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Inflexibility, Reactions to Retirement, and Mental Health in Elite Competitors: A Mediation Analysis

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Research suggests retirement from competition to be a significant life transition, categorized by both positive and negative experiences. Ample studies have shown that psychological inflexibility (i.e., a person's difficulty in coping with and accepting distress) is a negative experience that can lead to adverse mental health outcomes within competitive contexts. However, no studies to date have examined the link between psychological inflexibility, reactions to retirement, and mental health outcomes in retired competitors. The present study examines how inflexibility and reactions to retirement are associated with depression and anxiety symptoms in a sample of former competitors within Drum Corps International, an elite marching and performance organization with mandatory retirement at age 21. Results from 223 retired competitors (age range 20-29, M_{age} = 24.27) were analyzed. Consistent with hypotheses, psychological inflexibility predicted depression and anxiety symptoms, and reactions to retirement partially mediated the relation between inflexibility and symptoms of depression. Specifically, positive reappraisal and loss of control reactions to retirement partially mediated psychological inflexibility's association with depressive symptoms (with loss of control as the stronger mediator). Clinical implications for competitors approaching retirement are discussed, with emphasis on the utility of acceptance and commitment-based interventions.

Keywords: psychological inflexibility, depression, anxiety, reactions to loss

Psychological inflexibility, the central tenet of the acceptance and commitment therapy (ACT) model (Hayes et al., 1999; 2006), refers to difficulty connecting with the present moment and adaptively engaging in certain behaviors in service of chosen values. Inflexibility is construed as a process rather than an event and typically occurs when people attempt to avoid or control unwanted internal experiences. Inflexible behavior is oriented toward "getting through" or surviving psychological distress (e.g., mental illness symptoms), whereas flexibility is marked by using previously identified values to guide behavior toward building a life that is more rewarding, satisfying, and workable in the long run, even when distress is present.

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Values are defined as "things we care about, things that are important to us, and things we organize and plan our lives around" (DeYoung & Tiberius, 2023, p. 6), and focusing on how to pursue values amidst a difficult change can be good for mental health. The ability to pursue values in new ways during a challenging situation is a core aspect of psychological flexibility. For example, if a competitor experiences an injury that ends their career earlier than expected, an inflexible response would involve suppressing grief and avoiding acknowledgment of the imminent transition. In contrast, a flexible response would involve the acknowledgment of grief and consideration of ways that personal values can inform their responses to the injury (e.g., if leadership is a value, the competitor can look for ways to continue being a leader in their new role). An abundance of self-report, correlational research has established a link between flexibility and positive behavioral outcomes like job performance, job satisfaction, and decreased symptoms of depression and anxiety (for a meta-analysis, see Hayes et al., 2006), and

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behavioral and clinical studies have further supported these associations (Dalrymple & Herbert, 2007; Feldner et al., 2006).

Inflexibility is relevant for competition and retirement from competition in several ways. Inflexibility is particularly salient in competitive settings that involve intense goal pursuit, loss, and high stress because the ways in which people engage in high-intensity experiences (i.e., with varying degrees of flexibility) can have a magnified effect on outcomes (Carraça et al., 2018; Pourabdol et al., 2020). One such setting includes elite competitive contexts, wherein lower inflexibility is associated with better individual and team performance (Aukee, 2014; Carraça et al., 2018; 2019a; 2019b), and higher levels of inflexibility can lead to negative perceptions of performance (Clemente-Suarez et al., 2020). Interventions that lower inflexibility in elite soccer players have improved performance in competitive scenarios, more sophisticated strategies for coping with competition-related stress, and reductions in competition-related anxiety (Carraça et al., 2018). After experimentally examining the effectiveness of a mindfulness-based soccer program (MBSoccerP) on elite soccer athletes, Carraça et al. (2018) found ACT interventions (e.g., identification of salient values, practice of acceptance in the face of distress) to longitudinally predict greater increases in flexibility and self-compassion and decreases in their self-reported levels of anxiety during competition compared to controls. These results highlight flexibility as an important strength for coping with the demands of competition. In addition, inflexibility is relevant for retirement from competition because retirement involves a change of role and context (e.g., Willard & Lavallee, 2016), and people can respond to that change with acceptance and self-awareness (i.e., flexibly) or with avoidance or grasping for control (i.e., inflexibly).

Reactions to Loss in Retirement from Competition

Inflexibility matters both during competition and after when performers retire. Retirement from competition can bring about distinct reactions to loss. Loss is defined as "an experience where there is a change in circumstance, perception, or experience where it would be impossible to return to the way things were before" (Harris, 2020, p. 2). Loss is common in competition settings, and the ways competitors engage with loss might explain how inflexibility affects mental health outcomes, such as depression or anxiety symptoms. Performers engage with loss when they lose a competition but also during injury or transition to a different role or team. Perhaps the most profound loss competitors will experience is when they can no longer compete and transition into retirement. For example, one study on the retirement transitions of professional ballet dancers found that the dancers with a strong, exclusively athletic identity experienced the most loss and confusion during their retirement transition (Willard & Lavallee, 2016).

The psychological burden of retirement from elite competition can include symptoms of anxiety and depression, loss of competitive identity, the potential for substance misuse, disordered eating behaviors, and lack of long-term goal clarity (Chang et al., 2019; Esopenko et al., 2020; Martin et al., 2014; Miller & Buttell, 2018). Retirement is also associated with psychological struggle regardless of whether people plan for it or not (Bianco et al., 1999; Brewer et al., 2010; Park et al., 2012; Stephan et al., 2003). Because a highly inflexible person is at risk for some of these same outcomes (Arslan & Allen, 2022; Hayes et al., 1996; Kato, 2016; Levin et al., 2014), it is necessary to clarify the relation between inflexibility, competitive retirement, and depression and anxiety symptoms. Said another way, competitors' experiences following retirement likely depend on the nature of the transition and the degree to which they (in)flexibly relate to it. Scarce empirical research has examined the relation between psychological inflexibility and competitive retirement, thus highlighting a gap in the clinical and applied performance literature.

