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Testing the REBT-I model in athletes: Investigating the role of self-confidence between irrational beliefs and psychological distress

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ABSTRACT

Evidence suggests that, in the general population, instances of poor mental health have increased over recent years and are set to continue to grow. Athletes may experience a plethora of additional stressors, such as injury, de-selection, and competitive anxiety. Prior research has suggested that irrational beliefs may maladaptively influence an athlete's wellbeing, but little is known about the role of self-confidence in these relationships. The present study aimed to examine the role which self-confidence plays as part of the REBT-I model in athletes. Broadly speaking, it was hypothesised that primary irrational beliefs would relate negatively to self-confidence through secondary irrational beliefs. In turn, self-confidence was hypothesised to relate negatively to competitive anxiety and depressive symptoms. Additionally, irrational beliefs were hypothesised to combine with low self-confidence to relate negatively to competitive anxiety and depressive symptoms. Four hundred and ten athletes (n = 227 females, Mage = 33.91 years, SD = 14.84) completed an online questionnaire pack assessing irrational beliefs, self-confidence, cognitive and somatic competitive anxiety, and depressive symptoms. Using path analysis, the tested hypothesised model demonstrated an excellent fit to the data. Findings demonstrate some support for the REBT-I model in that primary irrational beliefs predict competitive anxiety and depressive symptoms through secondary irrational beliefs. Results extend the REBT-I model by including self-confidence as a mediating factor between depreciation beliefs and competitive anxiety and depressive symptoms. Findings suggest practitioners should be aware of the role that irrational beliefs may have in negatively influencing self-confidence and subsequent depression symptomology in athletes.

1. Introduction

There is growing evidence of increases in poor mental health (World HealthOrganisation, 2021), with one in four adults in the UK likely to experience a mental illness during their lifetime (NHS, 2022). Indeed, the increasing prevalence of depression is such that it will be the leading cause of illness worldwide by 2030 (Hoving et al., 2020). Despite the psychological benefits (such as improved mood) of taking part in physical activity (e.g., Shaw, 2005), studies frequently report the high prevalence of poor mental health in athletes (e.g., Gorczynski et al., 2017), which may be exacerbated by competitive anxiety (Chrysidis et al., 2020). A recent study found that 13.9% of elite athletes sampled reported moderate to severe anxiety whilst 21.1% were found to suffer from moderate to severe depression (Küttel et al., 2021), with females recording significantly worse mental health than males. Indeed, differences in psychological wellbeing may also be evident in athletes depending upon the type of sport they participate within. For example, Nixdorf et al. (2013; 2016) and Reardon et al. (2019) found that athletes taking part in individual sports reported greater depression than those taking part in team sports, although not all studies have reported similar conclusions (Turner, Carrington, & Miller, 2019). As such, evidence that would explain any differences based upon the type of sport is in its infancy. However, whilst lower social support (Rice et al., 2016) has been suggested as a reason behind differences in depressive symptoms, mediation analysis points to a more internalised attribution of failure (Nixdorf et al., 2016) for athletes in individual sports compared with team sports. To explain, athletes performing in individual sports are less able to attribute unwanted outcomes to the performance of team-mates, and as they look inwardly towards their own deficiencies, these internal attributions of failure may result in dysfunctional emotions associated with depressive symptoms.

One explanation for symptoms of poor mental health manifesting in athletes is irrational beliefs, a core component of Rational Emotive Behaviour Therapy (REBT; Ellis & Dryden, 2007). REBT holds that beliefs and attitudes play a determining role in psychological wellbeing (Dryden, 2021), such that rational beliefs (i.e., flexible, logical, and non-extreme) underpin psychological wellbeing, whilst irrational beliefs (i.e., inflexible, illogical, and extreme) underpin psychological illbeing (Turner, Carrington, & Miller, 2019). REBT offers four core irrational beliefs, namely primary irrational beliefs of demandingness (e.g., "I

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want, therefore I must ...", and three secondary irrational beliefs of awfulizing (e.g., "it is awful), frustration intolerance (e.g., "I can't stand it"), and self/other/life depreciation (e.g., "I/they/life is completely bad"). The REBT-I model proposed by Ellis (1994; see Figure 1) posits that the foundation of demandingness irrational beliefs leads to the secondary irrational beliefs, which in turn underpin psychological distress (such as depressive symptoms). Secondary irrational beliefs are said to mediate the relationship between demandingness and psychological distress (e.g., depressive symptoms) due to being more proximal to emotion.

The REBT-I model was supported by DiLorenzo et al. (2007) in a general population and by Turner, Carrington, and Miller (2019) in a sample of athletes, whereby it was found that awfulizing and depreciation mediated the positive relationships between demandingness and psychological distress, whilst frustration intolerance only mediated the positive relationship between demandingness and anger. However, Turner et al. being the only study to test the REBT-I model in athletes, further confirmation of the reliability of the model is required to increase knowledge of how irrational beliefs relate to athletes' mental health. Given that the sample in the study by Turner, Carrington, and Miller (2019) included both athletes and non-athletes, research that focuses on athletes only will allow researchers to ascertain how irrational beliefs may influence mental health in this specific group of people. This may help inform interventions that seek to enhance the psychological wellbeing of athletes by targeting particularly problematic irrational beliefs through REBT.

