Regulatory fit and performance in elite bowlers
Sammanfattning


Nyckelord: Framing, Idrottsprestation, Kroniskt fokus, Prevention, Promotion

**Abstract**

Research within regulatory fit framework has shown that athletes perform better when in a state of regulatory fit. This state occurs when there is a match between a player’s chronic regulatory focus and the framing of the given task. In a counterbalanced within-groups experimental design, bowling players ($N = 34$) performed various rounds of the same ecologically-valid pin-setting configuration under two different experimental conditions: in a promotion manner (aspiration to make the spare) and in a prevention manner (obligation not to miss the spare). Results showed no significant relationship between regulatory fit and bowling performance. Findings are discussed in terms of task difficulty and experimental manipulation in relation to regulatory fit theory.

**Keywords**: Chronic focus, Framing, Prevention, Promotion, Sport achievement
Regulatory fit and performance in elite bowlers

A central task for coaches is to get athletes perform at their best in competition. Usually, this will involve, amongst other, coaches designing different competitive training situations and confront athletes to these different scenarios to get them to reach optimal performances. However, there are different approaches one can take to frame (describe) given tasks and situations. As an example, between “Get this shot in” and “Don’t miss this shot”, though both mean similar things in the end, the way they are presented differ, consequently leading people to focus on different things when performing: in this case the aspiration of making it versus the responsibility of not missing it. It is worth noting that one is not necessarily better than the other, as this would depend on the interaction between the situation and its’ framing, and the individual’s chronic regulatory focus (see below for details).

According to Higgins’ (1997) regulatory focus theory, there are two different ways in which people may function to reach a given goal (develop strategies to motivate themselves in a given situation), depending on which chronic regulatory profile they possess, and the given situational framing: When in promotion, individuals focus on gains and aspirations in an eager and enthusiastic manner, whereas when in prevention, individuals focus on obligations and safety in a careful and vigilant manner (Higgins, 1997). Previous studies have shown that, when the task is described (framed) in accordance with a person’s chronic focus profile (either promotion or prevention), performance produced is expected to be better – that is, when there is fit between the situation and one’s regulatory focus (e.g., Kutzner, Förderer, & Plessner, 2013). In bowling, players are faced with a range of different situations during a match, facilitating manipulation of variables and making it an ecologically valid environment to test regulatory fit hypothesis. To the best of our knowledge, there is no study to date that has examined regulatory fit in bowling – that is of interest at a theoretical level, given the particular situations possible to manipulate in bowling as opposite to other, previously studied sport situations such as putting in golf or penalty taking in football (see below for further discussion). In the present study, regulatory fit hypothesis was tested in Swedish elite bowling players in an ecologically valid bowling environment.

Regulatory focus theory

Human motivation has often been seen as guided by either approaching pleasure or avoiding pain (e.g., Higgins, 1997). Higgins (1997) emphasised that, whilst such hedonic way of looking at motivation is not incorrect, one needs to understand what principles underlie this process to understand approach-avoidance motivation better. According to regulatory focus framework, different types of end-states can be dealt with in two different ways, depending on whether self-regulation is carried out within a promotion focus or a prevention focus. It is assumed that the hedonic principle of approaching pleasure and avoiding pain should operate differently depending on the fundamental needs being served, such as security (e.g., protection) and nurturance (e.g., nourishment). In order to obtain these fundamental needs, children have to establish and maintain relationships with their caretakers by learning how their behaviour and appearance effects caretakers’ responses to the child. In other words: children must learn how to approach pleasure and avoid pain through their behaviour. Regulatory focus theory suggests that nurturance-related regulation involves a promotion focus, whilst security-related regulation involves a prevention focus, and that the regulation of the two needs, therefore, differ in regulatory focus (see Higgins, 1997, 2012).

According to Higgins (1997; 2012), when the child-caretaker interaction takes a promotion approach, pain (e.g., when the caretaker takes away a toy) and pleasure (e.g., when the caretaker hug and kiss the child) are experienced as the presence/absence of positive outcomes. In this case, the regulatory focus is concerned with growth, advancement, and accomplishment. When the interaction takes a prevention approach, pain (e.g., when the caretaker yells at the child) and
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pleasure (e.g., when the caretaker trains the child in being alert to potential dangers) are experienced as the absence/presence of negative outcomes, and in this case the regulatory focus is concerned with safety, protection and responsibility. The point here is that socialization differences show how regulatory focus can separate different kinds of self-regulation in relation to desired end-states. However, the concept of regulatory focus does not concern the socialization of prevention-focus oughts and promotion-focus ideals only, but also momentary situations like when a boss gives feedback to an employee, which could be based on either gain-no-gain information (outcomes related to promotion) or non-loss-loss information (outcomes related to prevention; see Higgins, 1997, 2012). However, within the general approach for desired end-states, regulatory focus can develop either avoidance or approach inclinations (Higgins, Roney, Crowe, & Hymes, 1994). A prevention focus is more sensitive to negative outcomes, which is why a person with prevention self-regulation would be more inclined to avoid mismatches to desired end-states. In contrast, a promotion focus is more sensitive to positive outcomes, and therefore a person with promotion self-regulation would be more inclined to approach matches to desired end-states.