The ways that people react to losses, such as retirement from competition, matter for mental health. An abundance of psychological research has examined responses to loss and challenge in the form of coping, in which people try to respond to difficulty in an adaptive way that diminishes demands (Livneh & Martz, 2007). However, not all reactions to loss are adaptive, like coping; people can also respond defensively or fragmentedly (Chronister & Chan, 2007). Research has found that people react to loss (e.g., losing an important match, retirement from competition) in correlated but distinct ways, some of which are adaptive coping strategies (e.g., positive reappraisal), and some of which are not (e.g., avoiding the loss outright or perceiving the loss as a loss of control; Cooley et al., 2010). People who avoid the loss will try to go on as if nothing has happened and/or try to forget the loss completely. Avoidant reactions are typically associated with higher depression and anxiety symptoms (Arnaudova et al., 2017; Barlow et al., 2011). People who perceive the loss as a loss of control also tend to report more symptoms of both depression and anxiety, such as difficulty concentrating, rumination about the loss's negative future effects, and engaging in isolating behaviors (Cooley et al., 2010).

In contrast, people who positively reappraise their loss by reframing it as an opportunity to experience personal growth and/or engage in different manners of self-expression are more likely to report feeling stronger after the loss. Positive reappraisal is associated with greater happiness and positive affect, as well as lower anxiety (Cooley et al., 2010). Indeed, some research has suggested that retirement from competition can involve finding gains or strengths (Menke & Germany, 2019), suggesting not all retirement experiences are necessarily negative (Harrison & Ruddock-Hudson, 2017; Stankovich et al., 2001). For example, competitors may find value in committing themselves to new goals and investing in their competitive community in a new way (e.g., coaching), or competitors with ambivalent feelings about their performance domain may feel relieved to move on.

Given that flexibility can be conceptualized as a higher-order ability to respond effectively in a variety of distressing situations in pursuit of longer-term goals, its effectiveness as a process is likely related to engaging in adaptive reactions to loss in the presence of distress from that loss (Dawson & Golijani-Moghaddam, 2020). More avoidant reactions to loss have been shown to mediate the link between inflexibility and symptoms of depression and anxiety among psychiatric patients (Rueda & Valls, 2020). Conversely, flexible people who engage in a positive reappraisal style report higher levels of acceptance and lower levels of depression and/or anxiety in the general population (Dawson & Golijani-Moghaddam, 2020). This relation has yet to be extended to competitors, thus revealing another gap in the performance and applied performance literature.

Drum Corp International

The dearth of findings involving inflexibility, reactions to loss, and mental health outcomes warrant further investigation, especially in high-performance populations. One population in which these concepts can be examined is Drum Corps International (DCI), an elite competitive marching organization. Also known as "Marching Music's Major League," DCI is the most prestigious level of marching arts. DCI is comprised of 23 world class units and 22 open class units. Each unit (also known as a 'corps') is made up of 154 members and 3 sections (i.e., brass, percussion, and color guard), with 6,930 competitors in the organization each year. In 2017, the average age of world class corps was 19.31 years, with a range of 14-22 (About Drum Corps International (DCI), Marching Music's Major League™, n.d.).

Participants in DCI train extensively, spending 6-12 hours per day engaging in physical training, choreographed movements, and disciplined goal-setting for competition when in season. A unique element of DCI includes a standard age limit of 21 years old, commonly known as an "age-out." The fact that DCI enforces such a rigid retirement age makes it a prime context for examining reactions to retirement because retirement age (i.e., 21) and reason for retiring (i.e., forced) are more uniform across retirees than in other competitive contexts. Because the context and motivation of retirement are similar for DCI competitors, researchers can learn much about the individual difference factors that affect how competitors respond differently to the same event. Moreover, this mandatory age-out may affect reactions to loss in specific ways. DCI competitors may exhibit a higher perceived loss of control, or they may be able to engage in greater positive reappraisal and gratitude for their DCI experience as a whole. Research suggests that forced involuntary (versus voluntary) retirement negatively impacts competitor well-being (Coakley, 1983; Coleman & Roberts, 2021; McKnight et al., 2009; Park, Lavallee, & Tod, 2012). Given its emphasis on training, competition, and excellence, as well as the mandatory age-out at 21 years, DCI is an optimal context for examining inflexibility, reactions to retirement, and depression and anxiety symptoms in a high-performance, competitive environment.

The Present Study

We aimed to explore the relations between psychological (in)flexibility, reactions to loss, and depression and anxiety symptoms in a competitive context. The present study addresses important, unexplored questions about high-performance competitors' transitions to retirement and how differences in psychological (in)flexibility and reactions to loss influence depression and anxiety symptoms. The present study focuses on symptoms of depression and anxiety, which have been shown to be worse and more common after retirement from competitive contexts (Montero et al., 2022). Given that research has shown anxiety and depression to be two of the most frequently occurring comorbid disorders alongside the presence of psychological inflexibility (Aukee, 2014; Carraça et al., 2018; Kalin, 2020; Kessler et al., 2015), we hypothesized that (H1) retired competitors higher in inflexibility would report higher levels of depression and anxiety. Additionally, because psychological inflexibility has been shown to predict more avoidant reactions to loss (Rueda & Valls, 2020), we hypothesized that (H2) the

predicted relation between psychological inflexibility and mental illness symptoms would be mediated by reaction to loss styles. In other words, we predicted that retired competitors higher in psychological inflexibility would negatively appraise their loss (i.e., higher avoidance and loss of control, lower positive reappraisal), which would then be associated with higher levels of depression and anxiety following retirement from competition.