The evidence of direct relationships between irrational beliefs and poor mental health are well-established in the literature. For example, in a meta-analysis by Vîsla, Flückiger, GrosseHoltforth, and David (2016), it was found that irrational beliefs consistently relate to anxiety and depression. In sport, irrational beliefs have been found to be related to greater psychological distress (Mansell, 2021; Turner, Carrington, & Miller, 2019, 2022) and increased burnout (Turner & Moore, 2016). In the present study we seek to add to the current literature regarding the direct relationships between irrational beliefs, competitive anxiety, and depressive symptoms in athletes (e.g., Turner, Carrington, & Miller, 2019), as well as extending the literature by examining the role of self-confidence in mediating these relationships.

Although there is mounting evidence that irrational beliefs are a risk factor for, or are at least associated with, poorer mental health (e.g., Vîsla et al., 2016; Turner, Aspin, & Gillman, 2019), the mechanism through which irrational beliefs relate to mental health markers remains unclear. Why is it that some who endorse high irrational beliefs suffer with poorer mental health, whilst others do not? Although strong and consistent relationships between irrational beliefs and poor mental health have been demonstrated (e.g., Vîsla et al., 2016), it is not always the case that those who report high irrational beliefs also report poor mental health (Turner et al., 2022). This question has been approached in a smattering of past research, with findings that suggest mechanisms may include negative automatic thoughts (e.g., Buschmann et al., 2018),



maladaptive schema (Turner, Aspin, & Gillman, 2019), rumination (Artiran et al., 2019), thought suppression (Szentagotai, 2006), and self-determined motivation (Turner et al., 2022). But one potential mechanism that has not been explored is self-confidence. This is despite some research indicating that reductions in irrational beliefs can help to increase self-confidence (and self-efficacy; Chrysidis et al., 2020; Wood et al., 2017).

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Although self-confidence and self-efficacy are highly related, a distinction exists between the two. Self-confidence refers to an individual's trait beliefs that they are able to produce intended outcomes, whilst self-efficacy refers to these beliefs in specific situations (Bandura, 1997). As such, an individual with high self-confidence may be more likely to possess high self-efficacy, although this may vary depending on their experiences in given situations. To illustrate, an athlete may possess high self-confidence generally, but when drawn against the number one seed in a tennis tournament, their self-efficacy may be low as they perceive their chances of succeeding to be low in this specific situation. Given the similarities between self-confidence and self-efficacy, assessing studies that have investigated self-efficacy in relation to REBT could support hypotheses regarding self-confidence.

Chrysidis et al. (2020) conducted an REBT-based intervention with athletes where rational self-talk was found to promote sustained increases in self-efficacy. As a result of the intervention, which targeted irrational beliefs and not self-efficacy per se, it is notable that a reduction in irrational beliefs also resulted in increases in self-efficacy. An explanation of these findings is when an athlete possesses irrational beliefs, the words they say to themselves internally can have a powerful effect on subsequent feelings and appraisals, as suggested by the verbal persuasion aspect of Bandura's (1997) self-efficacy theory. As self-confidence is concerned with predictions that an athlete makes about their ability to succeed in a task, negative predictions of success are more likely if irrational beliefs form part of an athlete's internal dialogue. To demonstrate, athletes who hold beliefs such as "It would be awful if my position in my team was not secure" and "If others think I am no good at what I do, it shows I am worthless" may experience negative self-talk. Internal dialogue of this nature is reflective of hopelessness (Turner et al., 2022) and self-doubt (Balkis & Duru, 2019), which as the opposite of self-confidence, highlights the potential for irrational beliefs to influence self-confidence through negative self-talk.

Previous research has reported that negative automatic thoughts mediate the relationship between irrational beliefs and depressive symptoms when tested using the REBT-I model (Buschmann et al., 2018). When athletes are confronted with a stressful situation, irrational beliefs may be activated and prompt negative automatic thoughts (Pedro et al., 2019). Accordingly, holding such beliefs can distort reality (Dryden & Neenan, 2015) and disqualify the positives of a situation (David et al., 2008), which triggers negative emotions that can block goal attainment (Chan & Sun, 2020). For example, if an athlete holds irrational beliefs such as "It would be absolutely terrible if I did not win", this may instigate negative automatic thoughts indicative of self-doubt, such as "Why can't I ever succeed?" and "I'll never make it" (Hollon & Kendall, 1980). These unhealthy negative emotions are negatively skewed (Dryden, 2021), increasing the likelihood that an individual believes they will not be able to cope (Dryden & Neenan, 2015). Accordingly, a maladaptive thought process beginning with irrational beliefs and leading to negative automatic thoughts may undermine an athlete's self-confidence. Like negative self-talk but on a subconscious level, negative automatic thoughts may be influenced by irrational beliefs (DiGiuseppe, 1996) and lead to psychological distress (Flett et al., 1991), such as depression symptoms (Tecuta et al., 2019).

