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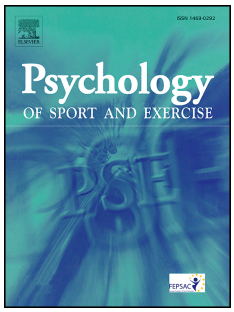

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Development and initial validation of an indirect measure of transformational leadership integrity.

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Development and initial validation of an indirect measure of transformational leadership integrity

Abstract

An indirect measure of transformational leadership integrity was developed across three studies. In Study 1, the transformational leadership integrity implicit association test (TLI-IAT) was developed and tested with 65 leaders across heterogeneous organizational contexts. Study 2 involved 51 coaches from 18 sports. Results from Studies 1 and 2 supported the construct validity of the instrument, providing evidence of the instrument's convergent and discriminant validity. Study 3 involved 32 coaches and 133 players from six sports. Findings supported the criterion validity of the measure, providing evidence for the instrument's predictive validity. In sum, evidence is presented that supports the TLI-IATs construct and criterion validity. As such, the present research has made significant advancements to the transformational leadership integrity literature and provides researchers with an indirect measure of automatic transformational leadership integrity self-attitudes.

Development and initial validation of an indirect measure of transformational leadership integrity.

As a rule-governed and social activity, sport represents a morally relevant context (Bredemeier & Shields, 1994). As such, the individuals who operate within this context face difficult moral choices on a daily basis. For example, coaches must decide whether to condone or criticize players who verbally abuse opponents (i.e., sledging) or cheat to gain a competitive advantage, instruct players to exploit an opponent's injury, or even whether they should encourage (tacitly or otherwise) the use of illicit performance enhancing substances. Although the majority of coaches are thought to abide by the rules of their respective sport and behave in a morally appropriate manner (Shields, Bredemeier, LaVoi, & Power, 2005), recent history provides evidence that there are those who do not (Stirling & Kerr, 2008, 2014). By tacitly endorsing appropriate or inappropriate behavior, coaches are in a highly influential position when it comes to developing the moral climate in which their athletes operate (Weiss, Smith, & Stuntz, 2008).

Although considerable research attention has been paid to examining performance related outcomes associated with coach leadership behavior in sport (see Fletcher & Arnold, 2015 for a review of sport leadership trends), few scholars have investigated the antecedent motives that underpin coaches' morally relevant actions. Further, although researchers have identified several morally relevant outcomes of coaching (see Kavussanu, 2012 for a review), such work is largely based on direct assessments of coach-based variables. As such, there is a need for research that seeks to assess antecedent motives that may contribute to coach-related moral outcomes in sport.

Transformational leadership integrity

Transformational leadership integrity examines the commitment in thought and action to the principles and values associated with two forms of leadership: (1) True

transformational leadership, and (2) Pseudo-transformational leadership. For Bass and Steidlmeier (1999), truly transformational leaders have a commitment to assisting their followers' development, even when this means the leader is required to transcend their own personal, and egoistic desires. They are also proposed to understand themselves, their values, and consider the values of their followers (Bass & Steidlmeier, 1999). Fairholm (2009) suggests that those with a propensity towards truly transformational leadership use this understanding to create an idealized and ethical vision for the future, based on mutual trust and respect. In turn, Frost and Howell (1989) suggest that this benefits and satisfies their followers, while recognizing them as individuals. Those with a propensity towards true transformational leadership (also known as authentic transformational leadership) are thought to be morally virtuous (Bass & Steidlmeier, 1999), of integrity (Parry & Proctor-Thomson, 2002), and able to liberate and empower those who follow them (Price, 2003). At the other end of the continuum, Bass and Steidlmeier (1999) consider those who possess pseudo-transformational leadership characteristics to have an inherent need for power and as such, promote dependency within their followers, and generally lack integrity. Such individuals are thought to manipulate their followers to internalize their own flawed values. They are considered controlling and while it may appear otherwise, they have little interest or empathy for others (Simola, Barling, & Turner, 2010).

Although perceptual approaches to leadership assessment may be effective in identifying true transformational leadership, they have historically been of less use when examining beliefs around immoral or illegal behavior (Rudman, 2004). As such, it is expected that direct, perceptual approaches may be ineffective in assessing self-attitudes towards pseudo-transformational leadership. Further, the effectiveness of perceptual approaches may be hampered by a desire and ability to self-present. According to Price (2003) there are three forms of pseudo-transformational leadership, which are differentiated

by impression motivation and impression efficacy: (1) opportunistic, (2) incontinent and (3) base. First, opportunistic pseudo-transformational leadership is used to describe those who present the impression of possessing the qualities associated with true transformational leadership, but only do so as there is a congruence between their needs and those of their followers. Such individuals are impression motivated and efficacious in their attempts to present themselves as possessing true transformational leadership values. Second, incontinent pseudo-transformational leadership describes those who are inefficacious in their attempts to construct the perception that they are truly transformational. Third, unlike both incontinent and opportunistic pseudo-transformational forms of leadership, base pseudo-transformational leadership describes those who are not impression motivated and are openly committed to their egoistic values. Such individuals lack integrity and are an example of baseness (i.e., a lack moral principles and a bad character).

