations of kick direction increase errors and reduce accuracy. *Journal of Sports Sciences, 24*, 467–477. doi:10.1080/02640410500190841.
- Kingstone, A., Smilek, D., & Eastwood, J. D. (2008). Cognitive ethology: a new approach for studying human cognition. *British Journal of Psychology, 99*, 317–340. doi:10.1348/000712607X251243.

- Kuhn, W. (1988). Penalty-kick strategies for shooters and goalkeepers. In T. Reilly, A. Lees, K. Davids, & W. J. Murphy (Eds.), *Science and soccer* (pp. 489–492). London: E & FN Spon.
- Langer, E. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311–328. doi:10.1037/0022-3514.32.2.311.
- Loewenstein, G. (1987). Anticipation and the valuation of delayed consumption. *The Economic Journal*, 97, 666–684.
- Marsh, K. L., Richardson, M. J., Baron, R. M., & Schmidt, R. C. (2006). Contrasting approaches to perceiving and acting with others. *Ecological Psychology*, 18, 1–37. doi:10.1207/s15326969eco1801_1.
- Masters, R. S. W. (1992). Knowledge, knerves and know how: the role of explicit versus implicit knowledge in the breakdown of a complex sporting motor skill under pressure. *British Journal of Psychology*, 83, 343–358. doi:10.1111/j.2044-8295.1992.tb02446.x.
- Masters, R. S. W., van der Kamp, & Jackson, R. C. (2007). Imperceptibly off-center goalkeepers influence penalty-kick direction in soccer. *Psychological Science*, 18, 222–223. doi:10.1111/j.1467-9280.2007.01878.x.
- Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: verbal reports on mental processes. *Psychological Review*, 84, 231–259. doi:10.1037/0033-295X.84.3.231.
- Psychology Software Tools. (2007). *E-Prime (Version 1.0) [Computer software]*. Pittsburgh, PA: Author.
- Ratcliff, R. (1993). Methods for dealing with reaction time outliers. *Psychological Bulletin*, 114, 510–532. doi:10.1037/0033-2909.114.3.510.
- Savelsbergh, G. J. P., Van der Kamp, J., Williams, A. M., & Ward, P. (2005). Anticipation and visual search in expert soccer goalkeepers. *Ergonomics*, 48, 1686–1697. doi:10.1080/00140130500101346.
- Thelwell, R., Greenlees, I., & Weston, N. (2006). Using psychological skills training to develop soccer performance. *Journal of Applied Sport Psychology*, 18(3), 254–270. doi:10.1080/10413200600830323.
- West, S. G., & Brown, T. J. (1975). Physical attractiveness, the severity of the emergency and helping: a field experiment and interpersonal simulation. *Journal of Experimental Social Psychology*, 11, 531–538. doi:10.1016/0022-1031(75)90004-9.
- Wood, G., & Wilson, M. R. (2010). A moving goalkeeper distracts penalty takers and impairs shooting accuracy. *Journal of Sports Sciences*, 29, 937–946. doi:10.1080/02640414.2010.495995.
- Woodman, T., & Hardy, L. (2003). The relative impact of cognitive anxiety and self-confidence upon sport performance: a meta-analysis. *Journal of Sport Sciences*, 21, 443–457. doi:10.1080/0264041031000101809.