Psychological inflexibility is considered as the independent variable in these models because it is a habitual way in which people engage the external world in relation to their internal experiences that is employed across diverse situations and contexts. In contrast, reactions to loss are situationally dependent in that they are only relevant in response to a loss and are more likely to vary based on the contextual features of a loss (e.g., retirement vs. relationship loss, forced vs. voluntary retirement). Whereas psychological inflexibility is relevant to both loss and non-loss scenarios, reactions to loss are constrained in their relevance to loss events. Thus, we examine how inflexibility, a domain general construct, affects depression and anxiety symptoms through specific reactions to the losses experienced during retirement. We chose to examine reactions to loss as simultaneous mediators because people can respond to a loss in a variety of coinciding ways (e.g., feeling out of control and wanting to avoid the loss). By testing whether reactions to loss play an explanatory role in the association between inflexibility and depression and anxiety symptoms simultaneously, we can compare effect sizes of those concurrent mediators.[1] Although we view this specification of independent, dependent, and mediating variables as the most theoretically defensible, alternative models in which inflexibility mediates the associations between reactions to loss and depression and anxiety symptoms can be found in the Supplemental Material.

Method

Participants and Procedures

Participants were alumni of DCI. An initial sample of 460 was attained, with ages ranging from 20 to 80 years old. Because our study focused on reactions to retirement that occurred at approximately 21 years of age, we restricted our final analytic sample to participants still in emerging adulthood (i.e., the same developmental stage as when they competed). Research supports emerging adulthood age ranges from 18 to 29 years old (Arnett, 2007; Arnett et al., 2014; Reifman et al., 2007). With an age range of 20 to 29, our final sample size was 223 (M_{age} = 24.47). See Table 1 for participant demographic information.

All participants retired at or before the age of 21 due to DCI's age-out rule. Participants indicated in which section of DCI they competed, with 54% in brass, 13% in percussion, 29% in color guard, and 5% as conductors. Participants also indicated the duration of their DCI involvement ($M_{involve}$ = 2.69 years) and whether they retired voluntarily (29%) or via age-out (71%). Participants also indicated whether they were still connected to the marching arts in some way today (66%

Table 1. Demographic Information

Demographic	*n*	%
Gender Identity		
Man	96	43.0
Woman	123	55.2
Other	4	1.7
Sexual Orientation		
Heterosexual	167	74.9
Homosexual	17	7.6
Bisexual	29	13.0
Other	10	4.4
Ethnicity		
African American/Black	2	.9
Asian American	9	4.0
Hispanic/Latino	13	5.8
White	191	85.7
Other	8	3.5
Education		
High school degree	2	.9
Vocational training	2	.9
Some college	49	21.9
Associate's degree	12	5.4
Bachelor's degree	101	45.3
Some graduate school	27	12.1
Master's degree	26	11.7
Doctorate degree	4	1.8
Religious Affiliation		
Christian	80	35.9
Buddhist	1	.4
Atheist	42	18.8
Unaffiliated	69	30.9
Other	30	13.4
Missing	1	.4
	M (Med)	***SD***
Age	24.47 (24)	2.33

[1] In addition, mediation models allow for simultaneous mediators but not more than one independent variable, and we wanted to test predictors all in one model.

still involved). Involvement does not refer to continued competition but rather any level of involvement, such as alumni groups, administrative roles, instruction (i.e., band director or teacher), judging of competitions, collegiate or community marching, spectator/fan, or volunteer (these examples come from an open-ended text box for participants who indicated that they were still connected to the marching arts).

Ethical approval was given and deemed exempt from our institutional review board. Data for this study were taken from a larger study aimed at examining which factors impact transition from DCI to everyday life. Participants were recruited online through snowball sampling on various social media platforms (i.e., Facebook and Instagram). Participants were told that they could share the survey link on their respective corps alumni group pages. The survey was distributed in the spring of 2019 for approximately 4–6 weeks. All participants provided consent before completing a Qualtrics self-report battery of questionnaires followed by basic demographic multiple choice questions (i.e., age, total number of years competed in DCI, voluntary versus involuntary retirement, continued involvement with the marching arts post-retirement, gender identity, sexual orientation, ethnicity, education level, and religious affiliation).

Measures

The Action and Acceptance Questionnaire-II (AAQ-II, Bond et al., 2011) is a ten-item measure of psychological inflexibility and experiential avoidance. Participants were asked to rate the extent to which items applied to them in the time following their age-out. Items are rated on a 7-point Likert scale ranging from 1 (never true) to 7 (always true), with items including such statements as "I'm afraid of my feelings" or "Emotions cause problems in my life." Items are summed, with higher scores indicating greater inflexibility and cutoff scores higher than 24 suggesting greater levels of psychological inflexibility and clinically significant distress. Internal consistency was good ($\alpha = .92$). The AAQ-II is also commonly used to examine inflexibility in both college-aged and athletic populations, and shows strong psychometric properties across cultures (Chang et al., 2017; Dehghani et al., 2018; Krafft et al., 2019; Wong et al., 2022).

The Reactions to Loss Scale (RTL, Cooley et al., 2014) is a 70-item self-report measure used to assess reactions to both death-related and non-death-related losses. Its three subscales refer to three discrete reactions to loss: Loss of Control (e.g., "I could not stop thinking about the loss"), Avoidant (e.g., "I tried to go on as if nothing happened"), and Positive Reappraisal (e.g., "I began to feel stronger after dealing with the loss."). Participants were asked to rate the extent to which items applied to them following the loss of their DCI eligibility. Items are rated on a 6-point Likert scale ranging from 1 (never true) to 6 (always true). Internal consistency across subscales was good (all $\alpha > .88$). The RTL was also validated by Cooley et al. (2014) in a sample of college-aged students, thus making it an appropriate measure for examining reactions to DCI retirement (i.e., at a maximum of 22 years of age).