Regulatory focus theory proposes that there are two different goal-seeking orientations with different motivational consequences (Higgins, 1997; 1998; 2000). One (promotion) focuses on end states such as hope, aspiration or wish. The other (prevention) focuses on end states such as responsibility, obligation or duty (Higgins, 1997). An example described in Kay and Grimm (2017), is that a promotion-focused individual would eagerly approach an exercise session with a focus on the benefits of it, such as optimized heart and lung functions, whereas a prevention-focused individual would be motivated by the risks of missing the session and the negative outcomes associated with that, such as higher risk of getting a heart disease. In general, people have one focus, known as “chronic focus”. However, depending on situational cues and experimental manipulation(s), the focus can be induced (Shah, Higgins, & Friedman, 1998). There is no focus that is better than the other when it comes to, for example, performance (Higgins, 2000), but the two differ in how they influence performance – e.g., depending on the given situation. According to regulatory fit framework, a prevention-focused individual will do better in situations that benefit from safety and responsibility, while a promotion-focused individual will do better in a situation that benefits from accomplishment and aspiration (Higgins, 2000, 2012).

Regulatory fit theory
Regulatory fit theory – a complement to regulatory focus theory – proposes that, when a person feels fit with the reward structure in a given situation, a benefit state is created, and the individual feels comfortable (Higgins, 2000, 2012). When a person feels fit, the situation feels right and he or she feels strongly motivated to engage in the situation (Higgins, 2005). Such state of fit, or regulatory-match (as opposite to mismatch), is to occur when either a promotion focused individual is paired with a gain-framed task, or a prevention focused individual is paired with a loss-framed task (Higgins, 2005). As an example, Kay and Grimm (2017) described how manipulation through highlighting different keys in a situation, such as the achieving point-gains (promotion) or avoiding point-losses (prevention), can create matches and mismatches for the different chronic focuses. Avraham, Van Dijk and Simon-Tuval (2016) described that gain-framed health messages, that emphasised the benefits of participating in healthy activities, increased motivation in promotion-focused individuals. On the contrary, loss-framed health messages, emphasizing the risks of not participating in healthy activities, increased motivation in prevention-focused individuals (Avraham et al., 2016).

Generally, regulatory fit can be seen as a function of three determinants (Plessner, Unkelbach, Memmert, Baltes, & Kolb, 2009). First, people have a chronic regulatory focus (either prevention or promotion). Secondly, a situation or a task is either prevention or promotion in
itself (Plessner et al., 2009). As an example, in basketball, where the goal would be to score as many points as possible, would fit under promotion. On the other hand, snooker, where the main goal is to prevent the opponent from having good “opportunities” to hit the “right” ball, would fit as a prevention-task (Unkelbach, Plessner, & Memmert, 2009). Third, an identical situation or task can be framed in either a promotion or a prevention way (Plessner et al., 2009). Framing is the way a situation or a task is described (Dijkstra, Rothman, & Pietersma, 2011). In previous studies the situations have been framed differently to subsequently examine whether the performance differed – depending on the framing (e.g., Dijkstra et al., 2011; Kutzner et al., 2013; Plessner et al., 2009). For the framing to fit a promotion focused individual, the researcher should present a gain-focused framing, highlighting the possible positive outcomes in that given situation. An example would be “your goal should be to hit three or more (out of ten)” (Unkelbach et al., 2009). In contrast, a loss-focused framing would highlight avoidance of possible negative outcomes in the given situation, as in “make sure not to miss more than seven (out of ten)”, fitting the prevention-focused individual better (Unkelbach et al., 2009).

Giving the right verbal instructions, that match (fit) with the chronic focus, has proven to enhance performance in cognitive tasks, such as mathematical equations (Keller & Bless, 2006), and in sport related tasks, such as putting in golf and penalty shooting in soccer (e.g., Kutzner et al., 2013; Plessner et al., 2009). Given this, the present study was designed to examine whether such relationship could be replicated in a given playing configuration in bowling.

