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Negative self-talk in runners: Emotional intelligence and perceived stress as explanatory factors

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ABSTRACT

To optimize in the cognitive and emotional processes that appear in stressful situations in sports contexts is a relevant aspect to achieve a high level of performance. The present study aimed to analyze the relationship between perceived stress, emotional intelligence and negative self-talk in runners. It also aimed to determine whether emotional intelligence factors could play a protective role in this relationship. The sample consisted of 1071 runners from a race held in the Basque Country (Spain). The age of the participants was between 18 and 75 years (Mean = 41.59; SD = 9.95; 71.4% men). Participants completed an online survey days after the race. The results showed that perceived stress would be related to greater use of negative self-talk. In addition, evaluation of others' emotions and emotional regulation would also explain the occurrence of negative self-talk. Likewise, the interaction between perceived stress and appraisal of one's own emotions would explain the occurrence of negative self-talk, this relationship being stronger among those with lower scores on appraisal of one's own emotions. Results and practical implications of the findings are discussed.

1. Introduction

For decades, self-talk has been considered in sports as a strategy that can optimize emotion regulation and improve performance (Zourbanos et al., 2014). This aspect is especially relevant in endurance sports, where the activity is performed for long periods of time, through repetitive movements, and where it is possible that athletes use part of their time in talking to themselves (LaForge-MacKenziea & Sullivan, 2014). Running is classified in this type of sport, where medium or long distances are performed continuously, dynamically and using the whole body (McCormick & Hatzigeorgiadis, 2019). This sport practice requires the athlete to stay motivated and persevere despite the difficulties (pain, injuries, etc.) and the demands of the activity itself (temperature, hydration, etc.; McCormick et al., 2019), being able to use different types of self-dialogue as a strategy in the management of all of them (McCormick & Anstiss, 2020). For example, Van Raalte et al. (2015) found that 88% of marathoners used several types of self-dialogue during the race: motivational, associative, dissociative, goal-oriented, mantra or spiritual self-dialogue.

Hardy (2006) was one of the first authors to propose a conceptual model of self-talk in sport, stating that personal and situational aspects would influence self-talk and that this, in turn, would have an impact on cognitive, motivational, behavioral and affective mechanisms. This internal dialogue includes modalities with differentiated objectives. On the one hand, strategic self-dialogue, of a planned nature and as a deliberate strategy of keyword use (Hatzigeorgiadis et al., 2011). On the other hand, automatic or organic self-dialogue (Zourbanos et al., 2009), which would consist of statements that the athlete makes involuntarily, spontaneously and effortlessly, but which are nevertheless linked to the activity and the context in which they occur (Latinjak et al., 2019). This self-dialogue appears without having been previously planned or trained (Zourbanos et al., 2009), and may be the result of metacognitive knowledge and skills or representation of psychological processes such as self-beliefs (Meichenbaum, 1972). It has been distinguished on the basis of content, thus differentiating its positive or negative nature. Positive self-talk would focus on the present, ignoring past errors (Weinberg, 1988). However, negative self-talk would be defined as a form of criticism (Moran, 1996). It would provoke performance concerns and disengagement, somatic fatigue and self-blame in the runner (Conroy & Metzler, 2004; Hatzigerogiadis, & Biddle, 2008; Zourbanos et al., 2009). Moreover, negative self-talk would always reflect organic self-talk (Karamitrou et al., 2020). In the sport context, it is especially relevant to reduce this type of self-talk, because it is related to anxiety or demotivation (Amado et al., 2019; Hatzigeorgiadis & Biddle, 2008), and

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also given its spontaneous, involuntary and uncontrollable nature.