Two subscales from the Depression and Anxiety Stress Scale-21 (DASS-21; Antony et al., 1998) were used to assess depression and anxiety. The third subscale, assessing stress, was not included in analyses, as the present study aimed to explore the association of inflexibility and reactions to retirement on depression and anxiety only. Both subscales consist of seven items. Participants were asked to rate the extent to which items applied to them in the time following their final season. Each subscale ranges from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time), with items describing emotional difficulties included in depression (e.g., "I felt down-hearted and blue") and anxiety (e.g., "I felt I was close to panic"). Items from each scale are summed to create composites for depression and anxiety. Cutoff scores are ≥ 21 for the depression subscale and ≥ 15 for the anxiety subscale, which indicates "high" or "severe" levels after composite scores have been multiplied by two. Internal consistency across subscales was good (all $\alpha > .81$). Additionally, the DASS-21 has been deemed one of the most respected norm-referenced scales of its kind and has been shown to be a stronger predictor of depression and anxiety diagnoses when compared to similar self-report measures of the same constructs (Dunstan et al., 2017).

Analytic Approach

For our first hypothesis testing whether greater psychological inflexibility predicts mental illness symptoms, multiple regressions were conducted in SPSS. Depression and anxiety were regressed onto psychological inflexibility while controlling for demographic variables in separate linear regressions. For our second hypothesis testing whether reactions to loss mediate the relation between psychological (in)flexibility and symptoms of depression or anxiety, mediation with nonparametric bootstrapping within

a regression-based framework using an ordinary least squares estimator was utilized with Hayes' (2018) PROCESS macro package in SPSS, downloaded at https://processmacro.org/download.html. Two mediation analyses were run to predict outcomes of anxiety and depression, respectively. The three reactions to loss were tested as simultaneous mediators of the relation between psychological inflexibility and symptoms of depression or anxiety. Demographic covariates were controlled for in the mediation models. PROCESS "Model 4" was used for mediation, and syntax specific to PROCESS was used to provide standardized effect sizes and compare effects of simultaneous mediators. Significant mediation effects were found when the 95% confidence intervals (CI) of the indirect effects excluded zero. Post-hoc power analyses using G*Power 3.1 indicated that we were sufficiently powered to detect a moderate effect (i.e., f^2 = .15) with a two-tailed alpha value of .05 with seven predictors and a sample of N = 223.

Results

Before testing hypotheses, we sought to understand the sample characteristics in terms of the severity of responses to clinical measures. All emerging adult participant data were included in analyses; the observations in relation to clinical cut-offs is to provide contextualization of the sample's general levels of symptoms. The analytic sample composite of psychological inflexibility (M = 31.15) fell above the cut-off for significant inflexibility (> 24), and frequencies indicated that 62.8% of participants fell above that cut-off, suggesting that this sample had high levels of distressing inflexibility. The sample composite for depression (13.47) did not fall above the cut-off for severe depression symptoms (≤ 21), but frequencies indicated that 15.2% of participants fell above that cut-off. Similarly, the sample composite for anxiety (11.23) did not fall above the cut-off for severe anxiety symptoms (≤ 15), but frequencies indicated that 20.6% of participants fell above that cut-off.

Descriptive statistics and bivariate correlations for study variables are displayed in Table 2. Depression symptoms demonstrated strong, positive correlations with psychological inflexibility (r = .65, p < .001), avoidant reactions (r = .60, p < .001), loss of control reactions (r = .69, p < .001), and a negative association with positive reappraisal (r = -.27, p < .001). Anxiety symptoms demonstrated strong, positive correlations with psychological inflexibility (r = .56, p < .001), avoidant reactions (r = .51, p < .001), and loss of control reactions (r = .52, p < .001). Anxiety was not related to positive reappraisal (r = -.10, p > .05).

Furthermore, study variables were compared between participants who are still involved with DCI compared with participants who are no longer involved in any capacity. Independent samples t-tests revealed a significant difference for positive reappraisal. Participants still involved with DCI had greater levels of positive reappraisal (M = 72.34) compared to participants no longer involved (M = 67.05), t(221) = 2.27, p < .05, Cohen's d = .32. In contrast, no differences were found between those still involved with DCI and those not involved on avoidant or loss of control reactions or psychological inflexibility (ps > .05). Participants still involved with DCI had lower levels of depression symptoms (M = 12.76) compared to participants no longer involved (M = 14.85), t(221) = -2.65, p < .01, Cohen's d = -.38. In contrast, no differences were found between those still involved with DCI and those not involved on anxiety symptoms.

Table 2. Descriptive Statistics and Correlations

Variable	1	2	3	4	5	6
1. Psychological Inflexibility	-	-	-	-	-	-
2. Depression	.65*	-	-	-	-	-
3. Anxiety	.56*	.59*	-	-	-	-
4. Avoidant Coping	.65*	.60*	.51*	-	-	-
5. Loss of Control Coping	.70*	.69*	.52*	.83*	-	-
6. Positive Reappraisal Coping	-.30*	-.27*	-.10	-.06	-.08	-
M(SD)	31.15(13.71)	13.47(5.64)	11.23(4.23)	49.76(18.85)	64.37(24.45)	70.56(16.57)
α	**.92**	**.91**	**.81**	**.91**	**.94**	**.88**

Note. *p < .001.

Hypothesis 1: Psychological Inflexibility and Depression and Anxiety Symptoms

Before psychological inflexibility was tested as a predictor of depression and anxiety symptoms, demographic covariates were tested as predictors. In separate models, depression and anxiety were regressed onto age, gender identity, sexual orientation, ethnicity, education, religious affiliation, and continued involvement with the marching arts post-retirement. See Tables 3 and 4 for full results for these models. Gender identity, education, and post-retirement involvement significantly predicted depression symptoms. Age and gender identity significantly predicted anxiety symptoms. Significant demographic variables were included in H1 analyses.

Multiple regressions were used to examine psychological inflexibility's predictive relationship with depression and anxiety symptoms while controlling for age, gender identity, education, and continued involvement in the marching arts. As predicted, when depression was regressed onto psychological inflexibility and demographic covariates, the model was significant, $F(5, 217) = 36.67$, $p < .001$, $R^2 = .458$, and psychological inflexibility significantly predicted depression, $t(217) = 11.82$, $p < .001$, $\beta = .61$. Gender identity also significantly predicted depression symptoms with women more likely to experience symptoms, $t(217) = 2.41$, $p < .05$, $\beta = .12$. Other demographic variables were not associated with depression symptoms, $|t| < 1.9$.