**Regulatory fit and performance in sport**

Previous research has shown a relationship between regulatory fit and increased sport performance (e.g., Kacperski & Kutzner, 2018; Kutzner et al., 2013; Plessner et al., 2009). However, it is important to emphasize that none of the “focuses” (prevention and promotion) are better than the other when it comes to performance; it is the fit that has the potential effect of improving performance (Kutzner et al., 2013). Still, a task can be either promotion or prevention oriented, and both focuses can be better (or worse) fitted to it (Kutzner et al., 2013). For example, tasks that are of more creative in nature are suggested to fit promotion better (e.g., Friedman & Förster, 2001), whereas tasks that are more analytic in nature are suggested to fit prevention better (e.g., Seibt & Förster, 2004). Tasks can also be of a non-profit regarding focus, such as solving math problems (Keller & Bless, 2006). Tasks can be manipulated by verbally framing them in a prevention or a promotion way, and by doing so, increasing performance when the person experiences fit (e.g., Kutzner et al., 2013). That is: Whether a task itself is of either focus, or a verbal framing is used to fit either focus, the performance in the given task is depending on the fit between the person’s focus and the situation framing (Kutzner et al., 2013).

Studies on the subject have developed similar methods, though in different environments (e.g., Kacperski & Kutzner, 2018; Kutzner et al., 2013; Plessner et al., 2009). Plessner et al. (2009) tested soccer players by having them taking penalties with differently-framed verbal instructions. The authors argued that penalty shooting, from the player’s perspective, was to be naturally considered as a prevention task; that is, most penalties taken are scored (70-80% of scoring success has been reported [Plessner et al., 2009]). In the experiment, the players were asked to shoot five penalties, with either a promotion framing (“your aspiration is to score at least three out of five”) or a prevention framing (“it’s your obligation not to miss more than two out of five”) (Plessner et al., 2009). In this case, the same task was presented, only framed differently. Before taking the penalties, the participants filled out a questionnaire to identify their chronic regulatory focus, which was then used to classify the participants when comparing their performances between the two experimental conditions. Kutzner et al. (2013) used a similar design as Plessner et al. (2009), but the study was conducted with elite golf players, who were randomly assigned to either a promotion or a prevention condition. The task was to hole puts from different locations on a putting green, all two meters from the hole. Depending on which
group the participants were assigned to, framing varied. The promotion group received as framing “your aspiration is to hole at least 3 putts”, while the prevention group received as framing “it’s your obligation not to miss more than two putts” (Kutzner et al., 2013). After the putting session was completed, all participants filled out a questionnaire to assess their chronic regulatory focus.

Kacperski and Kutzner (2018) used similar framings as the two abovementioned, though their study varied somewhat. They used table tennis players as participants; but instead of having all participants on the same place at the same time and dividing them randomly into different “framing groups”, they had the players playing six matches. Two of the matches had “baseline instructions” (no instructions), two were played under a promotion framing and two were played under a prevention framing. The framings were presented as either “please try hard to win each point” (promotion) or “please try hard not to lose each point” (prevention) (Kacperski & Kutzner, 2018). The main goal was to examine whether players adhered to a specific tactic (offensive or defensive), and if so, whether performance was different. As per previous studies, regulatory chronic focus was gathered through questionnaires.

All of these studies came to the same conclusion: when a player experiences fit between their chronic regulatory focus and the framing of the given task, performance is better than when in a non-fit state. Kacperski and Kutzner (2018) found that when players performed in fit, they adhered to their chosen tactic, and by doing so also enhanced their performance by being more likely to win points. Though the studies differ somewhat in which focus gains more in the fit state compared to the mismatch state, they all have significant results when it comes to the fit-performance interaction. Studies by Plessner et al. (2009) and Kacperski and Kutzner (2018) showed that the prevention focused players benefited most from the fit state, whereas Kutzner et al. (2013) concluded that the promotion focused players benefitted the most.

The present study
Previous research on regulatory fit and performance has shown that, when in fit, athletes perform better (e.g., Kacperski & Kutzner, 2018; Kutzner et al., 2013; Plessner et al., 2009). However, these studies show that it can be difficult to create a “natural” environment under the strings of an experimental design. Memmert, Hütterman and Orlicek (2013) suggested that future research on the subject should be carried out in natural environments, where athletes are as near a “real” sport specific situation as possible. In bowling, players are faced with a range of different situations during a match, facilitating manipulation of variables and making it ecologically valid for testing regulatory fit hypothesis. The present study examined bowlers in their natural environment (home alley, were the players have their home games), with a standard pin-setting to ensure that the given playing configuration is common and well known by players. By letting players participate in the experiment at the same time, a natural competitive environment was created, wherein every shot “meant” something to each player. Lastly, in our study we used framings inspired by previous research (e.g., Kacperski & Kutzner, 2018; Kutzner et al., 2013).