The paucity of research into the role of self-confidence in the relationship between irrational beliefs and mental health is surprising given the importance of self-confidence in athletic performance (Moritz et al., 2000). Furthermore, as REBT-based research in sport is still fairly novel (since 2013; Jordana et al., 2020) and self-confidence is not prevalent in clinical REBT-based work, there is little research that has investigated

Fig. 1. REBT-I Model (Ellis, 1994). Note. Solid lines represent positive associations. DEP = Self-depreciation, DEM = Demandingness, LFT = Frustration Intolerance and AWF = Awfulizing.

the relationships between irrational beliefs and self-confidence directly. But self-confidence itself is demonstrably important for psychological wellbeing. For example, greater self-confidence has been found to be associated with lower levels of both cognitive and somatic anxiety (e.g., Neil et al., 2012). Additionally, Schaal et al. (2011) suggest that self-confidence can act as a protective factor against depression symptoms. This may be due to increased feelings of control which enables individuals to rid themselves of negative thoughts (Lazarus & Folkman, 1984). Evidence also suggests that there are individual differences in anxiety and self-confidence. For instance, females tend to possess higher levels of anxiety and lower self-confidence compared with males (Feingold, 1994), whilst self-confidence has been found to be lower in individual athletes compared with team sport athletes (Martens et al., 1990; Zeng, 2003), perhaps due to social support from team-mates (Freeman & Rees, 2010). Given the known relationships between self-confidence and mental health, it is therefore important to investigate how trait dispositions may underpin self-confidence and subsequently, determine competitive anxiety and depressive symptoms.

1.1. Aims and hypothesis

Despite the potential associations between irrational beliefs and selfconfidence, there is no known research that has investigated how these relationships may influence competitive anxiety and depressive symptoms in athletes. Therefore, the aims of the present study were to examine the role that self-confidence may play as part of the REBT-I model (Ellis, 1994) in athletes. As described in Section A (in the supplementary material), it was hypothesised that demandingness would be positively directly associated with all three secondary irrational beliefs and both competitive anxiety and depressive symptoms (DiLorenzo et al., 2007), and negatively associated with self-confidence (Chrysidis et al., 2020). Demandingness was also hypothesised to indirectly relate to self-confidence negatively through secondary irrational beliefs, and to competitive anxiety and depressive symptoms positively through secondary irrational beliefs and self-confidence (Ellis & Dryden, 2007; Chrysidis et al., 2020). Secondary irrational beliefs were proposed to associate negatively with self-confidence (Wood et al., 2017) and positively with competitive anxiety and depressive symptoms (Turner, Carrington, & Miller, 2019) directly, and indirectly through self-confidence. Finally, self-confidence was hypothesised to negatively relate to competitive anxiety and depressive symptoms (Neil et al., 2012; Schaal et al., 2011).

Additionally, previous research has identified gender, age, and type of sport (individual vs. team sport) differences in irrational beliefs, self-confidence, and mental health (e.g., Mak et al., 2004; Nixdorf et al., 2016). Accordingly, a secondary aim of the present study is to assess such differences in the variables of interest. Based on the previous literature (e.g., Mansell, 2021), it was proposed that males would possess greater levels of self-confidence than females, with females possessing higher irrational beliefs, competitive anxiety, and depressive symptoms than males. It is also hypothesised that age would have a negative relationship with irrational beliefs, competitive anxiety and depressive symptoms, and a positive relationship with self-confidence.

2. Method

2.1. Participants

Four hundred and ten athletes (n = 227 females, n = 183 males, Mage = 33.91 years, SD = 14.84) participated in the study. Following ethical approval from the first author's university ethics committee, participants were recruited via promotion on social media, through advertisements on campus and throughout the UK and abroad by sending emails to sports clubs. Recruited athletes represented fifty different team (n = 153) and individual sports (n = 256) including running (n = 84), football (n = 48) and roller derby (n = 23). The competitive level of the athletes included recreational (n = 168), local club/university (n = 162), regional (n = 35), semi-professional (n = 15), national (n = 17), and international (n = 13), and athletes had taken part in their main sport for an average of 13.25 years (SD = 11.56). Inclusion criteria were that athletes were at least eighteen years of age and took part in a sport. Exclusion criteria included not currently experiencing any injuries preventing them from taking part in their sport in the last two weeks, and currently not having medically diagnosed mental health conditions.

2.2. Measures

Irrational beliefs. The irrational performance beliefs inventory (iPBI; Turner et al., 2018) was used to assess irrational beliefs. The 28-item scale assesses demandingness, frustration intolerance, awfulizing, and self-depreciation. Participants rate the extent to which they agree/disagree with the statements on a five-point Likert-scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores were calculated by summing the items for each of the four subscales to provide a total score for the specific irrational beliefs. In the present study, Cronbach alpha coefficients indicated high levels of reliability (range = 0.78 - 0.91).