Table 3. Demographics Predicting Depression Symptoms

Predictor	β
Age	β = .04
Gender Identity	β = .16*
Sexual Orientation	β = .11
Ethnicity	β = ..08
Education	β = -.18*
Religious Affiliation	β= .09
Post-Retirement Involvement	β = .13*
Model Results	$F(7, 214) = 4.92$, $p < .001$, $R^2 = .14$

Note. *p < .05, **p < .01, ***p < .001.

Table 4. Demographics Predicting Anxiety Symptoms

Predictor	β
Age	β = .15*
Gender Identity	β = .13*
Sexual Orientation	β = .13
Ethnicity	β = .07
Education	β = -.10
Religious Affiliation	β= -.01
Post-Retirement Involvement	β = .01
Model Results	$F(7, 214) = 3.63$, $p = .001$, $R^2 = .11$

Note. *p < .05, **p < .01, ***p < .001.

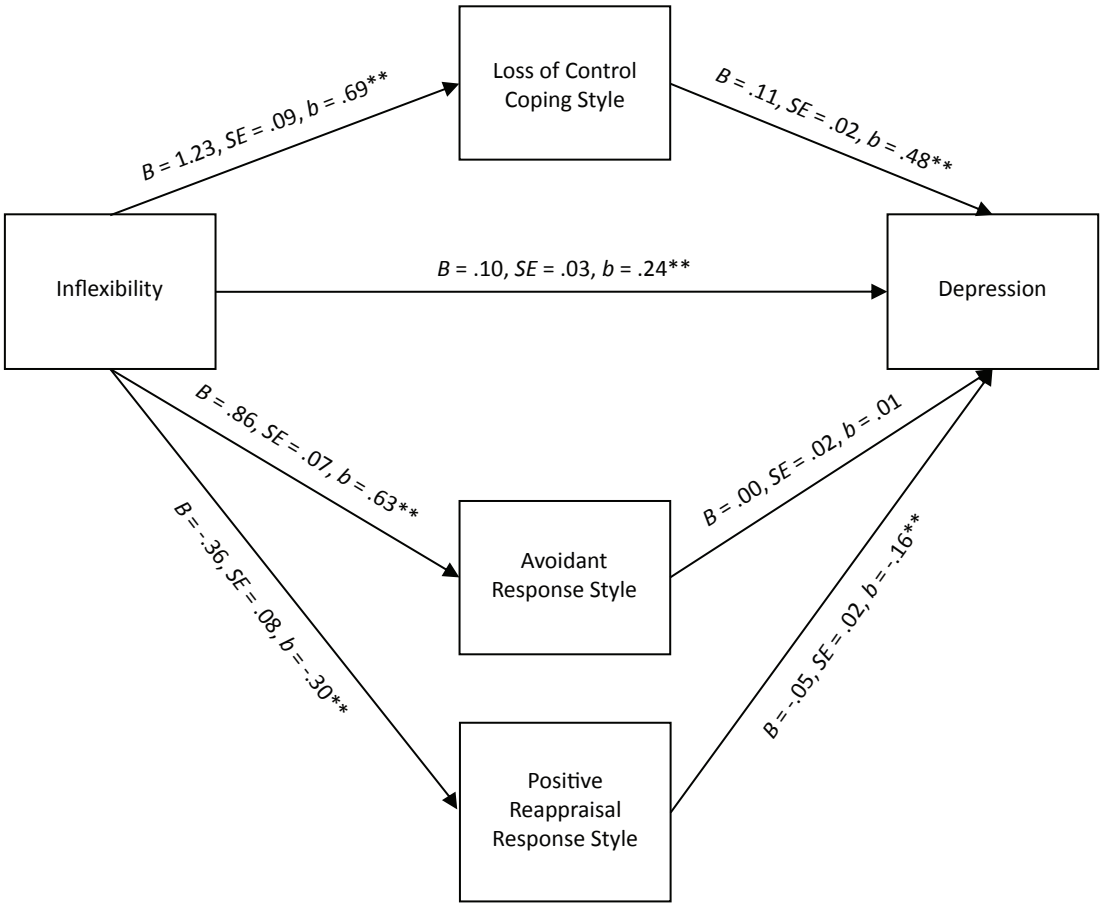
Also as predicted, when anxiety was regressed onto psychological inflexibility and demographic covariates, the model was significant, $F(5, 217) = 23.78$, $p < .001$, $R^2 = .354$, and psychological inflexibility significantly predicted anxiety, $t(217) = 9.52$, $p < .001$, $\beta = .53$. Older age predicted fewer anxiety symptoms, $t(217) = -2.76$, $p < .01$, $\beta = -.16$. Other demographic variables were not significantly associated with anxiety symptoms, $|ts| \leq 1.8$.

Hypothesis 2: Reactions to Loss as Mediators

Two mediation analyses were run to predict outcomes of symptoms of depression and anxiety, respectively. The three reactions to loss were tested as simultaneous mediators of the relation between psychological inflexibility and symptoms of depression or anxiety. Age and gender were included as covariates because they were significant predictors for H1, and involvement in the marching arts post-retirement was also included as a covariate because differences were found for positive reappraisal and depression symptoms between those involved and those not involved.

