



## Can creative role models prime creativity in soccer players?

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### ABSTRACT

**Objectives:** The goal of the present study was to test if priming soccer players with certain players that are known for extraordinary creativity can lead to enhanced creativity in a computer-based decision-making task.

**Design:** Between-subject experimental designs were implemented.

**Method:** Using a sequential priming procedure amateur soccer players were primed with either creative (Lionel Messi; Thiago Alcántara) or uncreative soccer players (Per Mertesacker; John Terry) and subsequently performed a soccer decision-making task. The priming stimuli were changed from Experiment 1 ( $N = 60$ ) to Experiment 2 ( $N = 60$ ), and the priming procedure was changed in Experiment 3 ( $N = 60$ ).

**Results:** All three experiments revealed large ( $d = 0.91$  in Experiment 1 and  $d = 1.75$  in Experiment 2) to moderate effects (Experiment 3;  $d = 0.59$ ) of priming on creative decision making in soccer.

**Conclusion:** Domain-specific creative thinking can be influenced by priming amateur soccer players with soccer stars that are known to differ in terms of creativity. Both the practical implications of the findings for soccer and the methodological implications for future priming research in sport are critically discussed.

Creativity is important in many performance domains (Runco, 2007; Memmert, 2011, 2017) and can broadly be defined as the generation of ideas or problem solutions that are novel but still appropriate (Amabile, 1983; Sternberg & Lubart, 1999). Creativity has been suggested to include the cognitive components of fluency, flexibility, and originality (Guilford, 1967). Fluency refers to the ability to generate many responses; flexibility is the ability to switch between categories of responses; and originality is the ability to generate relatively seldom responses. Traditionally, creativity has been considered a personality trait (e.g. Eysenck, 1993), meaning that individual differences in creativity are assumed to be relatively stable traits over time and are determined by a combination of genetic and environmental factors at early developmental stages (Simonton, 1991). However, and of particular importance to the present study, a growing body of research has shown that creativity can be substantially influenced by contextual circumstances. For example, a person's current mood as an instance of a contextual circumstance has been shown to affect creativity (e.g. Isen, Daubman, & Nowicki, 1987; Murray, Sujan, Hirt, & Sujan, 1990; e.g. Isen, 2000 for a review). Further, incentives (e.g. extrinsic rewards) for the task being performed substantially impact on an individual's creativity (Amabile, 1996, for a review). A certain motivational state (e.g. striving to achieve a desired goal as opposed to trying to avoid mistakes) is another situational factor that has been shown to influence creative behavior (Friedman & Förster, 2000, 2001, 2002). Even a brief glimpse of the color green (a color that has been associated with

creative inspiration) prior to a creativity task was shown to enhance creativity (Lichtenfeld, Elliot, Maier, & Pekrun, 2012). Taken together, all these studies indicate that the notion of creativity as a fixed personality trait is too narrow, and creativity is more appropriately conceptualized as a dynamic interactive capacity resulting from contextual and personality variables.

Further studies in the field of sport (Santos, Memmert, Sampaio, & Leite, 2016) have also shown that contextual factors (e.g. enriched environments; Memmert, 2015) or motivational states (Memmert, Hüttermann, & Orliczek, 2013) have the potential to enhance creativity. Creative athletes are assumed to gain performance benefits in interactive, open skill sports via their ability to be unpredictable and thereby constantly come up with new ways of outsmarting their opponents. In this regard, Argentinian soccer star Lionel Messi has been described as one of the most incredible, unique, and creative soccer players to have ever played the game. He has inspired officials, players, and fans all over the world. Millions of his jerseys are sold to fans every year and uncountable anecdotal instances come to mind of young players idolizing Messi and pretending to be Messi during soccer practice. In this vein, it is important to understand if envisioning the abilities of an idolized player or even merely being exposed to a player like Messi might actually have the potential to influence a players' creativity.

