Can Emotional Disclosure Promote Sport Injury-Related Growth?

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Abstract

This study makes an original and rigorous contribution to the psychology of sport injury literature by examining the efficacy of emotional disclosure to promote sport injury-related growth (SIRG). Participants (N=45) were assigned to one of three groups (i.e., written disclosure [WD], verbal disclosure [VD] or control), 30 of which took part in social validation interviews (>45hrs) and member reflections to evidence methodological rigor. VD group experienced SIRG. There was no significant difference between the WD and control groups. Practical implications are considered at intrapersonal, interpersonal, institutional, and cultural levels. Future research on emotional disclosure should proceed with caution and diversify.

Keywords: Trauma, Adversity, Stress, Recovery, Ethics

Introduction

Building upon growth following adversity research (Colhoun & Tedeschi, 2006; Joseph & Linley, 2008), emerged the concept–Sport Injury-Related Growth (SIRG)–that has significantly extended the psychology of sport injury literature. For some time now, researchers in this field have examined the adversity experienced by injured athletes throughout their recovery and provided evidence-based recommendations to alleviate the overall demand placed upon them (Brewer, 2007; Podlog, Dimmock, & Miller, 2011; Wadey & Evans, 2011). By adversity, we mean a relational state between an individual and his or her environment reflective of hardship or suffering that incorporates stressors, cognitions and affect (Fletcher & Sarker, 2013; Howells & Fletcher, 2015). Yet, the concept of SIRG goes beyond this agenda by proposing that adverse experiences can lead to perceived positive changes (Podlog & Eklund, 2009; Salim, Wadey, & Diss, 2015a; Wadey, Clark, & McCullough, 2013). That is, injury-related experiences may propel injured athletes to a higher level of functioning than that which existed prior to the injury (Roy-Davis, Wadey, & Evans, 2017). Positive changes identified in the literature include psychological (e.g., increased mental toughness), social (e.g., improved relationships with others), physical (e.g., greater physical strength), and behavioral benefits (e.g., more empathetic towards other injured athletes). Although this line of research is still very much still in its infancy, recent significant strides have been made in the sport and exercise psychology literature from a conceptual, methodological, and theoretical standpoint (Day & Wadey, 2017; Roy-Davis et al., 2017). Yet, *how* practitioners can foster SIRG when working with injured athletes has received no research attention.

The *Theory of Sport Injury-Related Growth* (T-SIRG) was proposed by Roy-Davis et al. (2017) who provided a detailed justification for introducing a new concept and theory. The theory suggests that injured athletes who experience adversity during their recovery and have access to and mobilise certain resources are more likely to experience SIRG. That is, injured

athletes are more likely to experience SIRG if they have certain dispositional qualities (e.g., optimistic, creative, proactive), access to physical spaces and equipment (e.g., gymnasium, rehabilitation equipment), previous experiences of adversity to draw upon, emotion- and problem-focused coping styles (e.g., meaning-making, emotional venting), a social support network that understands and meets one's needs, and access to narratives that reinforce growth-related experiences. Possessing, embodying, and/or mobilizing these resources in one's free time during recovery is proposed to help nurture SIRG through four specific mechanisms: meta-cognition, positive re-appraisal, positive emotions, and facilitative responses. Specifically, injured athletes who were aware of, and have control over, their own thoughts (i.e., meta-cognition) are more likely to positively reappraise how they interpreted their injury and the situation they find themselves in. Rather than interpreting their injury as a threat, they are more likely to identify it as a developmental opportunity. From positively reappraising their injury and the circumstances surrounding it, as well as continuing to draw from their resources, the theory proposes they are more likely to experience positive emotions (e.g., hopeful, grateful, interested). These emotions promote facilitative actions (e.g., acting upon the opportunities, engaging in purposeful reflection, reciprocating acts of kindness), which in turn ultimately lead to various dimensions of SIRG (i.e., psychological, social, physical, and behavioral) that are developmental and continuous across the lifespan.

Although the T-SIRG awaits future researchers to support, refute, and extend its underlying assumptions, recent research findings support one of its proposed internal resources: personality (Salim et al., 2015a; Salim, Wadey, & Diss, 2015b). Specifically, the personality trait of hardiness. Defined and conceptualized by Kobasa (1979) to reflect three resilient attitudes (i.e., commitment, control, and challenge), which provide the courage and motivation to transform stressful situations from potential disasters into opportunities for growth and development. Using a cross-sectional methodological design due to the

exploratory nature of the study, Salim et al. (2015a) identified a positive relationship between hardiness and growth-related experiences. That is, injured athletes who identified themselves at higher in hardiness were more likely to experience growth. Mediational analysis, together with a qualitative follow-up study (Salim et al., 2015b), identified that injured athletes' high in hardiness experienced more growth because they emotionally disclosed throughout their recovery to members of their social support network outside of sport. These transactions led to meta-cognitions, positive reappraisals, regulation of negative emotions, heightened positive emotions, and facilitative responses, which collectively led to growth-related experiences. Findings also revealed that those injured athletes low in hardiness had no emotional outlet, leading to sub-optimal outcomes (e.g., emotional outbursts, re-injury, inferior performance). Reasons for emotional suppression included the climate in sport (i.e., the need to keep up the visage of being 'mentally tough'), personal beliefs about disclosure (e.g., talking will negatively impact team selection), and their social support network not meeting one's emotional needs (e.g., offering informational rather than emotional support).