Spontaneous self-talk is the vehicle through which at least one psychological state is expressed (Latinjak et al., 2020). Van Raalte et al. (2016) go further, considering it a window into the emotional state of the athlete. Thus, organic self-talk could be considered part of the emotional experience (Fontaine, Scherer, Roesch, & Ellsworth, 2007). Following this perspective, it is proposed that basic emotions (that is, affective information related to past events that would make the memory of those situations more probable in the face of the current affective state due to their similarity) would stimulate higher cognitive processes, which would especially involve organic, spontaneous and goal-directed self-dialogue (Fritsch & Jekauc, 2020). That is, spontaneous self-dialogue would be emotionally charged or considered an expression of emotions (Latinjak et al., 2014; Latinjak et al., 2017). In sport, the presence of emotions such as anxiety, depression or anger can alter performance (Zizzi et al., 2003). In order to identify and regulate these emotions, the development of emotional intelligence becomes a key aspect for the athlete (Kopp & Jekauc, 2018; Laborde et al., 2016). This skill would refer to how people reason about emotions (Mayer & Salovey, 1997). Based on the model proposed by these authors, emotionally intelligent people would perceive emotions accurately, use these to facilitate thinking, understand emotions and their meanings, and manage their own and others' emotions. Following the model of emotional intelligence proposed by Salovey and Mayer (1990), emotional intelligence would be related to the use of psychological skills, such as visualization or activation (Lane et al., 2009). Thus, those athletes with greater emotional intelligence would identify their current psychological state and would be able to change what was necessary to achieve performance goals (Gill et al., 2011). In addition, it would enable a more effective management of moods among runners, resulting in a lower alteration of them, and leading to a greater presence of pleasant emotions (calm, happiness, vigor) and a lower presence of unpleasant emotions (anger, depression, fatigue; Gross, 2015; Lane & Wilson, 2011; Lane et al., 2011).

In addition to the emotional component of self-talk, it could be the result of environmental stimuli that the athlete must face (Karamitrou et al., 2020). These stimuli would be perceived by the runner as threatening, and would enter consciousness through spontaneous self-dialogue (Fritsch & Jekauc, 2020). The result would be an increase in stress levels, which would generate changes in their behavior and thoughts (Márquez, 2006). These stressors could derive from different sources. Sarkar and Fletcher (2014) proposed three types of stressors: (1) those stressors related to the competition, which include those related to preparation, pressure or expectations; (2) stressors related to the organization, which include team, leadership or logistical issues; (3) personal stressors, which would include those stressors related to the demands of the athlete's context that would not be directly related to his or her sport performance, but which, nevertheless, influence it, such as family or work. Thus, negative self-talk could be associated with both awareness and the generation of actions that occur in response to emotional or physical stimuli and associated physiological changes that are perceived as relevant (Gibson & Foster, 2007). Thus, spontaneous self-talk could be a reflection of irrational thoughts ("I have to win"), disengaging thoughts ("I have to stop"), or errors ("He beat me to it"; Latinjak et al., 2019). Moreover, failure or discrepancies between goals and performance, particularly stressful contexts in sports, would be associated with the occurrence of negative spontaneous self-talk among athletes (Hatzigeorgiadis & Biddle, 2008). Therefore, the management of stressors would be especially relevant in a discipline such as running, where the athlete's attention is directed towards oneself (Sin et al., 2015), and it is precisely oneself who must manage the demands of the environment as effectively as possible. And, for this, it would be necessary to implement the conditions and resources that the individual values as necessary in order to adapt to the threats of the environment (Lazarus & Folkman, 1984).

Ultimately, stressors are defined by their significance and emotional importance in the phenomenological world of the individual (Devonport, 2011). Thus, emotional intelligence could be a resource for coping with stressful situations (Matthew & Zeidner, 2000). It has been found that emotional intelligence would play an important role in how people cope with stress (Mikolajczak & Luminet, 2008). Lazarus and Folkman (1984), in their Transactional Model of Stress, proposed that, when faced with a stressful situation, in addition to evaluating the behavioral and cognitive coping strategies to deal with that situation, the person would evaluate not only the stressors, but also the emotions associated with them. In this sense, the same situation can be appraised in different ways: as a challenge, as a threat, and as a loss or harm (Jones et al., 2009). Thus, low emotion management skills could have an impact on the emergence of avoidant or ruminative coping strategies (Keefer et al., 2018). The latter has been considered in the most current classifications as a subcategory of automatic self-talk (Broudreault et al., 2018). Which could be considered a reflection of the athlete's attention being directed to past thoughts of negative events (Fritsch et al., 2022), which could have caused and be causing in the present certain levels of stress. Emotional intelligence has been shown to play a relevant role in the face of stress among runners, decreasing its levels (Laborde et al., 2011; Nicolas, Banizette, & Millet, 2011), as well as in reducing the impact of fatigue (stressor) and improving performance (Rubaltelli et al., 2018).