Self-confidence, cognitive and somatic competitive anxiety. The Competitive Trait Anxiety Inventory-2 (CTAI-2; Albrecht & Feltz, 1987) was used to assess self-confidence, and cognitive and somatic competitive anxiety. The shorter form 15-item questionnaire was employed, with five items each assessing trait self-confidence, trait cognitive competitive anxiety, and trait somatic competitive anxiety. Participants were asked to indicate the extent they agree with each statement in relation to their usual feelings prior to an athletic competition on a four-point Likert-scale ranging from 0 (*not at all*) to 4 (*very much so*). Scores were calculated by summing the five items on each subscale to produce a total score for intensity. The Cronbach's alpha coefficients in the present study were $\alpha = 0.89$ (self-confidence), $\alpha = 0.81$ (cognitive anxiety) and $\alpha = 0.87$ (somatic anxiety).

Depressive symptoms. The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) was designed to assess the mental health of an individual, with nine questions used to assess symptoms of depression. Participants are asked to consider how frequently they have been bothered by things over the last two weeks. Responses are made on a four-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). Scores are then summed with higher scores indicating higher levels of depressive symptoms. The Cronbach's alpha coefficient in the present study was $\alpha = 0.88$.

2.3. Procedures

Data collection took place between April and August 2019. Potential participants were provided with an information sheet about the study, including inclusion/exclusion criteria, and details of key ethical considerations. After providing informed consent, participants completed an online questionnaire pack containing demographic questions, the iPBI, CTAI-2, and PHQ-9. This included asking participants to identify their biological sex, which may have implications for differences in mental health (e.g., Turner, Carrington, & Miller, 2019). Overall, the questionnaire pack took approximately 20-min to complete.

2.4. Data analyses

Data were screened for missing values and outliers in SPSS (IBM, version 27). Three participants did not complete the questionnaire pack, and the remaining data (n = 410; female n = 227, male n = 183) contained less than 5% of missing responses. Little's MCAR test demonstrated that any missing data was missing at random (p > .05), so the expectation maximisation method was employed to complete the data set (Tabachnick & Fidell, 2013). The process of checking for outliers revealed no univariate or multivariate outliers when using Mahalanobis

distance at p < .001 (Tabachnick & Fidell, 2013). Participant characteristics are reported in Section C (in the supplementary material).

Two three-way MANOVAs were conducted in SPSS to test for gender, age (grouped into 18-33 years and 34 years and over), and sport-type (team vs individual) differences across total irrational beliefs, and anxiety and depression. Then, the hypothesised path model was tested using path analysis in AMOS (version 27). Model goodness of fit were examined using the chi square likelihood statistic ratio (χ^2 ; Jöreskog & Sörbom, 1993). Additionally, the GFI and the TLI were used as measures of incremental fit, with values of \geq 0.95 and \geq 0.90 indicating an excellent model fit (Hu & Bentler, 1999). RMSEA and SRMR were selected as indices of absolute model fit, where criteria of < 0.05 and <0.08 reflected excellent and adequate model fit respectively (Byrne, 2010; Hu & Bentler, 1999). Similar measures of model fit were also used in other comparable studies (e.g., Chadha et al., 2019). Standardized regressions were reported for all direct and indirect effects. Indirect effects were examined using 95% bias-corrected confidence intervals generated from bootstrapping of 1000 samples.

3. Results

3.1. Group differences

Irrational beliefs. The three-way MANOVA revealed a significant main effect between gender and sport type at the multivariate level (Pillai's trace = .03, F(4,400) = 3.22, p = .013, $\eta^2 = 0.03$), however, there were no significant differences at the between-subjects level. Furthermore, there was a significant main effect between age group and sport type at the multivariate level (Pillai's trace = .03, F(4,400) = 3.00, p = .018, $\eta^2 = 0.30$). A significant between-subjects effect between age group and sport type was revealed for frustration intolerance, F(1,400)= 5.30, p = .022, $\eta^2 = 0.01$, with pairwise comparisons indicating that younger adults reported significantly greater frustration intolerance than older adults, and team sport athletes reported significantly greater frustration intolerance than individual sport athletes (see Section C for mean scores). Finally, there was a significant main effect of sport type at the multivariate level (Pillai's trace = 0.03, F(4,400) = 3.58, p = .007, $\eta^2 = 0.03$). A significant between-subjects effect for type of sport was revealed for depreciation, F(1,400) = 6.35, p = .012, $\eta^2 = 0.02$, with pairwise comparisons of means indicating that athletes from individual

sports reported significantly greater depreciation than those in team sports. It should be noted that despite reaching statistical significance, the mean scores in these areas were only marginally different.

Self-confidence, cognitive and somatic competitive anxiety, and depression. The three-way MANOVA revealed no significant main effects for gender, age group and sport type on the dependent variables.

