

Decide like Lionel Messi! The impact of regulatory focus on divergent thinking in sports

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Abstract

According to Higgins, the regulatory focus theory states that in terms of motivational information processing, it makes a difference whether people have a promotion or prevention focus. A focus on aspirations is labeled as promotion focus, whereas a focus on responsibility is called prevention focus. In our study, the theory will be applied to the area of sport decision making. We showed that soccer players make different decisions in a sport-specific divergent-thinking task depending on their regulatory focus (promotion vs. prevention). Promotion-framed athletes were able to produce more original, flexible, and adequate solutions than prevention-framed athletes. Theoretical and practical implications for sport psychology are discussed.

Creative solutions are central facets of life like business, professional life, or even sports. Managers must find new ways to solve problems for industrial productions, designers must develop creative solutions in industrial or web design to secure crucial competitive advantages; and soccer players must make decisions in specific sport situations that are unexpected and are therefore less predictable for their opponents. Most of these original solutions are context specific, embodied in emotions, and have a motivational background. So how can people find more creative solutions?

Higgins (1997) proposed two modes of self-regulation in order to regulate pleasure and suffering, i.e., to direct behavior toward promotion or prevention targets. More specifically, a focus on accomplishments and aspirations is labeled as promotion focus, whereas a focus on safety and responsibility is called prevention focus. There is no a priori advantage of either motivational orientation in terms of performance (Seibt & Förster, 2004). According to this approach, the performance in a given task may depend on the nature of the task. Based on the risky, explorative processing style elicited by promotion cues, relative to the risk-averse, perseverant processing style elicited by prevention cues, Friedman and Förster (2001) assumed that cues with promotion foci would facilitate creative thoughts. Indeed, they could show that promotion cues bolster both creative insights and creative generation relative to prevention cues.

So far, the influence of situational regulatory foci on creativity could be supported by traditional creativity tasks, but to

our best knowledge there is no study examining the influence on creativity in more applied sport settings (e.g., production of creative solutions in soccer scenarios). Based on the regulatory focus theory by Higgins (1997), we propose that athletes framed with an aspirational attitude (promotion focus) will find more sport-specific creative solutions in a dynamic soccer task than athletes who regard finding a solution as a mere duty (prevention focus). This assumption rests upon numerous experiments of regulatory focus theory that compellingly document that a promotion focus stimulates the production of innovative ideas (Rietzschel, 2011), generates more alternatives and more unique dimensions to characterize different situations and objects (Crowe & Higgins, 1997), and further improves creative performances (cf. Friedman & Förster, 2000, 2001).

A frequently used procedural priming task to manipulate a participant's situational regulatory focus is the pencil-and-paper test by Friedman and Förster (2001). The participants' task is always to guide a mouse out of a maze. In the promotion condition, a piece of cheese is depicted as lying outside the maze (instruction: "Show the mouse the way to the cheese!"). In the prevention condition, instead of the cheese, an owl is depicted hovering above the maze (instruction: "How can the mouse escape from the owl?"). Typically, participants in the promotion condition outperformed the participants in the prevention condition in subsequent tasks, like creative insights and generation tasks (Friedman & Förster, 2001), attentional flexibility tasks (Friedman & Förster,

2005), selective attention tasks (Memmert & Cañal-Bruland, 2009), or tasks requiring a broad attentional focus (Förster, Friedman, Özel, & Denzler, 2006). Förster and Friedman argue that in a promotion focus, there is an approach motivation combined with a generally more risk-taking processing in which one enthusiastically tries to achieve the goals being open to change and novelty.

All in all, the results of these studies suggest that it is worthwhile to examine in more detail creativity in sport in line with promotion vs. prevention manipulation based on the regulatory focus theory by Higgins (1997). According to general and more scientific context (Runco, 2007; Sternberg & Lubart, 1999), creativity is defined as “the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful).” More specifically, divergent thinking is one of the most studied and most commonly recognized components of the multifaceted phenomenon of the creativity complex (for overviews, Runco, 2007; Sternberg, 1999). The term divergent thinking is specified by the observation criteria of originality, flexibility, and fluency. Originality means the unusualness and statistical rareness of solutions, flexibility the variability of ideas, and fluency the precise number of all given (appropriate) answers to a problem (task).

Nowadays, the role and definition of divergent thinking is a topic of current discussion in sport psychology (for an overview, Memmert, 2011). At the behavioral level, divergent thinking in sport is defined as the amount (fluency) of variable (flexibility) and rare (originality) solutions to a related sport situation (Memmert & Perl, 2009; Memmert & Roth, 2007). For instance, it is possible that Player A reveals a lot of original solutions with regard to a game situation that are all based on pass feints; another player, Player B, may give only one solution to react, but with different feint tricks, such as body or shot feints. Player A recognized a high number of adequate opportunities for actions (high fluency value), but these are all classified to one and the same category (low flexibility value). In contrast, Player B recognized only one opportunity for action (low fluency value), but included a diversity of several execution possibilities (high flexibility value).