It is worth noting at this point that while Price (2003) and Bass and Steidlmeier (1999) use labels such as: true, authentic, pseudo, base, incontinent, and opportunistic, the terminology is used to define attitudes and behaviors associated with the concepts, not act as a way of labelling individuals. While these terms are widely used within the literature, there is currently no discussion or agreement as to the requisite number of behaviors that need be presented or attitudes held to obtain such a label (Hardy et al., 2010). Further, as Mills and Boardley (2017, p. 658) argue ‘leaders do not use these behaviors in silos and are rarely all ‘dark’ or all ‘bright’’. While those who display the values associated with true transformational leadership are also thought to demonstrate integrity, high moral and ethical principles and, authenticity (Avolio & Luthans, 2003; Avolio & Gardner, 2005; Parry & Proctor-Thomson, 2002), Bass and Steidlmeier (1999) argue that possessing such values is not in itself a requirement of transformational leadership. As such, transformational leadership behavior (see Arthur & Tomsett, 2015 for a review of the transformational

leadership behavior literature within sport) can be displayed without necessarily possessing a foundation of integrity (Bass & Steidlmeier, 1999). As Dasborough and Ashkanasy (2002) point out, at a behavioral level, true and pseudo-transformational leadership is two sides of the same coin. For Dasborough and Ashkanasy (2002), ultimately it is the attitude towards integrity that defines the motive, which then influences the behavior.

As those with a propensity towards opportunistic pseudo-transformational leadership are likely to conceal their integrity attitudes and behave in a manner akin to true transformational leadership, relying on direct instruments alone (i.e., self- or follower-report) may be problematic. Although follower perceptions may identify those unsuccessful in their self-presentation (i.e., incontinent) and those who do not attempt to conceal their lack of integrity (i.e., base), Berinsky (2004; Fazio & Olson, 2003) suggests that perceptions alone may be fallible when attempting to identify those successful in presenting a false impression (i.e., opportunistic). Fortunately, instruments have come to the forefront in recent years (Fazio, Jackson, Dunton, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998; Karpinski & Steinman, 2006; Rothermund, Teige-Mocigemba, Gast, & Wentura, 2009; Teige-Mocigemba, Klauer, & Rothermund, 2008) that negate the problem of manipulation by indirectly assessing implicit social cognition (Berinsky, 2004; Fazio & Olson, 2003). Instead of asking participants to directly report on what they feel or think, indirect instruments assess spontaneously retrieved, automatically formed summaries of mental representations (i.e., the residue of previous observations, thoughts, and experiences) through systematic variations in task performance (Rudman, 2004). Essentially, rather than focusing on the question presented (i.e., direct assessment), participants focus on completing the task with inferences made post assessment; often by comparing reaction times.

Research questions

With the aforementioned in mind, the aim of the research is to develop and provide initial validation for an indirect measure of transformational leadership integrity self-attitudes (i.e., the Transformational Leadership Integrity Implicit Association Test; TLI-IAT). To achieve this, study 1 aims to develop the measure and offer initial evidence supporting its construct validity through examining its relationship with leaders' deliberate (i.e., directly assessed self-report) attitudes towards leader ethical integrity, as well as investigating its long-term reliability. Study 2 then aims to provide further evidence of the instrument's construct validity by testing its relationship with social desirability and directly assessed transformational leadership integrity attitudes, as well as testing its reliability over the short term. Finally, study 3 then aims to further examine its concurrent validity by assessing whether coaches' scores on the new measure are predictive of their players' reported sport commitment.

Study 1

Overview and aims

Building on the work of Perugini and Leone (2009) and earlier qualitative research of Mills and Boardley (2016), study 1 aims to develop an indirect measure of self-attitudes towards transformational leadership integrity, as described by Bass and Steidlmeier (1999). In addition to assessing self-attitudes towards transformational leadership integrity, Study 1 also examined directly assessed attitudes towards leader ethical integrity (i.e., perceived leader integrity scale; Craig & Gustafson, 1998). Like the indirect instrument developed within the present study, the perceived leader integrity scale (PLIS) adopts a characteristic focused approach. Importantly and again similar to the TLI-IAT, as a measure of ethical integrity, the PLIS was heavily influenced by the way integrity is conceptualized within the transformational leadership literature (Craig & Gustafson, 1998); in particular, the significance Bass (1985) placed on leadership attributes such as trustworthiness, fairness, and

believability. That said, while the concepts of ethical and transformational leadership integrity were conceived from a similar theoretical position, it is important to note that the PLIS does not wholly capture the same components as the TLI-IAT. This is partially due to the PLIS being based on an earlier theoretical position of transformational leadership integrity (Bass, 1985), whereas the TLI-IAT is based on Bass's latter position (Bass & Steidlmeier, 1999). The two instruments are, however, closely aligned and both assess the ethical, moral and, integrity intentions of leaders rather than behavior (Parry & Proctor-Thomson, 2002). As such, a significant and positive relationship between the PLIS and TLI-IAT would support the new measure's convergent validity (i.e., the degree to which two measures of constructs that theoretically should be related, are in fact related).