3.2. Testing the REBT-I model

Controlling for age and gender, path analysis revealed that the hypothesised model demonstrated an excellent fit to the data $\gamma^2(9) =$ 18.61, p = .033, GFI = 0.99, TLI = 0.97, RMSEA = 0.05 (CI = 0.01 to 0.08), SRMR = 0.03. The standardized path coefficients for each individual path are displayed in figure 2, demonstrating patterns largely consistent with study hypotheses. Squared multiple correlation (R²) scores offered additional support for the strength of fit of the data to the proposed model. Frustration intolerance was found to account for 2% total variance in cognitive anxiety (p = .003), and 2% of total variance in somatic competitive anxiety (p < .001), whilst depreciation was found to account for 16% total variance in self-confidence (p = .003), 3% of total variance in cognitive competitive anxiety (p < .001), and 23% of total variance in somatic competitive anxiety (p < .001). Finally, selfconfidence was responsible for 20% variance in cognitive competitive anxiety (p < .001), 43% variance in somatic competitive anxiety (p <.001), and 4% variance in depression (p < .001).

Results of the indirect effects demonstrated that demandingness was found to have a significant indirect effect through secondary irrational beliefs and self-confidence on self-confidence through secondary irrational beliefs ($\beta = -0.16$, p = .002, 95% CI = -0.22 to -0.09), and on cognitive competitive anxiety ($\beta = 0.17$, p = .02, 95% CI = 0.11 to 0.24) and depression ($\beta = 0.25$, p = .002, 95% CI = 0.16 to 0.34). Depreciation also had a significant indirect effect through self-confidence on cognitive competitive anxiety ($\beta = 0.11$, p = .001, 95% CI = 0.08 to 0.16), somatic competitive anxiety ($\beta = 0.18$, p = .001, 95% CI = 0.13 to 0.24), and depression ($\beta = 0.07$, p = .002, 95% CI = 0.04 to 0.11).

The study hypothesised that self-confidence would extend the REBT-I model (Ellis, 1994) by mediating the relationships between irrational beliefs, competitive anxiety, and depressive symptoms in athletes. In summary, depreciation has the greatest association with self-confidence, cognitive competitive anxiety, and depression directly, and with



Fig. 2. Path analysis testing the revised model for the effect of irrational beliefs on self-confidence, cognitive and somatic anxiety, and depressive symptoms. Note: Cognitive and somatic anxiety refer specifically to competitive anxiety. Full lines denote significant positive relationships and dashed lines denote significant negative relationships. Numbers refer to standardized beta values. * = p < .05, ** = p < .01, *** = p < .001

cognitive and somatic competitive anxiety and depression indirectly through self-confidence. Frustration intolerance was found to associate directly with cognitive and somatic competitive anxiety. Self-confidence was found to significantly predict cognitive and somatic competitive anxiety, and depression. Overall, the results demonstrate some support for the REBT-I model (Ellis, 1994) in that demandingness predicted secondary irrational beliefs, and in turn, competitive anxiety, and depression. Results extend this theory by offering self-confidence as a mediating factor between irrational beliefs, competitive anxiety, and depression.

4. Discussion

The primary aim of the present study was to examine the role that self-confidence may play within the REBT-I model posited by Ellis (1994). We sought to extend the literature by testing the REBT-I model within an athlete population to gain an understanding of the role of irrational beliefs and self-confidence in athlete's mental health. In brief, we hypothesised support for the REBT-I model, and hypothesised that self-confidence would act as an additional factor through which irrational beliefs would predict competitive anxiety and depressive symptoms. Data in the present study offered support for the REBT-I model (Ellis, 1994) and past research in athletes (Turner, Carrington, & Miller, 2019), whereby demandingness was related to competitive anxiety and depressive symptoms through secondary irrational beliefs. In extension to the REBT-I model, data also revealed that the positive relationships between demandingness, competitive anxiety, and depressive symptoms were atemporally mediated by a combination of depreciation and frustration intolerance secondary irrational beliefs and self-confidence. Separately, irrational beliefs and self-confidence have been found to be indicators of poor mental health in past research (e.g., Vîsla et al., 2016), but the current study assesses the effects of irrational beliefs and self-confidence together to progress theory and research. That is to say that the novel element of the present study is the extension to the REBT-I model with the inclusion of self-confidence. In the current study, secondary irrational beliefs were most important for self-confidence with primary irrational beliefs only indirectly related to self-confidence through secondary irrational beliefs. The notion that irrational beliefs are related to self-confidence has been implied in applied research (Chrysidis et al., 2020), but the present study offers the first direct evidence of how irrational beliefs could be related to self-confidence.

The relationships between primary and secondary irrational beliefs and self-confidence can be explained in three main ways. First, a novel finding from the present data was the significant direct relationship between depreciation and self-confidence. Depreciation beliefs are concerned with beliefs that refer to the self (e.g., "I am a complete failure"), are extreme and fatalistic (Turner et al., 2022). Subsequently, judgements of this nature are more likely to diminish one's self-confidence compared with beliefs that evaluate external events (e. g., "It is awful if others do not approve of me"). As depreciation beliefs hold negative evaluations of oneself as a central tenet, it seems logical that the self-doubt that these evaluations create will lead to lower self-confidence. If I am a failure, then surely, I am likely to fail. Second, the combined effect of demandingness and secondary irrational beliefs may adversely affect the performance accomplishments, emotional states, and verbal persuasion aspects of Bandura's (1997) self-efficacy theory, such as by ruminating about previous performance failures (Artiran et al., 2019). Demandingness (e.g., musts, demands, absolute shoulds) is said to be a core belief involved in primary appraisal which leads to evaluative secondary irrational beliefs (Ellis & Dryden, 2007). In addition to rigid demandingness beliefs such as "I wanted to win this match, and therefore I should have defeated my opponent", individuals may interpret previous performance failures maladaptively, such as considering them as worse than bad (awfulizing), or that their performance failure meant that they were a failure as person (depreciation). Combined beliefs of this nature are likely to lead to negative predictions of