This study will be the first to examine whether inducing a promotion or prevention mode has a different impact on divergent-thinking performance in team sports. Based on previous findings (see Friedman & Förster, 2000, 2001), we assume that in sport-specific divergent-thinking situations, athletes with a promotion focus in comparison with those with a prevention focus will show more original, flexible, and adequate solutions. In our study, soccer players complete either the cheese or owl maze (Friedman & Förster, 2001), and subsequently perform a soccer-specific divergent-thinking test. We hypothesize that the promotion cues (cheese maze) will produce more creative responses

than the prevention cues (owl maze). A reason for this might be that people with a promotion focus tend to be more approach motivated and are more willing to take risks as they are more open to change and novelty (see Förster, Higgins, & Taylor Bianco, 2003). Based on the psychological findings it seems feasible that athletes will benefit from promotion focus in situations that afford divergent thinking.

Method

Participants

Thirty male soccer players with an average age of $M = 25.27$ years (standard deviation [SD] = 3.72) voluntarily took part in this study. The distribution of training experiences varied between 5 and 31 years ($M = 17.93$, $SD = 4.87$), and the distribution of training time per week varied between 3.0 and 4.5 hours ($M = 3.10$, $SD = 0.38$). The participants received no money for participating and informed consent was obtained from each participant before commencing the experiment. The study was carried out in accordance with the Helsinki Declaration of 1975.

Promotion and prevention focus

The design included either a promotion condition or a prevention condition before the soccer players performed the sport-specific divergent-thinking task. To induce both orientations, we used a procedural priming task by giving the participants the pencil-and-paper maze by Friedman and Förster (2001), which has been used successfully as a manipulation for a promotion or a prevention focus (Förster et al., 2006; Friedman & Förster, 2005). Half the participants were randomly assigned to the promotion (cheese) condition, the other half to the prevention (owl) condition.

Divergent thinking task

The used divergent thinking test consisted of 20 different video clips displaying offensive soccer scenes that allowed for a number of possible solutions, when stopped at a specific point in time. Two independent soccer experts with longtime coach experiences and high-level trainer certifications selected the scenes, in which one team was currently attacking, from a videotape of 46 soccer games from premier and second league matches of the 2010/2011 season. The experts were searching for those scenes that offered the most solutions to play the ball. Each scene was approximately 10 seconds long, after which it was stopped and the last frame was shown for an additional 45 seconds. The video scenes were represented on a personal computer monitor (screen size: 15 in., diagonal; distance = 45 cm, visual angle of the display: 27° vertical \times 34° horizontal).

Procedure

Following the procedure of Friedman and Förster (2001), participants were requested to state their mood ("How do you feel right now?"), were asked about their current feeling defined by the use of 12 different adjectives (e.g., "How 'content' do you feel right now?"), should rate their performance expectancies regarding the next achievement task ("How well will you perform on the next task?"), as well as their prospective linking for the next task ("How much do you think you will like the next task?"). All questions were answered on a 9-point Likert scale from low to high.

After completing these measures, participants were asked to complete the Friedman and Förster (2001) maze depending on their assigned condition without time constraints. Subsequently, the divergent thinking task was administered and participants completed the first experimental block composed of four game scenes. They were instructed to imagine they were the player with the ball when the scenes were stopped as well as to generate and write down, as many possible solutions or decisions for each soccer scene as they could think of, including to whom they would pass the ball or if they would shoot at the goal, and also to define how they would pass the ball to the player or shoot the ball at the goal. Participants had 1 minute to write down their solutions (cf., Friedman & Förster, 2001). Altogether, there were five experimental blocks consisting of four scenes. Before each individual block, participants had to complete a respective Friedman and Förster (2001) maze depending on the experimental condition (promotion or prevention).

Following the procedure of Friedman and Förster (2001), participants filled out a final questionnaire assessing their retrospective liking of the creativity task ("How much did you like the task?") after completion of the divergent thinking task. Furthermore, they were asked about their motivation to perform the task ("How motivated were you to do the task?") and about the perceived difficulty of the task ("How difficult was the task?"). All questions were answered again on a 9-point Likert scale from low to high.

Data analysis

The participants' performance in the divergent-thinking task was judged using the three criteria of *originality*, *flexibility*, and *fluency* (see Guilford, 1967; Runco, 2007). Two independent raters (soccer experts with longtime coach occupations and high-level trainer certifications) judged the *originality* of the solutions for each scene; they were blind to both conditions. The inter-judge reliability coefficient was above the critical limit of 0.80 (intraclass correlation coefficient). The assessments of the judges varied between 1 (*not original at all*) and 5 (*very original*) for each offered response by a participant. These ratings were used to compute a mean originality

score for each participant (summed ratings for each response offered, divided by the total number of responses). The evaluations of all completed trials were then averaged for each participant. *Flexibility* was measured via diversity of response. All solutions suggested by the participants were sorted into seven different categories (shot on goal, feint followed by a pass, dribble, short pass, lob, cross, and other matters). One point was given for each category selected by a subject. *Fluency* was defined as the number of adequate solutions produced by a participant. Each of the three components (originality, flexibility, fluency) of the divergent thinking test were analyzed in isolation, and were averaged after a z-transformation of all three values to one creative performance value. This is a standard procedure in creativity research (Memmert & Perl, 2009; Memmert & Roth, 2007). All creative performance data were subjected to analyses of variance.