Appropriate knowledge and identification of emotions, as well as emotion regulation, have been shown to be effective mechanisms in various contexts, such as problematic internet use (Arrivillaga et al., 2020), cyberbullying (Yudes, Rey, & Extremera, 2022), or burnout (Molero Jurado et al., 2021), as well as in various mental disorders such as eating disorders (Zhang et al., 2022), anxiety (Liu & Ren, 2018), depression (Fernández-Berrocal & Extremera, 2016), and suicidal behavior (Domínguez-García & Fernández-Berrocal, 2018). Thus, emotional intelligence can be presented as an important factor that provides individuals with the ability to adapt to stressful environments, acting as a protective element against them (Ciarrochi et al., 2002). This could be due to the fact that those athletes with lower levels of emotional intelligence would present a greater tendency to become involved in risky situations (Magrum et al., 2019). On the contrary, higher emotional intelligence scores have been related to lower presence of injuries, higher levels of mental toughness, as well as lower levels of stress and anxiety during competitions (Cowden, 2016; Kalkhoran et al., 2013; Lu et al., 2010; Tok et al., 2013). Thus, those individuals who use emotional regulation strategies, such as cognitive reappraisal, would present a better ability to manage stressful situations more adaptively (Carlson et al., 2012).

In this context, the aim of the present study was to study the joint role that perceived stress and emotional intelligence have in the occurrence of negative self-talk in popular runners. Taking into account previous literature, it was hypothesized that: 1) perceived stress will be positively related to the occurrence of negative self-talk, 2) there will be a negative relationship between the four factors of emotional intelligence and negative self-talk, and, finally, 3) the factors of emotional intelligence will buffer the association between perceived stress and the occurrence of negative self-talk.

2. Methods

2.1. Participants

The sample consisted of 1071 runners from a race held in the Basque Country (Spain). The age of the participants ranged from 18 to 75 years (Mean = 41.59; SD = 9.95; 71.4% men). A total of 40.3% participated in the 10 km race, 45.1% in the 21 km race and 14.6% in the 42 km race. The participants' years of experience had a mean of 9.01 years (SD = 8.99).

2.2. Instruments

Firstly, the questionnaire consisted of a series of questions on sociodemographic data, such as sex, age, the event in which they participated, and years of running experience. Secondly, the questionnaires that measured the study variables were included.

Negative self-talk was measured by the Automatic Self-Talk Questionnaire for Sport (Latinjak et al., 2016; Zourbanos et al., 2009), adapted to Spanish by Latinjak et al. (2016). This questionnaire consists of two subscales that measure negative and positive self-talk, For this study, the subscale that measures negative selftalk was used. This subscale includes aspects such as performance-related concerns, irrelevant thoughts, and flight thoughts. The scale was composed of 10 items (e.g., "I am a disaster"), which were answered on a 5-point Likert scale (1 = never; 5 = very often). In the present study, the reliability of the scale was 0.88.

Emotional intelligence was measured using the Wang-Law Emotional Intelligence Scale (Wong & Law, 2002) adapted to spanish by Extremera et al. (2019). The questionnaire consists of 16 items that are divided into four subfactors: evaluation of one's own emotions, evaluation of others' emotions, use of emotions, and emotion regulation. The type of response is a Likert scale with response options of 1 (Strongly disagree) and 7 (Strongly agree). The internal consistency in the validation of the questionnaire for each of the subscales was: 0.93 (evaluation of own emotions), 0.91 (evaluation of others' emotions), 0.93 (use of emotions) and 0.94 (emotion regulation).

Perceived stress was measured by the Spanish version of the Perceived Stress Scale (Cohen et al., 1983) in its abbreviated version (Remor & Carrobles, 2001). This scale measures the perceived stress of each individual by means of four items and on a Likert-type response scale from 0 (Never) to 4 (Very often). The internal consistency of the questionnaire was 0.65.