These findings pose a dilemma for injured athletes low in hardiness. On the one hand, these athletes do not want to disclose their emotions to others because of the adverse consequences it may have (e.g., team selection) and that they do not believe members of their support network will be able to meet their needs. Yet, on the other hand by keeping their emotions to themselves it is likely to have a negative effect on their physical and psychological recovery following injury and subsequent return to competitive sport. One method of disclosure that may help to address this dilemma that has recently been explored in the context of sport injury is written disclosure. Mankad, Gordon, and Wallman (2009a) examined the effect of written disclosure with a male athlete rehabilitating from an anterior cruciate ligament reconstruction. The intervention required 3x20 minute writing tasks performed over three consecutive days. Findings demonstrated a decrease in strain (i.e.,

avoidance and intrusion symptoms) and mood disturbance (e.g., anger and tension), as well as an increase in self-esteem. Using the same intervention protocol, Mankad, Gordon, and Wallman (2009b) and Mankad and Gordon (2010) extended this study by examining a group of injured athletes and a diverse range of dependent variables (i.e., strain, mood disturbance, grief responses, rehabilitation beliefs, and immune functioning). Findings demonstrated no significant difference in rehabilitation beliefs; however, there was a significant decrease in negative affect (i.e., mood disturbance and grief responses) and an increase in positive affect (i.e., vigor and reorganization) and immune functioning (i.e., immune expression), which resonates with some of the proposed mechanisms (e.g., negative and positive affect) within the T-SIRG (Roy-Davis et al., 2017).

Although Mankad and colleagues' studies did not include SIRG as a dependent variable, they do provide preliminary evidence for written disclosure as a therapeutic tool in addressing injured athletes' psychological needs. Despite the novelty and merits of these intervention studies however, it is important that future researchers and practitioners are aware of their shortcomings: (a) no control groups were used, thereby making it challenging to assess the efficacy of the intervention; (b) specific populations of injured-athletes who are at risk of emotional suppression were not targeted (e.g., athletes low in hardiness), which may 'dilute' the intervention effects; (c) mechanisms underlying the intervention effects were not explored, which is of both theoretical and practical importance; (d) no follow-up assessments or social validation of procedures and outcomes were accounted for to enhance methodological rigor; (e) only written disclosure was explored. Indeed, researchers in other disciplines have compared written disclosure with other types of disclosure such as verbal disclosure (e.g., Lyubomirsky, Sousa, & Dickerhoof; 2006, Murray & Segal, 1994); and (f) the interventions were all conducted during the rehabilitation phase of recovery. Future researchers should also aim to explore the efficacy of this intervention during injury onset

and return to sport phases, which have both been observed to be stressful (Wadey & Evans, 2011). This study aims to address these shortcomings by including a control group, targeting a specific population (i.e., low in hardiness), accounting for the underlying mechanisms purported in the T-SIRG, integrating follow-up and social validation assessments, comparing written (WD) and verbal disclosure (VD), and examining the efficacy of this intervention at return to sport phase of recovery.

This study aims to make an original and rigorous contribution to the psychology of sport injury literature by examining the efficacy of a four-week written and verbal disclosure intervention (i.e., x 4 sessions; one session per week) to promote SIRG. Based on previous research (e.g., Mankad & Gordon, 2010; Salim et al., 2015a) and the T-SIRG (Roy-Davis et al., 2017), two hypotheses were proposed. Hypothesis 1: There will be a significant difference between groups for SIRG. The VD and WD Groups will report more SIRG than the control group. As Lyubomirsky et al. (2006) found no significant differences between written and verbal disclosure, no hypotheses are forwarded comparing written and verbal disclosure. Hypothesis 2: There will be a significant difference over time between Sessions 1-4 for positive emotions, negative emotions, and cognitive processing. Positive emotions and cognitive processing will increase, whereas negative emotions will decrease. The final aim of the study is to understand the participants' post-intervention appraisal of the acceptability of the intervention procedures (e.g., What did the participants think of the intervention? Were there any negative side effects?) and the importance of any elicited outcomes (e.g., What were the outcomes? Did the participants value them?).

Method

Sample and Participant Selection

Criterion, theoretical, and maximum-variation sampling were used to identify participants (Sparkes & Smith, 2014). The criteria were threefold: (a) potential participants

had to have been injured through sport for a minimum of four-weeks. Indeed, this study was only interested in 'sport'-related injuries and previous researchers have used four-weeks as the length of time to define a 'serious' sport injury (Bianco, Malo, & Orlick, 1999); (b) potential participants had to have returned to sport following injury in the past six months. This criterion aligns with the aim of the study, which is to examine the efficacy of the intervention during the return to sport phase of recovery; and (c) potential participants had to be low in hardiness. Theoretical sampling was used to meet this latter criterion, which entailed potential participants completing the Dispositional Resilience Scale to assess their level of hardiness (DRS; Bartone, Ursano, Wright, & Ingraham, 1989). If athletes scored below the 25th percentile (i.e., a score of 47 or below for this study), they were deemed low in hardiness. In total, 214 injured athletes who recently returned to sport were sampled, with only 52 deemed low in hardiness. This study is a stand-alone study and not part of a larger study; the questionnaire data has not been published elsewhere. The resultant 52 potential participants were then matched across three groups (i.e., WD, VD and control) using maximum variation sampling. The aim was to match the groups as much as possible across several pre-determined characteristics (i.e., sex, sport type, competitive level, type of injury, and severity of injury), which have been shown to impact psychological responses to injury (Brewer, 2007; Wadey & Evans, 2011). When a match was obtained for a participant already assigned to a group, the new participant was assigned to another group. In the case of two matches, the next matched participant was assigned to the remaining group. Participants who could not be matched across the three groups according to the criteria were omitted. This procedure ensured that any changes identified were the result of the intervention rather than demographic differences between groups.