future success when approaching tasks, reminiscent of low self-confidence. Furthermore, as irrational beliefs are associated with individuals who experience poor mental health (Turner, Carrington, & Miller, 2019), it is logical to suggest that the emotional states aspect of Bandura's model may explain that high irrational beliefs would be associated with low self-confidence, especially if negative emotional states are interpreted in a debilitative way. Indeed, the greater sense of emotional control afforded by adopting an $A \rightarrow B \rightarrow C$ method of thinking means that reductions in irrational beliefs may allow self-confidence to flourish. REBT theory may imply that self-confidence is a cognitive consequence of irrational beliefs so that low irrational beliefs could mean a reduced likelihood of maladaptive consequences such as low self-confidence. Third, negative automatic thoughts (DiGuiseppe et al., 1996) may provide an explanation for the relationship between irrational beliefs and self-confidence. Occurring autonomously (Buschmann et al., 2018) and based on core beliefs (Clark, 1999), it is thought that demandingness influences secondary irrational beliefs, and subsequently negative automatic thoughts (Buschmann et al., 2018). Indeed, negative automatic thoughts have been found to align with evaluative secondary irrational beliefs, such as adverse self-evaluation or worry (Zourbanos et al., 2009). Some negative automatic thoughts are also akin to low self-confidence, such as "I can't" or "I am not good enough". Fueled by irrational beliefs, such negative automatic thoughts may erode self-confidence through negative self-talk. Accordingly, this suggests that the relationship between irrational beliefs and negative automatic thoughts (Zourbanos et al., 2009), and the conceptual similarity between self-confidence and negative automatic thoughts, may explain the associations between primary and secondary irrational beliefs and self-confidence in the present study. This explanation therefore offers support for the role of REBT as a technique to address the deeper cognitions of irrational beliefs and the more superficial negative automatic thoughts simultaneously (Buschmann et al., 2018).

In addition to finding associations between primary and secondary irrational beliefs and self-confidence, the current study also revealed that self-confidence may play a role in the relationship between irrational beliefs, competitive anxiety, and depressive symptoms. Past research (e.g., Turner, Carrington, & Miller, 2019) has indicated support for the REBT-I model whereby primary irrational beliefs are indirectly related to competitive anxiety and depressive symptoms via secondary irrational beliefs, which are directly related to competitive anxiety and depressive symptoms. But in the current study we find that self-confidence plays an important role in the relationships between specific irrational beliefs, competitive anxiety, and depressive symptoms. The findings of the present study extend the literature by highlighting the direct relationship between depreciation and self-confidence, and how this in turn may predict competitive anxiety and depressive symptoms. So, if an athlete has high depreciation beliefs and low self-confidence, they will be more likely to experience competitive anxiety and depressive symptoms. This is an important finding for three main reasons. First, it means that athletes presenting with low self-confidence may not only be at risk of underperformance (e. g., Moritz et al., 2000), but also at risk of poorer mental health. Second, athletes presenting with low self-confidence may also have high depreciation beliefs, which can co-occur to undermine mental health. This is vital for REBT practice because low self-confidence is more likely to be expressed overtly by athletes compared to irrational beliefs, because irrational beliefs are more abstract, may operate as schema (Turner, 2016), and do not have specific behavioural substrates. Third, self-confidence may amplify the effects of irrational beliefs on competitive anxiety and depressive symptoms. That is, it may be the case that whilst depreciation beliefs are directly related to poorer mental health (depreciation seems to be particularly related to poorer mental health; e. g., Mansell, 2021), the low self-confidence associated with depreciation may serve to make worse competitive anxiety and depressive symptoms. Not only is the athlete depreciative of themselves, they are also filled

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with self-doubt about their competencies, and thus this combination may be particularly pernicious.

Self-confidence was hypothesised to negatively relate to competitive anxiety and depressive symptoms, and the findings of the present study supported this hypothesis for cognitive and somatic competitive anxiety and depressive symptoms. This adds weight to the literature that demonstrates the important role that self-confidence may have in predicting poor mental health (e.g., Schaal et al., 2011). Individuals who possess greater self-confidence are more likely to perceive themselves to have the resources to cope with the demands of stressful situations. In turn, this may mean that an athlete experiences cognitive and somatic competitive anxiety to a lesser extent than those who possess lower self-confidence. This may be because those who possess high self-confidence are less likely to consider the consequences of failing in their goal-related pursuits, thus reducing the accumulation of competitive anxiety (Bandura, 1997).