2.3. Procedure

Data collection was carried out in the context of a popular race. The race consisted of three distances: 10 km, 21 km and 42 km. Participants were contacted by e-mail, sent by the race organizers a few days after the race had taken place. The questionnaire was carried out using Google Forms. Participants were informed of the objectives of the study, as well as that their participation was voluntary, anonymous and confidential, and that the data would only be manipulated by the researchers responsible for the study. The test was completed in approximately 15 min. The study was approved by the ethics committee with reference ETK-52/21–22.

2.4. Data analysis

To evaluate the relationship between the factors of emotional intelligence, stress and the interactions between these factors and negative self-talk, path analysis with Lisrel 8.8 was used. The robust maximum likelihood (RML) method was employed, which requires estimation of the asymptotic covariance matrix of sample variances and covariances and includes the scaled Satorra-Bentler $\chi 2$ index (S–B $\chi 2$; Chou et al., 1991). The model included coefficients between scores on the four factors of emotional intelligence (appraisal of one's own emotions, appraisal of others' emotions, use of emotions, and emotional regulation), perceived stress, and negative self-talk. The model also included coefficients between the interaction terms between each subfactor of emotional intelligence and perceived stress and negative self-talk. To calculate the interaction terms, the variables were transformed into z-scores and multiplied (e.g., emotional regulation x perceived stress). Following the recommendations of several authors (e.g., Hu & Bentler, 1999), the goodness of fit of the model was assessed using the comparative fit index (CFI), the non-normative fit index (NNFI) and the root mean square error of approximation (RMSEA). In general, CFI and NNFI values of 0.90 or higher reflect a good fit. RMSEA values of less than 0.06 indicate an excellent fit and values of 0.08 or less indicate a moderate fit. SPSS 28.0 was used to obtain percentages, correlations and descriptive data.

3. Results

Table 1 shows the descriptive statistics and correlation coefficients between the variables. Negative self-talk correlated negatively with all factors of emotional intelligence, except evaluation of others' emotions, and positively with perceived stress. Perceived stress, on the other hand, correlated with all factors of emotional intelligence.

The hypothesized model was then tested. Regarding emotional intelligence factors, evaluation of others' emotions was positively associated with negative self-talk. Regarding perceived stress, this was positively associated with negative self-talk. The interaction between perceived stress and the emotional intelligence factors to explain negative self-talk presented only one significant interaction, this being between perceived stress and the factor of evaluation of one's own emotions. The fit indices of the model tested were acceptable, X^2 (34, N = 923) = 665.50 p = .00, RMSEA = 0.080 (90% CI (0.071; 0.090)), NNFI = 0.93; CFI = 0.96. Table 2 shows the coefficients that were statistically significant. The effect size of the model was small, 0.02.

Fig. 1 presents the interaction form for runners with low and high levels in negative self-talk in relation to the evaluation of self-emotions and perceived stress. The results show that when the score on the evaluation of self-emotions is low, there is an association between negative self-talk and perceived stress (B = 0.29, t = 3.98, p < .001). Similarly, when the score on the evaluation of others' emotions is high, the association is also statistically significant (B = 0.017, t = 2.05, p < .05). In addition, the interaction reflects that when self-emotion appraisal is low, the association between stress and negative self-talk is greater than when self-emotion appraisal scores are high.

4. Discussion

Knowing the processes underlying the occurrence of automatic self-talk among runners can help identify irrational performance beliefs associated with dysfunctional emotions and behaviors (Latinjak et al., 2019). Therefore, it is important to identify those factors that result in the occurrence of cognitive processes, such as negative self-talk, which may decrease performance or even lead to disengagement from one's practice (Hatzigeorgiadis & Biddle, 2008; Karamitrou et al., 2020). The aim of the present study was to explore the role of emotional intelligence and perceived stress, as well as the interaction between them, in the occurrence of negative self-talk in runners.