Participants who were duplicated or could not be matched across the groups were omitted (N=5). Two dropped out due to external commitments (i.e., time commitments to

sport). The final sample consisted of 15 athletes in each group. All 45 athletes were then invited to participate. All agreed and provided written consent in line with the University's Ethics Committee. Of the 45 athletes, 17 were female and 28 were male, with a mean age of 23.2 (*SD* = 5.22). They represented several individual and team sports, ranging from recreational to international levels of competition, and had previously sustained a variety of injuries (see Tables 4-6). All participants had recovered from their injuries and returned to full training and/or competition at the time of this study. Following the intervention, a purposeful sample of 30 athletes from the original sample participated in follow-up social validation interviews and member reflections. Ten from each of the three intervention groups. Mean age of participants was 23.3 years (SD = 5.2; 16 males, 14 females). Using maximum variation sampling (Sparkes & Smith, 2014), participants were matched across the groups and were selected because they represented diverse sports, levels of competition, and types and severities of injuries.

Procedure

Ethical approval was sought and granted from the University's ethics committee. Participants were recruited by approaching sporting Universities and clubs across the United Kingdom. Institutions were contacted by phone and email to discuss the nature of the study and whether they would allow access to potential participants. All Universities and clubs who were contacted agreed that the first Author could approach their athletes. For those athletes who met the selection criteria and provided informed consent, a suitable time to conduct the intervention was discussed. All interventions took place in a University office. Consistent with previous research and standardized instructions from Pennebaker and Beall (1986), the participants then experienced one of the three manipulations. Participants in the WD Group were asked to write about their deepest thoughts and feelings regarding their recent sporting injury. Those in the VD Group were asked to talk about their deepest thoughts and feelings

regarding their recent sporting injury into an audio-tape recorder. Finally, those in the control group were asked to write facts about their daily events (Stanton et al., 2002; Ullrich & Lutgendorf, 2002). Participants completed x 4 20-minute sessions, one session per week. Participants completed a measure of growth (Park, Cohen, & Murch, 1996) at the beginning of the first session, the end of the last session, and four weeks post-intervention. Importantly, safeguards were put in place to monitor the well-being of the participants. Following each session, participants were debriefed by the first Author who listened to any concerns and reminded them of organisations they could contact if they were experiencing any distress. From the outset of the study and during the intervention they were also reminded that they could stop the session or withdraw from the study at any time. A subset of participants (N=30) was then invited to take part in a social validation interview. Each interview was conducted face-to-face (*M* interview duration = 90.5 min.; *SD*=26.4), resulting in over 45 hours of qualitative data. All participants were debriefed.

Measures

Growth. As there is not a measure of SIRG, the Stress-Related Growth Scale (SRGS; Park et al., 1996) was used to measure growth. SRGS is a 50-item one-dimensional questionnaire designed to assess individuals' perceptions of whether they experience positive outcomes following a stressful event (e.g., "*I developed new relationships with helpful others*" and "*I learned that I was stronger than I thought I was*"). To ascertain athletes' perceptions of growth following injury and in line with Salim et al.'s (2015b) protocol, the original stem was modified from "*Rate how much you experienced each item below as a result of this year's most stressful event*" to "*Rate how much you experienced each item below as a result of your recent injury experience*". Participants were asked to rate each item from 0 (*not at all*), 1 (*somewhat*) or 2 (*a great deal*). SRGS has good internal consistency, model fit and test-retest reliability (Park et al., 1996).

Our rationale for using the SRGS was that the conceptualization of stress-related growth is more aligned with SIRG than with other concepts such as post-traumatic growth. To elaborate, Park (2009) described post-traumatic growth as radical and veridical positive transformation, which arises following traumatic events from rebuilding shattered assumptions. In contrast, stress-related growth is described as positive changes that are less dramatic or radical than post-traumatic growth, which arise through re-appraising the stressor. In Roy-Davis et al.'s (2017) T-SIRG, they identified that the process through which SIRG occurs is through re-appraising injury rather than rebuilding shattered assumptions. Therefore, we decided to use the SRGS rather than, for example, the Post-Traumatic Growth Inventory (Tedeschi & Colhoun, 1995).

Manipulation Check. A manipulation check (Pennebaker, Colder, & Sharp, 1990) was used to ensure the participants were conducting the task correctly after each intervention session (i.e., the experimental conditions were disclosing their thoughts and feelings). It contains nine statements (e.g., *Overall how much emotion did you disclose in the entries you wrote about*?) and one open ended question (i.e., *What do you think the experiment was trying to prove*?). Consistent with previous research (Murray & Segal, 1994), for those participants completing the verbal condition, the word 'wrote' was changed to 'spoke'. Each participant was asked to indicate the truthfulness of each statement on a 5-point Likert scale anchored from 1 (*not at all true*) to 5 (*completely true*). Higher scores demonstrated whether the participants adhered to the specific instructions.