Path coefficients from the first mediation analysis predicting depression can be found in Figure 1, and mediator indirect effects statistics with 95% confidence intervals can be found in Table 3. Results from 10,000 bootstrapped samples indicated a partial mediation: a significant direct effect of psychological inflexibility on depressive symptoms, $B = .10$, $SE = .03$, CI [.04, .15], and a significant total indirect effect of all mediators, $B = .16$, $SE = .03$, CI [.11, .21]. Specifically, there was a significant indirect effect of the positive reappraisal response style as a partial mediator between inflexibility and symptoms of depression after controlling for the two other mediators and age in the model. Psychological inflexibility negatively predicted positive reappraisal, and positive reappraisal negatively predicted depressive symptoms. Moreover, loss of control reactions partially mediated inflexibility and symptoms of depression after controlling for the two other mediators and age in the model. Psychological inflexibility positively predicted loss of control reactions, and loss of control reactions positively predicted depressive symptoms. Planned contrasts indicated that loss of control reactions had

Figure 1. Simultaneous Mediation Model: Inflexibility and Depression through Reactions to Loss



Note: Mediation model predicting depression symptoms (N = 223) where statistics associated with the arrow from Inflexibility to Depression represent direct effects. *p < .05, **p < .01.

Table 5. Mediation Statistics for Depression

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Psychological Inflexibility					.26(.02)	[.21, .30]	.62***
Age					-.16(.12)	[-.40, .08]	-.06
Gender Identity					1.13(.52)	[.10, 2.17]	.11*
Involvement					1.28(.60)	[1.00, 2.47]	.11*
Avoidant Reactions	.00(.02)	[-.04, .05]	.01(.06)	[-.11, .12]			
Loss of Control Reactions	.13(.03)	[.08, .20]	.32(.07)	[.02, .48]			
Positive Reappraisal	.02(.01)	[.01, .04]	.05(.02)	[.02, .09]			

Note. ***p < .001, **p < .01, *p < .05.

a stronger partial mediation compared with positive reappraisal, β = -.28, *SE* = .08, CI [-.44, -.14]. There was not a significant indirect effect for avoidant reactions.

Path coefficients from the second mediation analysis predicting anxiety can be found in Figure 2, and mediator indirect effects statistics with 95% confidence intervals can be found in Table 4. Results from 10,000 bootstrapped samples did not indicate a partial mediation. Although there was a significant direct effect of psychological inflexibility on anxiety symptoms, *B* = .11, *SE* = .03, CI [.06, .16], and a significant total indirect effect of all mediators, *B* = .05, *SE* = .02, CI [.01, .10], none of the reaction styles partially mediated the effects of inflexibility on anxiety symptoms (i.e., all confidence intervals included 0).

Discussion

The aim of this study was to examine the relations between psychological inflexibility, reactions to retirement loss, and depression and anxiety symptoms in a sample of retired elite competitors. Inflexibility predicted greater symptoms of both depression and anxiety, providing support for H1. In partial support of H2, loss of control and positive reappraisal response styles partially mediated the relation between inflexibility and depression symptoms. There were no significant mediators between inflexibility and anxiety symptoms.

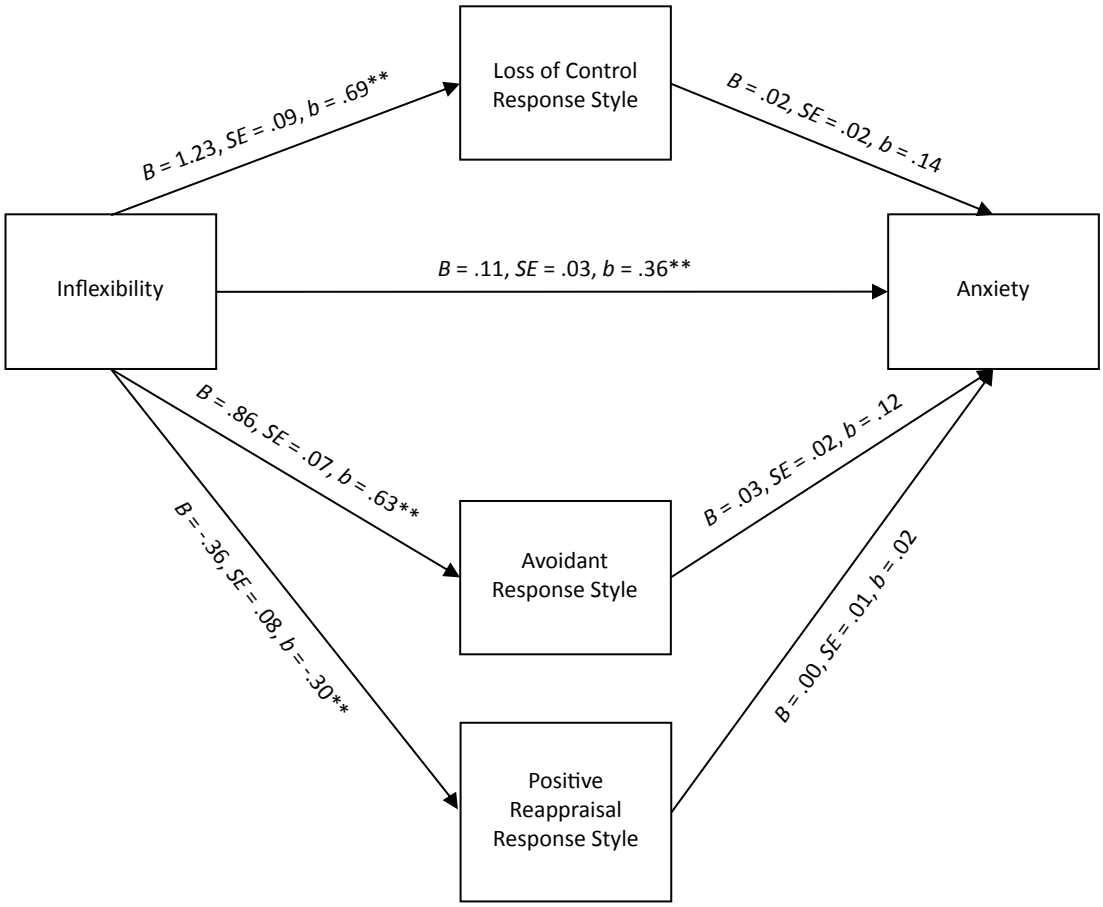
Our findings are in line with other studies that have shown inflexibility to be associated with higher levels of depressive and anxiety symptoms (Hayes, 1996; Levin et al., 2014). Our findings also corroborate studies that have shown ruminative reactions to loss to predict higher depression and anxiety symptoms (Benjamin et al., 2020; Mennin et al., 2018; Michl et al., 2013; Nedelec et al., 2018). Our findings also verify those of Cooley et al. (2010), which established positive reappraisal of a loss to significantly predict decreased symptoms of depression. Although past studies have demonstrated avoidant responses mediate the relation between inflexibility and symptoms of anxiety (Dawson & Golijani-Moghaddam, 2020; Rueda & Valls, 2020), we did not find that reactions to loss mediated the relation between inflexibility and anxiety.