The purpose of the present study was to examine, based on previous work on regulatory fit in sports (e.g., Kacperski & Kutzner, 2018; Kutzner et al., 2013; Plessner et al., 2009; Unkelbach et al., 2009), whether regulatory fit increases actual performance in male elite bowlers. By verbally framing the environment in either a prevention or a promotion way, it was hypothesised that, when a player with a chronic promotion focus is placed in a promotion framing, performance would be better than when under a prevention framing. On the opposite, when the chronic prevention focused player is placed in a prevention framing, performance would be better than when under a promotion framing. Note that while previous research (e.g., Kutzner et al., 2013; Plessner et al., 2009) had mostly used independent groups design, the present study was carried out in a counterbalanced, within-groups design. Lastly, since it is recognised that, when one feels
fit in a situation, he or she feels highly motivated to commit to the task, and therefore, might feel less pressured and perceive the situation as less difficult (Higgins, 2005), in the present study, measures of perceived pressure and perceived difficulty were gathered too.

**Method**

**Participants**
The study was conducted in multiple bowling clubs in Sweden, with thirty-four male players participating, whose age ranged between sixteen and fifty-three years ($M = 30, SD = 11$). Participants were players from the top two Swedish national divisions, ensuring high technical basis and competitive experience. Players’ current average bowling score ($M = 206, SD = 11$) and average training hours per week ($M = 4, SD = 3$) was gathered as well. Informed consent was collected from all participants before the experimental testing began.

**Material**
The regulatory focus questionnaire (RFQ; Semin, Higgins, de Montes, & Estourget, 2005) was used to determine players’ chronic regulatory focus; proving good reliability for both subscales with $\alpha = 0.75$ for promotion and $\alpha = 0.77$ for prevention. The RFQ is a 12-item scale, including six items assessing the prevention dimension and six items assessing the promotion dimension, with the response scale ranging from 1 to 5 (e.g., 1 = “never to seldom” and 5 = “very often”). Six of the twelve items were recoded. An example of a promotion item is “Are you someone who looks forward to situations in which you expect to have success?”, whilst for prevention an example is “Growing up, would you ever “cross the line” by doing things that your parents would not tolerate?” (see Appendix for full questionnaire). A demographic section was included as well, gathering information regarding participants’ age, current bowling level, playing hand, training hours per week, and current bowling average score. The survey ended with a question asking participants about their understanding of the items formulated in English, since their mother tongue was not English, ranging from 1 (very poorly) to 10 (very well). All participants level of understanding of the English items was very high ($M = 8, SD = 1$). As to the experiment, all the selected bowling alleys had the mechanical option of putting down the desired pin-setting. During the experiment, paper and pencil was used to keep participants’ performance scores and to document ratings of the manipulation checks, which concerned perceived difficulty and perceived pressure. These were administered before each shot through a sheet containing two separate scales. On these scales, participants were to rank perceived difficulty of the pin-setting and perceived pressure at the given time, facing the next shot, on a 1-10 scale.

**Design and Procedure**
The study was carried out in four different bowling centers with four different teams, as part of their regular training session. Participants were recruited by convenience sampling, as they were contacted by personal message. Procedures were carried out through a standardised design. After the participants were gathered together at a given location, the researchers introduced themselves and briefly informed players about the experiment. Information letters were handed out, containing more information about the experiment, participants’ rights, and their personal Identification Number (IN). If players agreed to participate in the study, they marked a box at the end of the information letter, giving their informed consent. Before the actual testing began, participants were handed a note with an IN, which they were to attach to their training dress so they could easily be identified. After they had changed, they were randomly assigned into two groups: one would be starting in the prevention framing and one in the promotion framing. See Figure 1 for further descriptive of the procedure.
Participants were given 15 minutes of warm up time on full pin-setting before the actual task was presented to them. The task was the same for the two groups: picking up a common split, called the “three-ten” (3-10) for right handers and “two-seven” (2-7) for left handers (see Figure 2 for further descriptive of pin-settings). Each participant was to throw six shots (per framing) at the split, going for spare every shot. However, the task was presented differently across the two conditions. The verbal frame instructions were presented similar to Plessner et al.’s (2009) study (obviously adapted to the current study): In the prevention framing the task was presented as “Your obligation is not to miss more than two spares”, while in the promotion framing it was presented as “Your aspiration is to spare at least four spares”. The experimenters continually reminded the participants about the task, by giving short key phrases that were in line with the current framing (e.g., “aspire to make it”, “remember your’ responsibility not to miss”).

The experiment was based on a within group counterbalance design. Manipulation checks were administered before each shot, asking players about their perceived pressure and perceived difficulty of the pin-setting, with the purpose of finding potential differences between the framings, depending on chronic focus. Additionally, authors had to check for a possible relation between framing order (in what condition participants started) and performance. Since participants’ performances were measured through the results they put up, the number of spares each and every participant made, as well as their personal rating on the different manipulation check scales, were documented on a separate paper, given one point for a spare and zero points when the pin-setting was not covered (meaning the max point for each individual in one framing was six points).