Social Validation. Rather than using questionnaires or a structured interview guide (Kazdin, 1977), a semi-structured interview guide was developed for this study. This qualitative method of data collection was chosen to understand the participants' perceptions of the intervention procedures (i.e., positive, negative, and cognitive mechanism words) and the importance of potential outcomes (i.e., growth-related experiences). The semi-structured

nature also provided the flexibility to enable the interviewee to talk freely around the pre-determined themes, whilst also allowing the interviewer to explore any areas that arose spontaneously (Kvale & Brinkmann, 2009). The guide consisted of five sections. The first two section explained the objective of the study and sought to gain rapport with the participants. The third and fourth sections focused on the acceptability of the intervention protocol (e.g., What did you think of the intervention? Were there any side effects?) and the potential impact of the intervention respectively (e.g., What effect, if any, did the intervention have on you? What do these outcomes mean to you?). The concluding section invited the participants to add to anything previously discussed. Neutral non-directional probes (e.g., Can you give me an example? What do you mean?) were used throughout the entire interview process (Kvale & Brinkmann 2009).

Data Analysis

Quantitative data were analysed using SPSS 19.0 and involved four stages. First, the data were screened to check for accuracy and statistical assumptions. Second, means and standard deviations from the manipulation check were examined to see how much emotion was disclosed. Third, a mixed-design (Group x Time) ANOVA was conducted to assess SIRG between groups. Follow-up Bonferroni corrected pairwise comparisons tests were used to isolate mean differences. Fourth, Linguistic Inquiry and Word Count (LIWC; Pennebaker, Francis, & Booth, 2001) was used to analyse the content of the verbal and written disclosure for each of the four intervention sessions. This software is designed to assess grammatical, linguistic, and psychological features of text documents. Based on T-SIRG (Roy et al., 2017), Salim et al.'s (2015) research findings with injured athletes high and low in hardiness, and our hypotheses, this study was interested in three measures: (a) words indicating that the participant experienced positive emotions, (b) words indicating that the participant experienced negative emotions, and (c) words indicating that the participant engaged in

cognitive processes. Finally, a mixed-design (Group x Time) MANOVA was conducted on the LIWC findings to examine the differences within groups for the intervention sessions. Follow-up ANOVA tests were conducted to isolate mean differences.

The large qualitative dataset was rigorously analysed using thematic analysis (Braun, Clarke, & Weate, 2016). First, the first Author familiarised herself with the data, which involved transcribing the data, repeat reading of the transcripts, and reading the data in an active way (i.e., searching for patterns). Next, initial codes were generated by identifying interesting features of the data in a systematic fashion across the entire data. Once the data had been coded, data relevant to each code was collated. The next phase considered how these different codes combined to form an overarching theme and involved thinking about the relationship between codes, between themes, and between different levels of themes. The themes were then reviewed in relation to the coded extracts, the entire data set, and the overall story they tell about the participants' experiences. Finally, producing the report involved ensuring the write up provided a concise, coherent, logical, non-repetitive, and interesting account of the data, with vivid, compelling extract examples. Although this description of thematic analysis may appear a linear stepwise process, in practice is was a more recursive and reflexive process of working with the data (Braun et al., 2016).

Enhancing the methodological rigour of the qualitative data analysis process, the co-author acted as a 'critical friend' throughout (Faulkner & Sparkes, 1999). For example, the first author presented her interpretations of the data on a regular basis to the co-author who provided a theoretical sounding board to encourage reflection upon, and exploration of, alternative explanations and interpretations as they were identified in relation to the data. As part of this process of critical dialogue, the first author was required to make a defendable case that the available data supported her interpretations. In addition, participant reflections on our analytical interpretations were also sought to enhance the study's methodological

rigour (Smith & McGannon, 2017), which took place on average six months following the social validation interviews. This involved sharing and dialoguing with the participants about the study's findings and providing opportunities for additional data and insight. To elaborate, this process involved discussing with our participants their experiences of the processes and 'outcomes' of the intervention, which helped to further co-construct and crystalize the identified themes. For example, our discussions of the 'outcomes' ensured we understood their growth-related experiences from their perspective. Rather than using existing definitions, taxonomies or inventories in a deductive fashion, we remained open to novel forms and representations of growth-related experiences (Day & Wadey, 2017). In addition, the participants also expressed whether their perceptions of the intervention had changed since the social validation interview. For example, some participants expressed during the interview that the intervention was difficult for them in that it involved reliving a painful time in their lives. Yet, during the member reflections, it was expressed that the intervention had also been therapeutic for them over time. By generating more nuanced insights and additional data, which ultimately led to more well-rounded themes, the process of member reflections had a critical role in enhancing the rigor of this study.