Frustration intolerance also featured as having an independent influence on competitive anxiety, although previous studies have reported mixed results as to its exact effect (e.g., Turner, Carrington, & Miller, 2019; Vîsla et al., 2016). To explain the positive association between frustration intolerance and competitive anxiety, an individual who holds frustration intolerance beliefs are likely to perceive that they are unable to endure adverse situations (DiLorenzo et al., 2007). This may mean that they focus on the symptoms of competitive anxiety and find this to be distressing and uncomfortable (Simons & Gaher, 2005). It can therefore be implied that athletes who hold frustration intolerance beliefs and low self-confidence may be at greater risk of experiencing competitive anxiety. Equally of interest is the finding that awfulizing was not directly related to self-confidence, competitive anxiety, or depressive symptoms. Perhaps the pathway between awfulizing and self-confidence was non-significant because conceptually they do not speak to each other as much as depreciation beliefs. Whilst depreciation is concerned with beliefs that are self-defeating and therefore erode self-confidence, the awfulizing subscale in the iPBI (Turner et al., 2018) features items such as fairness of treatment and the need for respect (e. g., "It's awful to be dismissed by my peers"), which appear not to be as closely linked to self-confidence. Furthermore, time-limited irrationality posits that although awfulizing beliefs may be present in response to an adverse event, they might not continue to be present over time (Dryden, 2020), and as a result may not be as maladaptive for mental health. As such, measures of irrational beliefs could aim to capture tendencies to think in irrational ways (e.g., "I tend to think that it is awful when bad things happen to me") rather than in the specific situations (e.g., unfair treatment) of the iPBI. Given the addition of the findings of the present study to other studies that have demonstrated the relationships between irrational beliefs and athlete's mental health (e.g., Turner, Carrington, & Miller, 2019), interventions targeting specific irrational beliefs should be considered. If practitioners detect high irrational beliefs, an REBT-informed intervention which disputes such beliefs and replaces them with more rational ways of thinking could be employed to improve mental health (e.g., Turner, Ewen, & Barker, 2020).

Taken together, the data points to the inclusion of self-confidence within the domain of REBT as a tertiary cognitive component, suggesting that high irrational beliefs and low self-confidence may relate and co-occur to influence competitive anxiety and depressive symptoms in athletes. That is, it is those who report both high irrational beliefs and low self-confidence may be particularly at risk in terms of their mental health. The inclusion of self-confidence to the REBT-I model brings in to focus the suggestion that tertiary cognitive elements may mediate the relationships between primary and secondary irrational beliefs, competitive anxiety, and depressive symptoms. Previous studies have demonstrated that cognitions such as challenge and threat appraisals (Chadha et al., 2019), maladaptive schema (Turner, Aspin, & Gillman, 2019), negative automatic thoughts (e.g., Buschmann et al., 2018), rumination (Artiran et al., 2019), self-determined motivation (Turner et al., 2022), and thought suppression (Szentagotai, 2006) may mediate the positive relationship between primary and secondary irrational beliefs, competitive anxiety, and depressive symptoms. As such, the REBT-I model could be extended to include these tertiary elements to produce a more complete picture of how irrational beliefs may relate to and predict competitive anxiety and depressive symptoms.

This extended REBT-I model (Section B in the supplementary material) might help to explain more variance in competitive anxiety and depressive symptoms but can also orient practice towards general REBT rather than specific REBT (Turner, 2022). To elaborate, specific REBT is characterised by the achievement of a profound cognitive or philosophic change in clients' basic assumptions (i.e., irrational beliefs, to rational beliefs) (Ellis, 1977). General REBT is a broader approach which does not necessarily address the deep-seated fundamental irrational beliefs and is a form of REBT often applied by practitioners (Ellis, 1977). So as a practitioner, specific REBT can be used to focus applied work on helping the athlete to dispute and change their irrational beliefs, or general REBT can be used to focus work on a broader gamut of cognitions (including irrational beliefs), such as self-confidence, challenge and threat appraisals, maladaptive schema, negative automatic thoughts, rumination, self-determined motivation, and thought suppression. This work falls within the remit of a single REBT, done specifically or generally (Dryden & David, 2008). Therefore, the extended REBT-I model offered in the current paper captures this general REBT approach and opens the door to a broader understanding of competitive anxiety and depressive symptoms through REBT.