However, our findings move beyond replication and extend the literature in several key ways. First, to our knowledge, the current study is the first to demonstrate these findings within a high-performance context. Most previous research on psychological inflexibility was conducted in clinical or undergraduate samples (Krafft et al., 2018). Given the demands of a high-performance context and the types of individuals who compete in such contexts, showing the direct effects of inflexibility on depression and anxiety, as well as the indirect effects through reactions to loss, is an important step forward for basic and applied literature. Second, the findings suggest different pathways by which inflexibility affects depression and anxiety symptoms through reactions to loss. The indirect effects through loss of control reactions and positive reappraisal were significant for depression, and loss of control reactions was a significantly stronger mediator of the two. In contrast, reactions to loss, although significantly related to anxiety symptoms, did not mediate the relation between inflexibility and anxiety symptoms. The discrepancy in anxiety and depression symptomatology suggests that certain reactions to loss may be more problematic for inflexible people prone to depression versus anxiety symptoms, and they may point toward the need for more targeted interventions at the time of retirement.

The fact that DCI enforces such a rigid retirement age makes it a prime context for examining reactions to retirement because retirement age (i.e., 21) and reason for retiring (i.e., forced) are less variable than other competitive contexts, which allows individual difference variables (rather than situational variation) to be examined. The mandatory age-out may affect reactions to loss in specific ways because it is outside the person's control. Our data suggest that people with greater psychological inflexibility are more likely to experience such a forced retirement as a loss of control and less likely to positively reappraise it as they process the loss, which are each associated with greater depression symptomatology. Our preliminary analyses indicate that people who remain somehow involved in the marching arts (e.g., band director, judge) have less depression and a greater positive appraisal of the loss. This continued involvement in a new capacity may appraise an involuntary retirement as less of a retirement and more of a change in role.

Results based on the basic mediation model underscore the significance of competitors' appraisal of retirement as they prepare to leave their performance setting. Involuntary retirement from competition has been shown to be psychologically injurious across ages, genders, sports, and cultures (Alfermann et al., 2004; Brown et al., 2017; Chang et al., 2019; Filbay et al., 2017), with involuntarily retired athletes reporting higher levels of depression, anxiety, social disorientation, loss of identity, and feelings of frustration compared to the general population (Gouttebarge et al., 2019; Miller & Buttell, 2018). Psychological stress related to the process of athletic retirement (e.g., retirement planning,

Figure 2. Simultaneous Mediation Model: Inflexibility and Anxiety through Reactions to Loss



Note: Mediation model predicting anxiety symptoms (N = 223) where statistics associated with the arrow from Inflexibility to Anxiety represent direct effects. *p < .05, **p < .01.

Table 6. Mediation Statistics for Anxiety

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Psychological Inflexibility					.17(.02)	[.13, .20]	.54***
Age					-.29(.10)	[-.49, -.09]	-.16**
Gender Identity					.82(.43)	[-.03, 1.66]	.11
Involvement					-.09(.49)	[-1.06, .87]	-.01
Avoidant Reactions	.02(.02)	[-.02, .07]	.08(.07)	[-.06, .22]			
Loss of Control Reactions	.03(.03)	[-.02, .08]	.10(.08)	[-.07, .26]			
Positive Reappraisal	-.00(.01)	[-.01, .01]	-.01(.02)	[-.04, .03]			

Note. ***p < .001, **p < .01, *p < .05.

psychological adjustment, reworking of identity) contributes to higher levels of mental illness symptoms post-retirement (Esopenko et al., 2020; Gouttebarge et al., 2019). Our data suggest that competitors might engage with the retirement experience in such a way that depression symptoms can be minimized or avoided, specifically by seeking to decrease their psychological inflexibility, which will allow them to engage in positive reappraisal and decrease the sense of a loss of control as they react to the loss. Likewise, generally decreasing inflexibility will also be beneficial for lowered anxiety symptoms but through mechanisms other than reactions to loss.

Applied performance practitioners and clinicians who are treating retiring competitors should primarily focus efforts on decreasing inflexibility amidst retirement, as higher levels of inflexibility directly predicted negative reactions to retirement as well as increased anxiety and depression symptoms. Practitioners can do so by employing interventions from the ACT framework that help competitors cognitively defuse worrisome thoughts; such activities include repeated mindfulness practice, increased present-moment awareness, and acceptance in the face of distress. These interventions will likely reduce the ruminative and avoidant behaviors seen in those who are highly inflexible (Hayes, 1999; Wolkin, 2015), thereby decreasing the intensity of the loss of control reaction style and increasing positive reappraisal, which is associated with depressive symptoms. This is in line with other research that has shown decreased inflexibility to be associated with decreased mental illness symptoms over time (Østergaard et al., 2020). Non-clinician applied performance practitioners can also engage in mindfulness practices, enhance present moment awareness, and encourage the acceptance of distress among current competitors to prepare them for adaptive goal disengagement upon retirement; such practices may include engaging in a group setting and having additional benefits beyond preparation for retirement. Likewise, practitioners can help competitors who are nearing forced retirement make a plan for disengaging from their competition goals and, ideally, identify new goals that still align with their values (Brandstätter et al., 2013; Wrosch et al., 2003).