Results

Preliminary Analyses

Consistent with other disclosure interventions (Lyubomirsky, Sousa, & Dickerhoof; 2006, Murray & Segal, 1994), three preliminary analyses were conducted: (a) difference between groups for growth-related experiences at Time 1 (i.e., pre-intervention), (b) manipulation check, and (c) word count. Growth scores between groups at Time 1 revealed no significant difference: VD group and WD group (p = .87), WD group and control group (p = .53), and VD group and control group (p =.43). Regarding the manipulation check, a significant difference between the experiment groups and control group for emotional

disclosure and its meaningfulness was identified (*ps*. < .05). That is, both the WD and VD groups disclosed more emotions and their entries were more meaningful than the control group. There was no significant difference between the WD and VD groups ($p > .05$). Consistent with Pennebaker et al. (1990) who developed the manipulation check, these findings show that the experimental manipulation was effective, with both experimental groups expressing more emotions than the control group. Means (SD) are displayed in Table 1. Finally, the VD group ($M = 4700.13$ [$SD = 1431.03$]) disclosed three times as many words than the WD group ($M = 1376.86$ [$SD = 600.52$]). The control group disclosed the least amount of words ($M = 1005.12$ [$SD = 501.32$].

Hypothesis 1: Growth

Findings revealed a significant Group x Time interaction (Wilks' Lambda = .34, F [4, 82] = 14.51, $p = .00$, $\eta_p^2 = .41$). Post hoc test indicated a significant interaction effect at Time 2 (post-intervention) and Time 3 (4-week follow-up) between groups. That is, the participants in the VD condition reported more growth than those in the WD and control groups at Time 2 and Time 3 (*ps* < .05). Findings also revealed a significant main effect between groups (F [1,42] = 3.38, $p = .04$, $\eta_p^2 = .14$). Bonferroni pairwise comparisons indicated a significant difference between the VD Group and control group ($p = .04$). From exploring the mean values, the VD Group reported more growth than the control group. No significant difference was found between the VD group and WD group or WD Group and control group (*ps.* > .05). All means (SD) are displayed in Table 2.

Hypothesis 2: Linguistic Inquiry

Findings revealed a significant Group x Time interaction (Wilks' Lambda = .76, F (4, 82) = 2.95, $p = .025$, $\eta_p^2 = .12$). Post hoc test indicated a significant interaction effect for positive, negative and cognitive mechanism words for all four sessions. This interaction was due to the condition differences. That is, between the VD and WD groups during the final

disclosure session. Findings also revealed a significant main effect for time (Wilks' Lambda = .60, F [3, 40] = 8.76, p = .00, η_p^2= .40). Bonferroni pairwise comparisons revealed no significant difference between Sessions 1 and 2 (p = .30), Sessions 2 and 3 (p = .40), or Sessions 3 and 4 (p = 1.00). However, a significant difference was found between Sessions 1 and 4 (p = .02). From exploring the mean values, there was a significant increase in positive emotions and cognitive mechanism words over the four weeks and a decrease in negative words for both the WD and VD groups. All means (SD) are displayed in Table 3.

Social Validation

Verbal disclosure. Participants' experiences of the processes of the VD intervention were grouped into four themes (i.e., *Retraumatisation*, *Therapeutic Experience*, *One-Way Conversation*, and *Putting the Puzzle Together*), whereas the outcomes reflected three themes of SIRG: *Seeing Myself in a Different Light*, *Seeing Others in a Different Light*, and *Stop, Reflect, Act*. Regarding processes, the first theme was *Retraumatisation*. Participants reported from the outset that the intervention was a difficult and challenging experience for them in that it led to reliving an upsetting period in their lives, resulting in negative affect (e.g., anger, frustration, guilt, feelings of depression, restlessness). One athlete recalled "Talking about being injured made me feel angry because it takes you back to that moment again. I could *feel* that same *frustration* from when I was off for so long. It was a horrible experience. It's like opening the door to the past." These negative emotions lingered with the participants during and after the first two sessions. One participant expressed, "I remember coming out of the first session, and the negative feelings staying with me. They, they, came home with me that evening. I couldn't shake them off. I kept replaying the injury over again in my head. It wasn't a pleasant experience for me." Yet, these negative emotions were reported to dissipate in later sessions as the participants worked through their experiences, leading to what they

described as a *Therapeutic Experience* that lowered negative affect and heightened positive affect. One participant expressed:

> It was nice to talk in the later sessions. It was cathartic. Better out than in, I guess. I don't know, it was just nice to take the time to understand, well, *me*. It was like therapy. I clearly had a lot of shit going on in my head about my injury, and it was nice to unleash it. To let it all out. It felt good to do it. It felt nice to offload. To get everything out of my head. I'd do it again. I'd recommend it to others.

Another theme identified was having a *One-Way Conversation*. Participants reported that talking into a Dictaphone was a strange experience; strange in the sense that no one was replying to them and no one was physically present in the room. For example, one athlete recalled, "For the first minute it seemed, well, *weird*. Weird to be talking to myself, because I had never done anything like that before, you know, talking out loud by myself." Yet on the other hand, they also reported that over time it soon became an effortless process for them. One participant expressed, "Initially, it felt really weird to be talking to myself out loud. But, as the sessions went on, I started to feel more comfortable talking. It felt quite natural to talk. To talk to myself." Participants also reported having a one-way conversation was pleasurable. Indeed, no one was interrupting them, no one was telling them how they should think and feel, no one was pretending to listen, and no one was following up with their own examples. In addition, they reported that they could be honest with themselves: "It was nice because no one was judging me. I was just being honest with myself. Saying how I *really* felt." Yet, while having a one-way conversation was deemed pleasurable, they also reported that one of the main challenges for them was *Putting the Puzzle Together*. Participants' recalled that their thoughts were initially jumbled and unorganized, but over the four sessions they were soon able to put their experiences into a story-like format. One participant recalled:

> In my head, it seemed like a jumbled, incoherent mess! Funny enough though, over the four sessions, I think it started to come out in a more structured way; almost like a story. As each session went on, it became more and more structured and I think it ended up as a story from the start of my injury all the way through to my return. It was like putting a puzzle together.