Figure 2. Full pin-rack.
When the bowling task was completed, each participant was given a questionnaire including demographic information, the RFQ (Semin et al., 2005), and a question related to participants’ understanding of the English language. Relative chronic regulatory focus was measured as a continuous variable for every subject, ranging from a promotion to a prevention relative score. There was one participant who dropped out in the middle of the experiment, and he was therefore not included in the study. Once they had returned the questionnaire, participants were thanked for their participation in the study.

**Data Analysis**

To test the prediction that players performance should increase when they experience fit between their regulatory focus and the task (with a given framing) at hand, a cross-tabulation and a chi-square test were carried out. The same tests were performed to examine whether perceived difficulty and perceived pressure were influenced by framing. Descriptive of the data are shown in Tables 1, 2 and 5. An independent t-test was performed to examine whether the framing order had any effect on the performance. Another independent t-test was performed to see if there were any significant differences between group (chronic prevention and chronic promotion) regarding age, training hours per week, current level and current average score. Descriptive for the t-tests are presented in Table 3 and Table 4.

**Results**

**Manipulation checks**

Two additional chi-square tests were carried out to see how the participants perceived the difficulty of the pin-setting and the pressure in the two conditions. The results for perceived difficulty showed a significant result: $\chi^2(2, N = 30) = 7.50, p < .05$. The association was of a medium strength: $\phi = 0.50$. See Table 1 below for counts. In Figure 3, the average difficulty is presented, grouped by chronic focus.

**Table 1**

*Number of bowlers (%) who perceived the pin-setting more difficult on average in one or the other (or neither) condition*

<table>
<thead>
<tr>
<th>Chronic Focus</th>
<th>Neither</th>
<th>Promotion framing</th>
<th>Prevention framing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion</td>
<td>0 (0%)</td>
<td>10 (50%)</td>
<td>10 (50%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Prevention</td>
<td>3 (30%)</td>
<td>2 (20%)</td>
<td>5 (50%)</td>
<td>10 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>3 (10%)</td>
<td>12 (40%)</td>
<td>15 (50%)</td>
<td>30 (100%)</td>
</tr>
</tbody>
</table>
The results for perceived pressure showed a non-significant result: $\chi^2(2, N = 30) = 0.15, p > .05$. The association was of a low strength: $\varphi = 0.07$. The counts are presented in Table 2 below. In Figure 4, the average perceived pressure in the different framings is presented, grouped by chronic focus.

Table 2

<table>
<thead>
<tr>
<th>Chronic Focus</th>
<th>Neither</th>
<th>Promotion framing</th>
<th>Prevention framing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion</td>
<td>3 (15%)</td>
<td>7 (35%)</td>
<td>10 (50%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Prevention</td>
<td>2 (20%)</td>
<td>3 (30%)</td>
<td>5 (50%)</td>
<td>10 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>5 (16.7%)</td>
<td>10 (33.3%)</td>
<td>15 (50%)</td>
<td>30 (100%)</td>
</tr>
</tbody>
</table>

Figure 4. Average perceived pressure in the different framings, grouped by chronic focus.

Demographics

Participants who did not show either a promotion or a prevention chronic focus ($n = 4$) were excluded from the analysis. The distribution of the overall participants between promotion,
prevention, and neither were: promotion 59% \((n = 20)\), prevention 29% \((n = 10)\) and neither 12% \((n = 4)\). This was performed when all the data was collected in SPSS (Brace, Kemp, & Snelgar, 2013). The remaining participants \((n = 30)\) were those who could be identified as either promotion or prevention in their chronic regulatory focus.

An independent \(t\)-test showed no significant differences regarding age, training hours per week, current level, and current average. Promotion and prevention scores in Table 3 represents mean values of what alternative participants chose on average (see appendix for response alternatives) for age, training hours per week, current level, and current average score (see Table 3 for full details). Response alternatives to current level was Elitserien (highest division; “1”) and Allsvenskan (second highest division; “2”).

Table 3  
**Promotion and prevention groups compared in demographic variables**

<table>
<thead>
<tr>
<th></th>
<th>Prevention ((N = 10)) M (SD)</th>
<th>Promotion ((N = 20)) M (SD)</th>
<th>(t)</th>
<th>df</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>31 (12.7)</td>
<td>30 (10.9)</td>
<td>-0.24</td>
<td>28</td>
<td>0.82</td>
</tr>
<tr>
<td>Traning hours per week</td>
<td>4 (1.8)</td>
<td>4.5 (4.2)</td>
<td>0.36</td>
<td>28</td>
<td>0.72</td>
</tr>
<tr>
<td>Current level</td>
<td>1.3 (0.5)</td>
<td>1.7 (0.5)</td>
<td>1.85</td>
<td>28</td>
<td>0.07</td>
</tr>
<tr>
<td>Current average</td>
<td>206.9 (10.3)</td>
<td>205.8 (12.8)</td>
<td>-0.24</td>
<td>28</td>
<td>0.82</td>
</tr>
</tbody>
</table>

*Note:* Significance level was set at \(p < .05\). Standard deviations (SD) appear in parentheses below means (M).