In addition to decreasing inflexibility, it would benefit retiring competitors to assign meaning to their experience in competition to increase positive reappraisal reactions and decrease any associated depressive symptoms. Lallay (2007) showed that elite competitors who can anticipate a disruption in their athletic identity following retirement and proactively utilize positive coping mechanisms tend to experience less identity confusion following retirement. Within the ACT model, one way to decrease inflexibility and positively engage with an experience is to identify values that are salient to the competitor and to identify actions they can take that are congruent with those values. For example, if a DCI participant is approaching retirement and identifies competition and camaraderie as important values in their life, clinicians or applied performance practitioners could help competitors to identify activities in which they can engage in post-retirement that are congruent with those values (e.g., continued recreational competition, becoming a coach or volunteer within DCI). Our findings corroborate this suggestion in that retired DCI competitors still involved in the organization utilized greater levels of positive reappraisal compared to retired competitors no longer involved in DCI. Past research in performing arts settings has also found that perceived continuation of social support from fellow competitors positively influenced retirement transition processes (Willard & Lavallee, 2016). Such involvement can facilitate smoother transitions from competition and will likely buffer retired competitors from adverse mental health outcomes post-career. Thus, applied performance practitioners can also encourage competitors to engage in their social relationships from their competitive context during and after the retirement transition.

Limitations and Future Directions

Our data are cross-sectional and retrospective self-reports, so we cannot make firm interpretative claims. To make substantial predictions, longitudinal data would be ideal. Furthermore, the retrospective nature of this study and age range 20–29 years create a limitation of memory recall (i.e., a 29-year-old reflecting on their experience post-retirement from 8 years earlier). Additionally, the current study places some constraints on generalizability. It is difficult to determine whether these effects would extend to other competitive contexts. This constraint is especially true for DCI, given that it shares similarities with both athletics and the arts and shares similarities with both individual and team sports. Future studies need to examine these processes in both retiring athlete and non-athlete competitors, and within individual and team-based competitive contexts.

Conclusion

Greater inflexibility is associated with greater depression and anxiety symptoms, and the association between inflexibility and depression is partially explained by two reactions to retirement: loss of control and positive reappraisal. The degree to which a competitor is unwilling to approach internal distress associated

with retirement directly influences depression and anxiety symptoms, and greater loss of control reactions and positive reappraisal partially explain the effect of inflexibility on depression symptoms. Applied performance practitioners can prepare competitors for retirement by employing mindfulness practice and present moment awareness; working with retiring competitors would benefit from targeting inflexibility as an individual engages with athletic retirement.

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Supplemental Material

Table S1. Mediation Statistics for Positive Reappraisal → Inflexibility → Depression Symptoms

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Positive Reappraisal					-.09(.02)	[-.13, -.05]	-.26***
Age					-.30(.15)	[-.60, -.00]	-.13*
Gender Identity					2.00(.15)	[.67, 3.25]	.19**
Involvement					1.43(.76)	[-.06, 2.93]	.12
Psychological Inflexibility	-.06(.02)	[-.09, -.03]	-.18(.04)	[-.27, -.09]			

Note. ***p < .001, **p < .01, *p < .05.

Table S2. Mediation Statistics for Avoidant Reactions→ Inflexibility → Depression Symptoms

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Avoidant Reactions					.17(.02)	[.14, .20]	.57***
Age					-.05(.13)	[-.31, .20]	-.02
Gender Identity					1.22(.55)	[.13, 2.31]	.12*
Involvement					1.10(.64)	[-.16, 2.36]	.09
Psychological Inflexibility	.08(.02)	[.06, .12]	.28(.05)	[.19, .38]			

Note. ***p < .001, **p < .01, *p < .05.

Table S3. Mediation Statistics for Loss of Control Reactions → Inflexibility → Depression Symptoms

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Loss of Control Reactions					.15(.01)	[.13, .17]	.66***
Age					-.17(.12)	[-.40, .06]	-.07
Gender Identity					1.10(.50)	[.11, 2.08]	.11*
Involvement					1.11(.57)	[-.02, 2.25]	.09
Psychological Inflexibility	.05(.01)	[.03, .07]	.22(.05)	[.12, .32]			

Note. ***p < .001, **p < .01, *p < .05.

Table S4. Mediation Statistics for Positive Reappraisal → Inflexibility → Anxiety Symptoms

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Positive Reappraisal					-.03(.02)	[-.06, .01]	-.11
Age					-.38(.12)	[-.61, -.15]	-.21*
Gender Identity					1.30(.51)	[.30, 2.30]	.17*
Involvement					.17(.59)	[-.99, 1.33]	.02
Psychological Inflexibility	-.04(.01)	[-.07, -.02]	-.17(.04)	[-.26, -.08]			

Note. ***p < .001, **p < .01, *p < .05.

Table S5. Mediation Statistics for Avoidant Reactions → Inflexibility → Anxiety Symptoms

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Avoidant Reactions					.11(.01)	[.08, .13]	.48***
Age					-.23(.11)	[-.44, -.02]	-.13*
Gender Identity					.89(.44)	[.00, 1.77]	.11*
Involvement					-.19(.52)	[-1.21, .82]	-.02
Psychological Inflexibility	.06(.01)	[.04, .08]	.26(.05)	[.16, .36]			

Note. ***p < .001, **p < .01, *p < .05.

Table S6. Mediation Statistics for Loss of Control Reactions → Inflexibility → Anxiety Symptoms

	Unstandardized Indirect Effect		Completely Standardized Indirect Effect		Unstandardized Direct Effect		Completely Standardized Direct Effect
Predictor Variable	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	***B*(*SE*)**	**95% CI**	**β**
Loss of Control Reactions					.09(.01)	[.06, .11]	.49***
Age					-.31(.10)	[-.51, -.11]	-.17**
Gender Identity					.86(.44)	[-.01, 1.73]	.11
Involvement					.13(.51)	[-1.13, .87]	-.01
Psychological Inflexibility	.04(.01)	[.03, .06]	.26(.05)	[.16, .36]			

Note. ***$p < .001$, **$p < .01$, *$p < .05$.