Regarding intervention outcomes, participants reported three areas of SIRG. The first was *Seeing Myself in a Different Light*. The participants reported learning a great deal about themselves (i.e., heightened self-awareness). This included how selfish they were and that they need to be more caring, how their actions have consequences on themselves and others, how they took their health for granted and they need to be more compassionate to their bodies, how they need to be less pessimistic and more optimistic or more pessimistic and less optimistic, how they were more resilient than they give themselves credit for, and the importance of emotional-disclosure. One athlete recalled:

> I never thought it would change me, but I have learnt so much about myself from doing this task. I wouldn't have call myself a resilient or strong person. I always thought I was weak … I don't handle pressure very well. I don't deal with adversity as well as I would like to. I'm often not able to speak out about how I'm really feeling. But, I've realised that despite feeling rubbish, I still overcame my injury. So, I must be stronger than I thought.

Participants also reported *Seeing Others in a Different Light*. This theme encompassed strengthened and weakened relationships with others, heightened awareness of their support network, understanding the importance of reciprocal relationships, realisation of who they can and cannot rely on in times of need, and a greater insight into the support exchanges between members of their support network. Indeed, participants reported that many of their

support network did not meet their needs. On the other hand, they also acknowledged how they had affected these support exchanges:

> I learnt my friends and family didn't really help me much when I was injured. But, this task also made me realize that I didn't tell them what I was really thinking and feeling, because I didn't think they would understand what I was going through. I guess I'm partly to blame here, as I didn't give them the chance to understand because I was so angry. Relationships are messy.

The final theme is *Stop, Reflect, Act*. The theme reflected how the participants changed behaviors because of the intervention in terms being more empathetic to other injured athletes, changing training regimes to integrate rehabilitation exercises to prevent injury, and eating more healthily. One athlete reported, "I now understand the importance of warming up and cooling down properly. Talking forced me to think about why I got injured. I never warmed up or cooled down properly. I have definitely taken this on board now." Regarding eating more healthily, one participant said, "I took my health for granted. I ate so unhealthily when I was injured. I've realised that I need to change this. I need to look after me, my body. Now, I only put good stuff on my plate, which makes me feel better about me."

Written disclosure. Participants' experiences of the processes of the intervention were grouped into five themes (i.e., *Retraumatisation, Therapeutic Experience, A Structured Approach, Struggling to Keep Up with My Thoughts,* and *Seeing is Believing*), whereas the outcomes reflected two themes: *Still Putting the Pieces of the Puzzle Together* and *Seeing Myself in a Different Light*. Like the VD group, participants found WD to be both retraumatising and therapeutic. Two participants reported, "I got dropped from the squad because of my injury. I've never really discussed how I felt with anyone or written anything down. It was tough reliving and putting my emotions down on paper" and "I enjoyed writing. I don't write enough. It was nice to chronical my experiences. It was therapeutic in a way."

However, a novel theme for WD was *A Structured Approach*. This theme reflects how the participants found the intervention challenging, because they felt their writing had to be structured, with a clear beginning and end. Although they were instructed not to worry about spelling, grammar, and sentence structure, they reported feeling conscious that their entries made sense and progressed chronologically. One athlete recalled:

> I overthought about what I should and shouldn't write. I felt it needed to be structured, like a story. In the first session, I tried to write my whole story. In later sessions, I tried to go back and forth to re-address things. In ended up a bit of a mess, with bits of my story all over the place.

Despite wanting to take a structured approach, the participants found this difficult to do in practice; they reported *Struggling to Keep Up with My Thoughts*. This theme reflected what the participants described as their thoughts moving faster than their ability to write. They reported their thoughts as jumping around, darting in different directions as new insights emerged and as their reflections widened and narrowed. This incongruence between their thoughts and ability to write them down fast enough led to them forgetting certain things they wanted to write. One participant mentioned:

> Once I got into the flow of writing I found that I had too much I wanted to write down but I could only think and write about one thing at a time. I had so many thoughts running through my mind and often when I was writing, there were things I wanted to say but forgot once I finished the point I was making. In all of the sessions, I ran out of time before I could finish what I wanted to say.

The final theme, *Seeing is Believing*, represented that the interventions allowed them to see their thoughts and feelings in a written format, which validated them and made them real. Until the intervention, they had not stopped and reflected on their experience and they

were surprised by what they were writing, their thoughts and feelings, theirs and other people's actions, and what their injury clearly meant to them. One athlete recalled:

> I never realized how I felt about my injury until I wrote it all down and saw it on the paper, you know what they say, *seeing is believing*. I didn't believe that my injury affected my life in such a way until I wrote it down. It explains a lot of my behavior because I was so upset about my injury.