The results revealed that perceived stress is associated with the presence of negative self-talk. This finding is important because it helps to delve deeper into the negative repercussions that the perception of certain stimuli can produce in the runner, and its possible negative effects on their subsequent performance (McCormick et al., 2019). The

Table 1
Correlation coefficients and descriptive statistics of the variables.

	1	2	3	4	5	6
1.Negative self-talk						
2.Perceived stress	.41**					
3.Evaluation of the emotions of others	−.03	−.10**				
4. Evaluation of one own's emotions	−.18**	−.30**	.68**			
5.Use of emotions	−.20**	−.30**	.63**	.73**		
6.Emotion regulation	−.20**	−.31**	.59**	.69**	.71**	1
Mean	1.91	1.31	4.9	5.3	5.2	4.8
SD	0.66	0.55	1.22	1.24	1.27	1.29

**p < .01; *p < .05

Table 2
Path analysis results.

	B	Std. Error	Wald test	t
Perceived stress	.23	.02	10.04	11.65**
Evaluation of one own's emotions	.01	.04	0.05	−0.47
Evaluation of the emotions of others	.09	.03	3.14	3.19**
Use of emotions	−.06	.03	−1.84	−2.19
Emotion regulation	−.06	.03	−2.06	−1.56
Perceived stress x Eval. own's emotions	−.06	.02	−2.46	−2.12*
Perceived stress x Eval. emotions of others	.04	.02	1.76	2.31
Perceived stress x Use of emotions	.01	.03	0.02	−0.38
Perceived stress x Emotion regulation	−.03	.03	1.22	−1.04

Note: **p < .001; *p < .05

results of the study suggest that negative self-talk could be the consequence of the runner's evaluation of the situation, giving it in this case a negative meaning.

In addition, this study evaluated the role of the dimensions of emotional intelligence in the association between stress perception and negative thinking. The results showed that the evaluation of one's own emotions reduced this association, suggesting that in stressful situations this dimension of emotional intelligence would help to reduce the occurrence of negative self-talk. The evaluation of one's own emotions could be presented as a readjustment mechanism in stressful situations perceived by the runner, and, consequently, an effective way to reduce the appearance of negative self-talk. That is, athletes would be able to identify their current emotional state and change what is necessary to achieve their goals (Gill et al., 2011).

Likewise, although they did not moderate the association between perceived stress and negative self-talk, two components of emotional intelligence showed a direct association in explaining negative self-talk among runners: evaluation of others' emotions and emotional regulation. Regarding the evaluation of others' emotions, this would be related to an increase in negative self-talk. The evaluation of others' emotions would reflect the identification and understanding that the runner itself is able to make of the emotional state of other runners (Mayer & Salovey, 1997). This could lead him to compare its own mood with that of others and trigger more negative self-talk in his attempt to adapt to the situation. This attempt to adapt could be dysfunctional, as it could involve the use of attacks and blaming oneself (Conroy & Metzler, 2004). Also, as authors such as Latinjak et al. (2019) point out, it could be the reflection of criticism towards oneself and the perceived inability to achieve success. Although, on the other hand, the runner could make use in these situations of negative self-talk as a motivational strategy (Tod et al., 2011).

Regarding emotional regulation, the results showed that better emotional regulation of the runner would be associated with a lower probability of occurrence of negative self-talk. Beck (1976) proposed that individuals are not always aware of their spontaneous self-talk, but can learn to identify it by analyzing any emotionally charged thoughts that arrive, and, in situations where it is useful, replace it with a more adaptive thought for the situation. Following this perspective, it is possible that the ability to regulate the negative emotions may be a mechanism by which the runner could allow to make conscious as well as deepen his negative state (Van Raalte et al., 2016). And, subsequently, to impact on it through goal-directed self-talk. And, in this way, reduce the negative self-talk. On the other hand, there are authors who propose that self-talk could be used as a reactive mechanism, that is, as a strategy that appears to cope with an experienced emotion (Fritsch & Jekauc, 2020). Thus, the ability to control the emotion being experienced would mean, in this case, decreasing the negative messages that the runner directs to himself as a coping mechanism to that emotion. Future studies should analyze whether, in addition to reducing negative self-talk, positive self-talk could increase. In any case, as well noted above, spontaneous self-talk has been considered as a mechanism of emotion expression and as an integral part of emotions (Van Raalte et al., 2016).