Pertinent to the present research, several studies using a sequential priming paradigm have demonstrated that prior exposure to primes can

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influence creativity (Cai, Mednick, Harrison, Kanady, & Mednick, 2009; Dijksterhuis & van Knippenberg, 1998; Förster, Friedman, Butterbach, & Sassenberg, 2005; Lichtenfeld et al., 2012; Sassenberg & Moskowitz, 2005). Research using this sequential priming paradigm, has, for example, demonstrated that priming the cognitive concept of a unique, deviant person (e.g. a “punk”) increased creativity in comparison to priming the concept of an analytical person (e.g. an engineer; Förster et al., 2005). Bargh (2014) describes priming as part of the process by which sensation is turned into perception. Within this process, external environmental stimulation comes in contact with internal mental representation while the external information is massively reduced, simplified, and imbued with categorical meaning (Bruner, 1957; Neisser, 1967). In this respect, an environmental event (i.e. the prime) stimulates sensory receptors that in turn lead to the activation of a mental representation. This representation may then remain activated subsequently and exert a passive effect on the individual during the time it is activated. In this regard, priming can be considered the natural method of how the human mind keeps in touch with the environment.

The mechanism of how (social) priming is assumed to exert behavioral effects on an individual is by preactivating cognitive concepts that are associated with behavioral tendencies and processing modes (Bargh, Chen, & Burrows, 1996; Dijksterhuis & van Knippenberg, 1998; Dijksterhuis, 2014; Förster et al., 2005). This theorizing is supported by a large body of evidence indicating shared representations between perception and behavioral responses (Knuf, Aschersleben, & Prinz, 2001; Prinz, 1997). For the purpose of the present research, this means that the activation of the trait “creative” activates a number of response tendencies associated with the trait (e.g. ‘thinking outside the box’, generating numerous behavioral options, switching conceptual categories of problem solutions, etc.). Hence, there is a solid theoretical and empirical basis for assuming that envisioning the abilities of Lionel Messi could indeed induce priming effects that possibly trigger a player’s creativity. We conducted three experiments to test whether priming athletes with certain soccer stars that are known for specific extraordinary skills in a certain domain (creativity) can lead to enhanced creativity in that same domain.

## 1. The present research

The media frequently reports on the influence that elite athletes can have on younger players (e.g. <https://www.psychologytoday.com/blog/coaching-and-parenting-young-athletes/201504/are-athletes-good-role-models>, retrieved on March, 17, 2017). While research confirms that athletes often do function as role models, especially for boys (Biskup & Pfister, 1999), the only studies indicating effects of athletes as role models have been conducted on consumer behavior (Bush, Martin, & Bush, 2004; Martin & Bush, 2000). We are not aware of any research that has investigated how athlete role models might affect behavior or decision making while performing sports. To address this shortcoming in the literature the present research investigated if social priming can be considered one mechanism of how role models in soccer might affect other amateur soccer players. The sequential priming paradigm by Dijksterhuis and van Knippenberg (1998) can be considered a promising starting point in this endeavor as it has been highly influential in psychological theorizing (Bargh, 2014) and is the most widely used paradigm in priming research (Bargh & Chartrand, 2000).

Recent research has provided evidence for the necessity of taking moderating variables into account when conducting priming research (see Cesario, 2014; Dijksterhuis, 2014; Klatzky & Creswell, 2014). These moderating variables include both individual difference variables (e.g. cultural or experiential background) and experimental variables (e.g. task characteristics). Social priming effects have been shown to be substantially moderated by the extent to which the participant group attributes certain characteristics to the social primes (Cesario, Plaks, Hagiwara, Navarrete, & Higgins, 2010; see also; Dijksterhuis, Aarts,

Bargh, & van Knippenberg, 2000). From this follows that participants would not be influenced in their creative behavior if they did not perceive the player they are being primed with as creative. Further, research shows that primes will only affect behavior in particular contexts (Cesario et al., 2010) and it has been demonstrated that social priming will only affect participants if the concept that is being primed ‘fits’ the experimental context. For example, priming aggressive behavior is not likely to result in overt aggressive behavior in a friendly, peaceful context (Cesario et al., 2010), but priming soccer-specific creativity in the context of a soccer decision making task might result in more creative decision making. Moreover, social primes have been shown to be more influential when the person being primed (e.g. a soccer player) and the social prime (e.g. a celebrity soccer player acting as a role model) are similar or belong to the same group (Loersch, Aarts, Payne, & Jefferis, 2008).