Regarding outcomes from the intervention, two outcomes were identified: *Still Putting the Pieces of the Puzzle Together* and *Seeing Myself in a Different Light*. The participants felt they had not yet reached closure. That their stories had chapters missing. That they had unanswered questions. That they had yet to dot-the-i's and cross the t's. All in all, they still felt they were working through their injury experience. One athlete recalled:

> My story was like a jumbled puzzle and I spent each session trying to write it down and put it together. I never managed to write everything I wanted because the time would run out. I managed to tell parts of my story, but it was probably incoherent in places and I still have no idea about what really happened when I got injured.

The second theme, *Seeing Myself in a Different Light*, reflected what the participants had learned about themselves during the intervention and reflected SIRG, which contradicts and extends the quantitative findings. They had learnt how to train more effectively, how they manage adversity, how they should not take their health for granted, and how they should be more optimistic and less critical of themselves. One athlete reported:

> This task has made me realize I'm negative about everything in my life, and always think the worst-case scenario, rather than thinking about how I can make things better. The more I talked the more I realized this. I now know I need to change this and try to be more positive because my negativity just makes me feel rubbish.

Control Group. Participants' experiences of the processes and outcomes of being in the control group reflected two themes: *Too Much Time* and *Better Time Management*. Regarding the former, the participants felt they had far too much time. That is, they did not need 20 minutes to write down what they had done during the day. One participant reported:

> I wrote everything I could in as much detail as possible but I still found myself completing the daily diary pretty quickly. I then had to go back to the beginning and write it all again. There is only so much detail you can write about your day! And I didn't really understand why we were doing it.

Yet, while the participants at times found the task a tedious and pointless endeavor in the earlier sessions, they soon started to realize that they were overburdened, investing too much time in areas of their life they do not value, and not maximizing their time during the day. For example, some realized how little time they spend with family and friends, whereas others identified that they had blocks of time when they were not doing anything. One participant expressed:

> The diary has made me aware of what I do in a day and that I need to get better with my time management. I think I will start to write a list of things I need to do, that way I know when I have got things done. I think I am less likely to waste my day on tasks that do not even need to be done.

Discussion

The aim of this study was to examine the efficacy of a four-week emotional disclosure intervention to promote SIRG with injured athletes low in hardiness during their return to competitive sport. This study makes an original and rigorous contribution to the literature on SIRG in several important ways. First, this study is novel in that it is the first study in the sport and exercise psychology literature to examine the efficacy of an intervention to promote growth-related experiences. Whilst researchers have extended the literature conceptually,

methodologically, and theoretically (Day & Wadey, 2017; Howells & Fletcher, 2015; Roy et al., 2017), *how* to promote SIRG has received no research attention. Second, this study significantly extends previous research on written disclosure with injured athletes in terms of its methodological rigor (Mankad et al., 2009a; Mankad et al., 2009b; Mankad & Gordon, 2010). Heeding recommendations from the psychology of sport injury (Cupal, 1998; Evans & Hardy, 2002) and emotional disclosure (Frattaroli, 2006) literature, this study uses a rigorous methodology that incorporates a control group, follow-up assessment, manipulation check, and social validation of procedures and outcomes. Finally, this study has also accounted for a sub-group of athletes that have received limited research attention (i.e., injured athletes low in hardiness). The sport and exercise psychology literature has lots of excellent examples of research conducted with athletes who identify themselves as resilient or mentally tough (e.g., Connaughton, Wadey, Hanton, & Jones, 2008; Fletcher & Mustafa, 2012; Gucciardi, 2017; Hardy, Bell, & Beattie, 2013). Yet, athletes who lack resilience or mental toughness have received less empirical attention (Uphill & Hemmings, 2017).

As hypothesized (Hypothesis 1), findings support the efficacy of VD to promote growth in athletes' low in hardiness. The VD group reported significantly more growth than both the WD and control groups, which was identified to represent three themes: *Seeing Myself in a Different Light*, *Seeing Others in a Different Light*, and *Stop, Reflect, Act*. This finding supports the T-SIRG (Roy et al., 2017) and research by Salim et al. (2015a,b) that suggest or provide evidence that injured athletes who disclose their emotions are more likely to experience SIRG. In contrast to our hypotheses, WD was not found to significantly promote SIRG. This conflicts with research in other disciplines that have demonstrated the efficacy of expressive writing to promote growth following adversity in diverse populations, including cancer patients, bereaved individuals, and rheumatoid arthritis patients (e.g., Danoff-Burg, Agee, Romanoff, Kremer, & Strosberg, 2006; Lichtenthal & Cruess, 2010;