**Performance**

To check whether framing order had an effect on players’ performances in the condition that fitted their chronic focus, another independent \(t\)-test was conducted. See Table 4 for details.

Table 4  
**Effect of framing order on performance**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Framing order</th>
<th>N</th>
<th>Mean (SD)</th>
<th>(t)</th>
<th>df</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion</td>
<td>1</td>
<td>9</td>
<td>2.78 (1.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11</td>
<td>2.64 (1.63)</td>
<td>0.21</td>
<td>18</td>
<td>0.84</td>
</tr>
<tr>
<td>Prevention</td>
<td>1</td>
<td>6</td>
<td>2.67 (0.82)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
<td>2.75 (1.5)</td>
<td>-0.1</td>
<td>4.2</td>
<td>0.92</td>
</tr>
</tbody>
</table>

*Note:* In the promotion condition, only players with chronic promotion focus are represented. In the prevention condition, only players with chronic prevention focus are represented. Framing order represents in what condition players started (1 = promotion, 2 = prevention). Values of actual performance are expressed in mean (M) and standard deviation (SD).

Chi-square tests were conducted to see whether the participants performed better when their chronic focus matched the framing in the given situation. The test showed a non-significant result: \(\chi^2(2 N = 30) = 3.29, p > .05\). The association was of a medium strength: \(\phi = 0.33\). In
Table 5 the counts are presented. In Figure 5, the average score in each condition is presented grouped by chronic focus.

Table 5

<table>
<thead>
<tr>
<th>Chronic Focus</th>
<th>Neither</th>
<th>Promotion framing</th>
<th>Prevention framing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion</td>
<td>8 (40%)</td>
<td>5 (25%)</td>
<td>7 (35%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Prevention</td>
<td>1 (10%)</td>
<td>5 (50%)</td>
<td>4 (40%)</td>
<td>10 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>9 (30%)</td>
<td>10 (33.3%)</td>
<td>11 (36.7%)</td>
<td>30 (100%)</td>
</tr>
</tbody>
</table>

Figure 5. Average scores in the different framings, grouped by chronic focus.

Discussion

The purpose of the present study was to examine whether regulatory fit would improve performance in elite bowlers. The study was based on a counterbalanced, within-groups design, examining bowlers in their natural environment (home alley), with a standard pin-setting to ensure that the given playing configuration is common and well known by players. Main finding showed that, creating a fit state between players’ chronic regulatory focus and the framing of a given task, did not improve performance. The hypothesis that a player with a chronic promotion focus will perform better in a promotion framing than in a prevention framing, whilst a chronic prevention focused player will perform better in a prevention framing than in a promotion framing, was thus not confirmed. Manipulation checks showed that players, in general, felt more pressured in the prevention setting, regardless of chronic focus. Still, these results were not of significant value. However, when it came to perceived difficulty of the pin-setting, significant results were found, showing only a slight difference in counts (see Table 1) between the two conditions.

Main findings of the present study failed to support previous work on regulatory fit (e.g., Kutzner et al., 2013; Plessner et al., 2009), where a positive significant difference in performance when players were in a fit state compared to a non-fit state, was found. Opposing to previous studies using independent group designs (e.g., Kutzner et al., 2013; Plessner et al., 2009), the present study used a counterbalanced within group design, meaning every participant was exposed to both framings. A drawback to this method is that participants, when going into the second framing, might be affected by the first framing. Even though
performance was not biased by the framing order (see below), the effect of the framing could potentially be. Furthermore, the present study had players performing in groups, contrasting to procedures conveyed by Plessner et al. (2009) and Kutzner et al. (2013), who isolated the player being measured from the rest of the group. This was considered as one of the current study’s strengths, since players were measured in an environment similar to their practice and competition settings.

An independent $t$-test showed that framing order (in what order players were exposed to the two conditions) did not influence performance (see Table 4). Furthermore, there were no significant differences between the two groups (chronic promotion and chronic prevention), regarding the demographic variables. Neither framing order or demographic variables are therefore of relevance when addressing the non-significant findings to the relation between regulatory fit and performance.