Taking these moderating variables into account, three separate experiments using different social primes in Experiment 1 and 2 (Lionel Messi vs. Per Mertesacker and Thiago Alcántara vs. John Terry, respectively) and a different priming procedure in the Experiment 3 were conducted. In all three experiments the social prime, the task, and the participants were all from the domain of soccer. Further, the primes were pretested to differ in terms of attributed creativity. More specifically, the experiments tested if priming soccer players with creative role models would lead to different levels of domain-specific creative thinking (i.e. thinking outside the box [flexibility], creating more [fluency] and unusual solutions [originality]; Memmert et al., 2013).

## 2. Experiment 1 and 2

### 2.1. Method

**Participants.** Sixty male soccer players with an average of 18 years ( $SD = 3.7$ ) of amateur soccer experience as a player took part in Experiment 1 ( $M_{\text{age}} = 24.8$ ,  $SD = 2.7$ ). On average the sample reported watching 5.2 h of soccer per week ( $SD = 3.6$ ). Sixty different male soccer players with an average of 16.66 years ( $SD = 4.0$ ) of amateur soccer experience as a player took part in the Experiment 2 ( $M_{\text{age}} = 23.0$ ,  $SD = 2.6$ ). On average the sample reported watching 4.35 h of soccer per week ( $SD = 1.9$ ). Written informed consent was obtained from every participant before commencing the experiment. Sample size was calculated prior to the study to have sufficient power (Schweizer & Furley, 2016) to detect medium-to-large effects ( $d = 0.8$ , based on Experiment 2 of Förster et al., 2005) on an established creativity measure (Memmert et al., 2013) in a one-tailed independent *t*-test (Faul, Erdfelder, Lang, & Buchner, 2007).

**Experimental manipulation (between-participants).** A preliminary study was conducted to verify which soccer players differed in terms of creativity ( $N = 46$  college students with a sports science major). First, two experienced soccer coaches (having acquired a high UEFA coaching license) selected a list of ten players, then the 46 college students with a sport science major rated these players on a four items list: ‘How creative is this player?’, ‘How deviant from the norm do you consider this player?’, ‘How unique is this player?’, and ‘How risk-taking are the decisions of this player?’ All items were anchored at 1 (Not at all) and 9 (Very much). These items were derived from the procedure of Experiment 2 in Förster et al. (2005). For Experiment 1 we selected the player with the highest rating on the mean of all four items ( $\alpha = 0.76$ ) Lionel Messi ( $M_{\text{creative}} = 7.63$ ,  $SD = 1.9$ ;  $M_{\text{deviant}} = 7.85$ ,  $SD = 1.9$ ;  $M_{\text{unique}} = 8.37$ ,  $SD = 1.0$ ;  $M_{\text{risk-taking}} = 7.22$ ,  $SD = 1.9$ ) and the lowest mean ratings Per Mertesacker ( $M_{\text{creative}} = 2.52$ ,  $SD = 1.4$ ;  $M_{\text{deviant}} = 2.96$ ,  $SD = 1.8$ ;  $M_{\text{unique}} = 3.04$ ,  $SD = 1.0$ ;  $M_{\text{risk-taking}} = 2.61$ ,  $SD = 1.7$ ). For Experiment 2 we selected the two players with the second highest mean ratings of our preliminary investigation: Thiago Alcántara ( $M_{\text{creative}} = 7.33$ ,  $SD = 1.4$ ;  $M_{\text{deviant}} = 6.90$ ,  $SD = 1.5$ ;  $M_{\text{unique}} = 6.90$ ,  $SD = 1.6$ ;  $M_{\text{risk-taking}} = 6.96$ ,  $SD = 1.5$ ) and the second lowest mean ratings John Terry ( $M_{\text{creative}} = 3.24$ ,  $SD = 1.9$ ;

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