Low, Stanton, Bower, & Gyllenhammer, 2010; Smyth, Hockemeyer, & Tulloch, 2008). Several reasons may explain this finding. First, the intervention did not have enough sessions. Despite following recommendations in the literature (Pennebaker & Beall, 1986), one of the themes identified from the social validation interviews was that the participants were *Still Putting the Pieces of the Puzzle Together*. Future researchers, therefore, should consider the number of sessions and the duration between them (Frattaroli, 2006), as well as alternative methods of disclosure (e.g., video logs), to add to our knowledge of the optimal conditions under which disclosure should take place. A second reason why WD did not significantly promote growth is the nature of the intervention itself. The VD groups were found to disclose three times as many words than the WD group. Considering the T-SIRG suggests that the cognitive and emotional processes of working through injury is a challenging endeavor (Roy et al., 2017), this is perhaps not surprising that the VD group had moved further along the pathway to SIRG than the WD group. Finally, a measure of stress-related growth was used rather than SIRG; therefore, the measure used might not have adequately accounted for the nuanced differences between the concepts. Future researchers need to develop a measure of SIRG to ensure the coherence of terminology and the associate use of a measurement tool (Howells, Sarker, & Fletcher, 2017). However, this will be a challenging endeavor as SIRG manifests itself within, and is perceived by, injured athletes differently. For example, one athlete might view strengthened relationships with others as SIRG, whereas another might report weakened relationships as an indicator of SIRG (Day & Wadey, 2017).

As hypothesized (Hypothesis 2), negative emotions decreased and positive emotions and cognitive words increased over time for both the VD and WD groups. This finding resonates with the identified themes from the social validation interviews that identified the role of negative emotions (i.e., *Retraumatisation*) and positive emotions and cognitions (e.g., *Therapeutic Benefits* and *Putting the Pieces of the Puzzle Together).* Further, these findings

595 align with the T-SIRG (Roy et al.., 2017) that suggests that the adverse experiences
596 following injury need to be rationalized and positively reappraised throughout recovery,
597 which in turn will generate positive emotions, facilitative actions, and ultimately SIRG. Yet,
598 while the present findings do support these theoretical proposals, the T-SIRG also stipulates
599 that the relationship between these phenomena is far more complex. For example, Roy et al.
600 (2017) reported, "… negative demands and responses not only trigger the development of
601 SIRG, but also co-occur with the processes and experiences of SIRG" (p. 41). Indeed, the
602 process to SIRG is not linear and SIRG itself is not a static phenomenon; rather they both are
603 very much reflective of the ebb and flow of recovery from injury (Wadey & Evans, 2011).
604 This might be explained by drawing on a limitation of our study. That is, the method of data
605 collection used (i.e., questionnaire) and the study's methodological pre-post design, might not
606 have been able to account for such complexity. Future researchers, therefore, should seek to
607 use alternative methods (e.g., diaries, observation, informal interviews) and methodologies
608 (e.g., ideographic rather than nomothetic such as action research and case studies) to generate
609 a more critical and nuanced understanding the complexities of SIRG. Importantly, these
610 methodologies should also be longitudinal to account for the temporal nature of growth
611 (Helegson, Reynolds, & Tomich, 2006).

612 Underpinned by the *Multilevel Model of Sport Injury* (Wadey, Day, Cavallerio, &
613 Martinelli, 2018), the study's implications for applied practice are now considered across
614 several levels. At an intrapersonal level, injured athletes' beliefs of emotional disclosure need
615 to be challenged. Salim et al. (2015a) identified that athletes low in hardiness believe that
616 emotional disclosure burdens others, does not affect recovery, and can have negative
617 repercussions (e.g., team-selection). These beliefs should be prioritized as targets for change.
618 Other examples at this level include hardiness training (Maddi, 1987). Taking an
619 interpersonal perspective, findings suggest that the support received by injured athletes does

not often meet their needs. Therefore, support providers should receive adequate training. This can include teammates, physiotherapists, and family members. An excellent example of how this could be done with parents, for example, is provided by Thrower, Harwood, and Spray (2017). At a broader institutional level, sports organizations and clubs should reflect on their resources, practices, and policies (Wadey et al., 2018). Questions worth considering include: What physical spaces exist that are conducive to emotional disclosure? If an injured athlete needed to disclose, what is the current protocol? What relationships with external agencies exist that can facilitate disclosure? Excellent examples of how this could be explored within a sports organization are provided by Parent (2011) and Cavallerio, Wadey, and Wagstaff (2016). Finally, it is important to consider the cultural context: What are the collective beliefs, norms, traditions, and values? What cultural narrative resources prevail? For example, sporting cultures have been identified to revere positivity, which govern what stories can be told and what stories are silenced (Mankad et al., 2009a). As recommended by Brown, Gilbourne, and Claydon (2009), all injured athletes need to be afforded the space and opportunity to share their stories, which should be met with support, understanding, and empathy (Wadey & Evans, 2011).

Conclusion

This study is original in that it is the first study to provide rigorous support for the efficacy of VD to promote SIRG. Yet, while this study is rigorous and its findings are of practical significance, it is recommend that future researchers proceed with caution. One finding from the social validation interviews is that injured athletes can experience retraumatisation. That is, talking or writing about injury can be an upsetting experience and such retraumatisation may constitutes abuse on the part of the researcher (Andersen & Ivarsson, 2016). While research is often fundamentally an exploitative process, future researchers should put appropriate safeguards in place to ensure the well-being of their

participants is not compromised. Future researchers should seek to extend this study by diversifying. Drawing from other disciplines of research on growth following adversity, researchers have examined art therapy (Singer et al., 2012), narrative exposure therapy (Hijazi, Lumley, Ziadni, Haddad, Rapport, & Arnetz, 2014), and poetry (Tegner, Fox, Philipp, & Thorne, 2009). These interventions, amongst others, represent exciting and unfamiliar terrains for the psychology of sport injury literature.

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