The task
A factor to consider when interpreting the results, is the task being measured. Vogel and Genschow (2013) found that in a task considered as easy, fit between chronic focus and framing instruction produced better performance in the athletes being measured. Firstly, the task used in the present study (also considered to be an easy one) might have been more difficult than expected. Secondly, the task provided by the experimenters might not have been beneficial in its nature to either chronic focus, and therefore players’ performances were not enhanced when they experienced fit. To further understand why the chosen task could be explaining the results found in the present study, let’s have another look at Plessner et al. (2009)’s study, where they had soccer players shooting penalties as the task. They argue that the penalty situation can be seen as both promotion (when a penalty takes place during a game) and prevention (when a penalty takes place during a penalty shootout). However, the percentage of scoring a penalty is roughly 75% (Plessner et al., 2009), and therefore, it could be argued that this is more of a prevention-task, based on a loss-framed situation (obligation to score); compared to a promotion-task that is gain-framed. According to Higgins (2005), tasks can be either loss-framed or gain-framed. A prevention-player would naturally fit in a loss-framed task. For the promotion-player to be able to profit from the same task, equal to the prevention-player, the instruction (the framing) given to that player would have to be gain-framed. In the present study, statistics (number or percentage; like the percentage of scoring a penalty in soccer [Plessner et al., 2009]) of converted spares on the given pin-setting, were not available for collection. The chosen pin-setting was provided by an expert bowler, who named the pin-setting to be a “fairly easy one”, fitting the task. On these grounds, we considered the task to be a prevention-task (obligation to make the spare), similar to a penalty in soccer. If the task would happen to be a “50-50” task (meaning no chronic focus would be predisposed to profit from the nature of the task), it could be that players’ skill level alone would determine their performance, not giving any room for framing to have an effect on actual performance.

Keller and Bless (2006) examined cognitive performance on students in real classroom settings. They stated, based on their findings, that regulatory fit is not a fragile phenomenon that is only to find under controlled laboratory settings, but in natural environments as well. Based on this, and the fact that the experimental setting was considered as one of the present study’s strengths (see discussion below on strengths and limitations), it is reasonable to conclude that the testing setting is not to hold responsible for the non-significant findings, concerning the effect of regulatory fit on performance. This strengthens the notion that the lack of a clearer cut in the given task (to be more promotion or prevention in its nature) could be the explanation to the non-significant results.
Manipulation checks
As would be expected regarding perceived pressure, players should feel more pressured when facing the framing that does not fit their chronic focus. As mentioned earlier, Higgins (2005) proposed that when a person feels fit, the situation feels right and he or she feels highly motivated to engage in the task; which would be expected to reduce pressure. If this would be due to the framing or the actual task is for future research to decide. However, results in the present study showed that, in general, players perceived the prevention condition as more pressured than the promotion condition, regardless of chronic profile. These results were then of non-significant value, meaning that the difference shown could be due to chance. Since the framings were presented in similar manners to those employed in Plessner et al. (2009)’s study, they should not be the cause of the non-significant findings (since Plessner et al., 2009’s framings produced significant results). This, again, turns the focus to the task. Since there have been no similar studies conducted in bowling, the task in the present study had to be based on an expert bowler’s opinion of what would be a suitable pin-setting to the topic being examined. Given the current results, it could be that the task (going for spare), or the actual pin-setting (3-10 for right handers, 2-7 for left handers), was not appropriate to the purpose of examining regulatory fit in bowling.

As for perceived difficulty (the second manipulation check), findings regarding in what condition players felt the pin-setting was more difficult, were of statistically significant value. Higgins (2000) proposed that when a person experience regulatory fit in a situation or a task, a benefit state is created, and the individual feels better. It was expected that if significant differences in performance were found, the perceived difficulty of the pin-setting should be rated differently between the chronic profiles across the two conditions, as well. When in fit, the task should be perceived as easier, and therefore lead to better performance. The counts, however, (see Table 1) showed that neither condition was perceived as more difficult than the other. In sum, the pin-setting in both conditions was perceived as rather difficult, regardless of chronic regulatory focus. However, the chronic promotion players perceived the pin-setting to be somewhat more difficult than the prevention players, on average (see Figure 3).

Strengths and limitations
Regarding strengths of the present study, counterbalance was taken into close consideration. Each participant was exposed to both framings, and the presentation of each framing across the four occasions was distributed equally between the experimenters. Participants were randomly assigned into two groups, ensuring that there were no predisposed differences between the groups. The study was conducted in a natural competitive environment, where each player had to perform under the presence of other team members and the experiment leaders. This created a natural competitive environment, giving no need for the experimenters to manipulate pressure. Even though the realistic experimental environment was considered as the main strength of this study, on the flipside, this meant that participants had the opportunity to communicate and influence each other during the experiment. This might have been detrimental to the effect of the framings, since talking to their peers took focus away from the instructions given by the experimenters. Previous studies (e.g., Kutzner et al., 2013; Plessner et al., 2009) measured participants one by one, meaning there were no distractions coming from other participants.