A secondary aim of the present study was to investigate differences across gender, age, and competitive level in the variables of interest. Despite mean scores suggesting that females report greater irrational beliefs, competitive anxiety, and depressive symptoms than males, and that males possessed greater self-confidence than females, results demonstrated that only significant differences were found in selfconfidence. Age was hypothesised to have a negative relationship with irrational beliefs, competitive anxiety, and depressive symptoms, and a positive relationship with self-confidence. Results demonstrated that this was only true for frustration intolerance, where younger adults reported significantly greater frustration intolerance than older adults. As individuals grow older, they accumulate a wealth of experience of coping with stressful situations (Lazarus & Folkman, 1984), and a more rational sense of perspective towards stressors may be developed through their reflections (Hanton et al., 2008). In turn, frustration intolerance may be reduced as fear of failure declines (Sagar & Jowett, 2012) and individuals perceive that they are more able to tolerate failure. Team sport athletes were hypothesised to report greater self-confidence and lower irrational beliefs, competitive anxiety, and depressive symptoms than individual sport athletes. Results offered partial support for the hypotheses, demonstrating that team sport athletes possess significantly lower depreciation than individual sport athletes. Perhaps these differences are due to perceived support (Freeman & Rees, 2010), and it may be that team-mates can distract athletes from thinking negatively about their ability to perform well or verbally persuade (Bandura, 1997) individuals that they bring value to the team. In contrast to the hypotheses, all other differences were non-significant, apart from frustration intolerance, which was surprisingly greater in athletes from team sport athletes than individual sports. Despite findings of statistical significance, caution is urged as to how much the specific irrational beliefs may vary between different population groups given the small mean differences and effect sizes. As with other previous studies (e.g., Turner, Carrington, & Miller, 2019), differences in irrational beliefs, self-confidence, and mental health between athletes from team and individual sports have not always been evident, and the individual context that the athletes operate in may be a more important factor than the type of sport alone.

A strength of the present study was the use of path analysis. Also used in other similar studies (e.g., Chadha et al., 2019), it accounts for multiple associations simultaneously. An important aim of the study was to investigate the indirect relationships between irrational beliefs, self-confidence, competitive anxiety, and depressive symptoms, and the employment of path analysis enabled examination of both direct and indirect pathways to test the REBT-I model. A further strength of the present study was the relatively large sample size (n = 410), although greater homogeneity across the between-groups factors would have been beneficial. The sample was drawn from a cross-section of athletic ability, thus offering a wide representation of athletes ranging from recreational to elite level. Future research may wish to offer comparisons as to whether elite athletes possess differing irrational beliefs to recreational athletes, and in doing so should adopt the athlete classification taxonomy proposed by Swann et al. (2015) to clearly delineate athlete levels. Considering the limitations of the present study, the trait dispositions were collected using self-report measures which may result in responses indicative of self-presentation (e.g., Turner et al., 2014). Furthermore, given athlete-only sample, the study collected data on competitive anxiety rather than anxiety as a mental disorder and thus focused only on depressive symptoms as a measure of psychological distress. Future research may wish to ascertain whether our results regarding competitive anxiety are replicated by measuring anxiety from a mental disorder perspective, for example via the general anxiety disorder-7 (GAD-7) scale (Spitzer et al., 2006). It should also be noted that the study was cross-sectional and does not imply causation or indeed that these cognitions always occur temporally in this order. In other words, it is not that one has an irrational belief, and then a cognition related to self-confidence, and then experiences distress. We place self-confidence between irrational beliefs and distress in order to examine the explanatory power of self-confidence in the relationship between irrational beliefs, competitive anxiety, and depressive symptoms. Thus, the placement of variables is tied to the purpose of the paper, rather than the temporal or depth at which variables are expressed. Accordingly, future research may wish to conduct longitudinal studies that investigate the relationships between irrational beliefs, self-confidence, competitive anxiety, and depressive symptoms. Additionally, it may be of interest to researchers to assess whether an intervention that targets specific irrational beliefs and self-confidence leads to psychological wellbeing and enhanced performance in stressful situations (e.g., sporting competitions). The content of such interventions may include strategies such as unconditional self-acceptance to reduce depreciation (Cunningham & Turner, 2016) or self-talk to enhance self-confidence (e.g., Laborde et al., 2014). Mastery imagery may also be employed to alter perceptions about competitive anxiety, where meaning propositions are used to reinterpret the symptoms of anxiety as facilitative (Williams et al., 2017).

4.1. Conclusion

In the present study we investigated the extent to which selfconfidence atemporally mediated the relationships between primary and secondary irrational beliefs, competitive anxiety, and depressive symptoms in athletes. Using path analysis, data generally supported the proposed role of self-confidence in the REBT-I model (Ellis, 1994). Put simply, greater irrational beliefs appear to relate to lower self-confidence, which in turn relates to higher competitive anxiety and depressive symptoms. The findings of the present study underline the importance of irrational beliefs in athletes' psychological wellbeing (e. g., Turner, Carrington, & Miller, 2019) and add to the extant literature by highlighting the important role that self-confidence may have in combining with irrational beliefs to influence the mental health of athletes. As such, results suggest the REBT-I model may be extended to include a tertiary level of cognitions (i.e., the extended REBT-I model) that are influenced by irrational beliefs and are more proximal to competitive anxiety and depressive symptoms. Results also support the findings of previous studies (e.g., Mansell, 2021) by pointing towards depreciation as being a particularly important secondary irrational belief for predicting depression symptoms in athletes. Finally, results also add to the literature by suggesting how irrational beliefs and self-confidence may differ across gender, age, and competitive level. Taken together, the findings of the present study suggest that practitioners should employ strategies to reduce specific irrational beliefs and enhance self-confidence to reduce the risk of competitive anxiety and depressive symptoms among athletes.

Declaration of competing interest

No potential conflict of interest was reported by the author. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data availability

Data will be made available on request.

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