This study has some limitations that need to be taken into account. First, aspects such as the experience of the runners have not been controlled. It is possible that the experience in the years that the runner has been running influences the use of their psychological resources and skills. Studies in this regard have found that those with less experience would benefit more from self-dialogue than those with more experience (Tod et al., 2011). Future studies should consider the possible differences between different runner profiles. Secondly, the data in the study were collected days after the race, so these may be affected by the runner's perception of success or failure based on the outcome or goals achieved. It would be interesting for future studies to take into account the presence of self-dialogue during the race and its relationship with the variables studied. Third, although the questionnaire used to assess negative self-talk (ASTQS) was not created to assess spontaneous self-talk, there are discrepancies in the conceptualization of organic self-talk, which has previously been referred to as automatic (Zourbanos et al., 2009) or spontaneous (Van Raalte et al., 2014). Finally, the cross-sectional design of the study does not allow us to establish causal relationships between the variables analyzed, so future studies should consider this aspect. Thus, it would be possible to determine whether these explanatory relationships could be maintained over time.

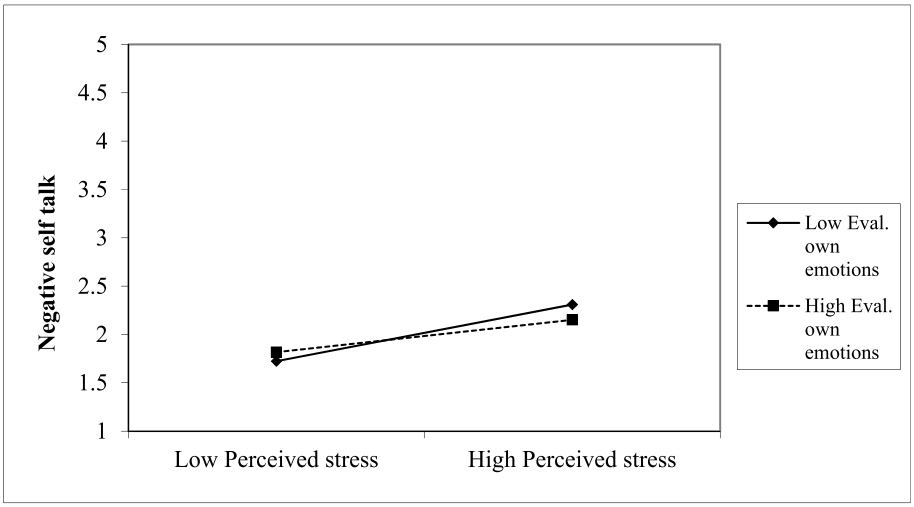

Fig. 1. Interactions for negative self talk, evaluations of self-emotions and perceived stress.

In conclusion, the present research has highlighted the importance of emotional processes as potential adaptive strategies in stressful situations that generate negative self-talk. On the one hand, self-talk can become an obstacle with negative consequences for runners, and knowing the antecedents that may be related to its appearance can help to establish effective strategies to identify and avoid its presence. On the other hand, identifying the stressors that may appear during training and/or competitions, as well as analyzing the emotions that may appear in the face of these stressors, would enhance runners' ability to reduce the negative messages they receive. Thus, there are several practical implications derived from this study. The results highlight the importance of identifying one's own emotions as a relevant aspect in the psychological management of runners, which can help to cushion the impact that internal and external stimuli can generate during the race or training. Thus, an intervention with the runner aimed at reducing negative self-talk in situations evaluated as stressful by the runner should focus on how the individual identifies and evaluates his or her own emotions and less on the emotions of the other participants. This would imply managing to analyze and anticipate contextual situations likely to generate specific unpleasant emotions and becoming aware of his or her reaction to them. In addition, knowing at what moments spontaneous messages may arise can help the runner to recognize specific targets for intervention (e.g., the frustration that appears when a specific time is not achieved in a partial).

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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