Previous studies used tasks that were either more promotion or prevention oriented in their nature (e.g., Plessner et al., 2009). The task used in the present study was based on a pin-setting provided by an expert bowler. It was considered as a fairly easy spare attempt, meaning the task should fit under an “obligation frame”, and therefore, according to Higgins et al. (1997), fit the prevention focused player better than the promotion focused player. However, results showed no significant difference when it came to performance across the
two conditions, indicating that the task might not have been more beneficial to either chronic focus after all.

**Implications and future research**

As the present study failed to support the hypothesis that regulatory fit produces better performance, and only small differences were found between the groups being measured, further implications to the effect of regulatory fit in bowling cannot be concluded. However, the task that was used may not have been optimal to the purpose of examining regulatory fit in bowling (see discussion above). A practical implication for future researchers within the regulatory fit frame, is to collect statistical data of the actual task (e.g., scoring percentage), allowing for researchers to build more accurate hypotheses of what to expect.

Future research on the subject should have the limitations stated above in mind when choosing what approach to take when studying regulatory fit’s effect on performance. To further build on the present study, it would be preferable to conduct the study in the same environment, but with a different task, measuring participants’ performances one by one. An example of a different task could be a strike (knocking down all ten pins with the first shot) challenge, with framings similar to the ones used in the present study. Measuring participants’ performances one by one would, of course, be more time consuming and not as representative of players’ actual competition setting as would be desired; however, it might produce better conditions to find significant results. Even though no significant findings regarding the main hypothesis were held in the present study, the results have led to an expansion on the literature of the sport as a science, as well as the topic on regulatory fit.
References


Appendix

The information letter

Hej!

Vi är två studenter från högskolan i Halmstad som går vårt tredje år på programmet Psykologi - inriktning idrott och motion. Som examensarbete under det sista året skriver vi vår C-uppsats inom ämnet "Regulatory fit" - kopplat till bowling.

Deltagandet i experimentet är frivilligt, dina svar kommer behandlas konfidentiellt och din identitet förblir anonym. Skulle du under undersökningen känna dig obekväm på något sätt har du full rätt att avsluta när du vill. Dina svar är viktiga för oss.

Experimentet tar cirka 60 minuter och består av tre delar, den första delen är en genomgång som redan är avklarad, del 2 är själva experimentet där du aktivt kommer deltaga och utföra de uppgifter som vi har beskrivit. Den tredje delen är en enkät som kommer att ta cirka 6 minuter att slutföra, där dels bakgrundsfrågor såsom kön/ålder/bowlingtimmar per vecka besvaras, men även frågor som skildrar händelser i ditt liv.

Om det skulle uppstå frågor gällande undersökningen nu innan eller under själva experimentet så svarar vi gärna på dina frågor. Skulle det dyka upp något efteråt är du välkommen att maila till eller timmyfredriksson@outlook.com, så svarar vi så snabbt vi kan.


Jag samtycker □
Del 1
Denna del består av bakgrundsfrågor

1. Kön?
   Man
   Kvinna

2. Ålder?

3. Antal bowlingtimmar per vecka?
   1. 0-2
   2. 3-5
   3. 6-8
   4. 9-11
   5. 12+

4. Din nuvarande nivå?
   1. Elitserien
   2. Allsvenskan

5. Ditt nuvarande snitt? (rullande helår)
   1. -150
   2. 151-165
   3. 166-180
   4. 181-195
   5. 196-210
   6. 211-225
   7. 226+

8. Vilken hand spelar du med?
   Höger
   Vänster

Del 2

9. Growing up, would you ever "cross the line" by doing things that your parents would not tolerate?
   1. Never or seldom
   2. 
   3. Sometimes
   4. 
   5. Very often

10. How often have you accomplished things that got you "psyched" to work even harder?
    1. Never or seldom
    2. 
    3. Sometimes
    4. 
    5. Very often

11. Did you get on your parents nerves often when you were growing up?
    1. Never or seldom
    2. 
    3. Sometimes
    4. 
    5. Very often
12. Growing up, did you ever act in ways that your parents thought were objectionable?
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

13. Do you often do well at different things that you try?
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

14. Not being careful enough has gotten me into trouble at times.
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

15. I feel like I have made progress toward being successful in my life.
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

16. Are you fanatic when you are trying to realize your goals?
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

17. Do you find that there are things that you have not thought about when you choose something?
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

18. Are you someone who looks forward to situations in which you expect to have success?
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

19. I try to reach that in my life, in which I believe?
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

20. Do you break rules to reach your goals?
1. Never or seldom  2.  3. Sometimes  4.  5. Very often

21. Hur upplevde du att du förstod de engelska frågorna på en skala 1-10 där 1 är väldigt dåligt och 10 är väldigt bra?
Adam Kihlman and Timmy
Fredriksson