Results

Several *t* tests revealed no reliable effects of cue (promotion vs. prevention) on any of the measures before and after completion of divergent thinking task like mood scores, task liking judgments, performance expectancies, task difficulty and motivation ratings; for all measures $t < 1$.

As predicted, soccer players in a promotion mode showed more creative solutions than participants in a prevention mode. We found a significant motivational condition effect ($M_{\text{Promotion}} = .57$, $SD = .56$; $M_{\text{Prevention}} = -.57$, $SD = .59$; $F(1, 28) = 29.325$, $p < .001$, $\eta^2 = .512$). This effect is based on all three components of divergent thinking, namely originality ($M_{\text{Promotion}} = 3.15$, $SD = .06$; $M_{\text{Prevention}} = 3.07$, $SD = .08$; $F(1, 28) = 11.590$, $p < .005$, $\eta^2 = .293$), flexibility ($M_{\text{Promotion}} = 2.37$, $SD = .22$; $M_{\text{Prevention}} = 2.09$, $SD = .20$; $F(1, 28) = 14.200$, $p < .005$, $\eta^2 = .336$), and fluency ($M_{\text{Promotion}} = 3.09$, $SD = .35$; $M_{\text{Prevention}} = 2.58$, $SD = .32$; $F(1, 28) = 17.497$, $p < .001$, $\eta^2 = .385$).

Discussion

Different kinds of motivationally-oriented theoretical models from social psychology (e.g., regulatory focus theory, Higgins, 1997) indicate that creativity can directly be influenced by the simplest of manipulations, for instance manipulating emotional states of the participants. Our findings replicate these findings in a more representative sport decision-making setting, and thus highlight the fact that the regulatory focus theory plays a considerable role in divergent thinking in sports. Athletes in a promotion mode produce not only more adequate solutions, but also more original and flexible solutions in sport specific divergent thinking tasks than athletes in a prevention mode. In accordance with Förster et al. (2003), it seems that the ways of processing of the promotion athletes are more open toward novelty and

risk-taking. These first results need to be confirmed and elaborated on.

Without doubt, there are further theoretical research questions that require clarification. First, future studies should also take into account whether the participants are generally rather in a promotion or prevention focus. Regulatory focus can differ both across situations (situational regulatory focus) and across individuals (chronic regulatory focus). Is there a difference in divergent task performance for those with a chronic promotion focus as opposed to those with a chronic prevention focus? Questionnaires have been developed to measure a person's regulatory focus (e.g., Higgins et al., 2001).

Second, it might also be worthwhile to examine the relationship between persons' foci and the environments in which they act. Regulatory fit theory (Higgins, 2000) suggests that participants perform best when the direction of the motivational manipulation matches their motivational personality (promotion vs. prevention). This idea of better performances and a more positive effect—because of a regulatory fit—have received some empirical support in the domain of cognitive tasks (e.g., Keller & Bless, 2006; Memmert, Unkelbach, & Ganns, 2010), but not for divergent thinking tasks yet. For example, in the study by Memmert et al. (2010), the participants were influenced with regard to their motivational orientation before solving the inattention blindness task by Simons and Chabris (1999). As in our experiment, the regulatory focus condition was produced by giving the participants the pencil-and-paper maze by Friedman and Förster (2001); the dispositional focus of each player was measured using the regulatory focus questionnaire by Lockwood, Jordan, and Kunda (2002). The latter found out that participants in the fit condition outperformed the participants in the non-fit condition in noticing the unexpected object.

Last but not least, latest research in applied psychology has also replicated this motivational fit effect in more natural

environments and with more goal-directed instructions (Plessner, Unkelbach, Memmert, Baltes, & Kolb, 2009; Unkelbach, Plessner, & Memmert, 2009). Plessner et al. (2009) proved that sports performances (score of a penalty shooting task) can also benefit from a regulatory fit. In the experimental study, soccer players had to shoot five penalties in a standardized condition. For half of them, the task was described in terms of promotion ("Your aspiration is to score at least three times."), for the other half in terms of prevention ("Your obligation is not to miss more than two times."). The results showed, among other things, a significant interaction between instruction (promotion vs. prevention) and the chronic focus of the players (promotion vs. prevention). Hence, the regulatory fit had a positive effect on the players' scoring rates.

Thus, further research in applied social psychology should take a closer look on specific and more realistic promotion and prevention instruction manipulations in order to produce more creative solutions. This is important because so far, most conducted studies were based on internally valid instructions which are not as application oriented as externally valid instructions, which would be more realistic, e.g., for the real world of sports. Consequently, more and newer ways of instructions manipulating players toward promotion or prevention focus have to be found and validated for a successful interaction with the athletes during training and competitions, especially, ways which the athletes are willing to accept. Resolution of these issues could provide a more comprehensive model of decision making in sports.

To conclude, the present study points out the great potential of the regulatory focus theory with regard to both, understanding and enhancing the processing of sport specific divergent thinking. We were able to show that the generation of creative solutions can be optimized through changing the athletes' motivational states.

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