Methods

Participants

The sample consisted of 64 leaders (n = 39 females) residing in the United Kingdom. This sample size is representative of typical sample sizes used in the development of an implicit association test (IAT; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). To facilitate the development of a measure suitable for use across a range of leadership domains, and to allow investigation of organizational differences in transformational leadership integrity, a heterogeneous sample of performance driven contexts (from both the public and private sector) were sampled from: academic (n = 16), health (n = 13), business (n = 24) and sport (n = 10). For the purpose of the current study, leaders were defined as those who currently held a formal leadership position over two or more followers (M = 15.9, SD ± 15.3, Min = 2, Max = 70) and spent a minimum of 5-hours per week with their followers (M = 23.3, SD ± 13.1, Min = 5, Max = 40). Finally, participating leaders had spent a mean of 8.2 years within a leadership position (SD ± 7.5), had been in their current position for a

minimum of six-weeks (*M* = 2 years, *SD* ± 1.2 years, *Min* < 1 year, *Max* = 30 years), and were, on average, aged 39.4 years (*SD* ± 12.5, *Min* = 19, *Max* = 68).

To examine the instrument's test-retest reliability, the original participants were re-contacted *N* = 65) after an 18-month period. However, due to the length of time and fluid nature of employment within the populations investigated, it was found that a large proportion (62%) of the original sample were no longer employed within their respective positions or contactable. From the remaining participants, 24 agreed to complete the TLI-IAT again (*n* = 7 male; *n* = 8 business, *n* = 8 health, *n* = 6 academic, and *n* = 0 sports leaders).

Measures

Perceived leader integrity scale. Although the PLIS is usually administered to followers, for the purposes of the current study, the language used was adapted to be read in the first person: 'I am vindictive' as opposed to '[your immediate supervisor] is vindictive'. In keeping with the original measure, a four-point Likert scale was adopted for each of the 31-items, ranging from 1 (*Not at all*) to 4 (*Exactly*). Scenarios of low integrity were used throughout the scale (e.g. 'I often lie to followers'), in order to maintain consistency. Once completed, the measure was scored according to Craig and Gustafson's (1998) protocol with each item value combined to compute a total leader integrity score. As the perceived leader integrity scale is reverse scored each item was reverse coded and the total score standardized before the analysis was completed. Within the present study, the PLIS demonstrated good internal consistency with a Cronbach's α of .86. As a well-validated measure (Parry & Proctor-Thomson, 2002), the PLIS offers the closest available direct measure of leadership integrity and as such, is suitable to test the TLI-IATs convergent validity (Vaughn & Daniel, 2012).

Transformational Leadership Integrity - Implicit Association Test.

Face validity. An initial list of 24 stimuli items (i.e., 12 characteristics pertaining to true and 12 to pseudo-transformational leadership integrity) were generated. All stimuli items were generated using: (1) the theoretical framework of transformational leadership integrity proposed by Bass and Steidlmeier (1999), (2) qualitative discussions with seven leaders (i.e., three expert football managers; Mills & Boardley, [2016], one manager within the national health service, two academic leaders, and one business leader), and (3) with consideration to the stimuli word selection criteria discussed by Nosek, Greenwald, and Banaji (2007). In order to provide the optimal number of items for the IAT (Nosek, Greenwald, & Banaji, 2005) the quantity of terms was further reduced down to 16-items through discussions with two experienced leadership researchers (see Figure 1).

[Insert Figure 1 around here]

As the terms true and pseudo-transformational are not used within everyday English, the category headings were also discussed with three alternatives suggested (i.e., ethical and unethical, moral and immoral, and virtue and vice). Through participant discussion during piloting, the terms moral and immoral were selected as it was felt they best represented true and pseudo-transformational leadership, while being commonly understood. For the self and other categories, items previously verified as fit for purpose by Pinter and Greenwald (2005) were adopted. Although the self and other terminology is not without criticism (Karpinski, 2004), the terms have been reliably shown to assess self-concept (Greenwald, Nosek, & Banaji, 2003).

During completion of the TLI-IAT, participants undertook seven blocks, including both practice and counterbalanced trials. These were automatically randomized and based on the participant's numerical ID. Following standard IAT protocol (Greenwald et al., 2003), in

Trial 1, participants classified the stimuli into the categories of 'Moral' or 'Immoral'. Trial 2 then repeated the task, replacing the Moral/Immoral categories with 'Self' and 'Other'. In order to assist with the classification, the 'Moral' and 'Immoral' categories and stimuli used within Trial 3 were presented on a black background with white text, whereas 'Self' and 'Other' categories and stimuli are presented in green. This was particularly important in Trials 3, 4, 6 and 7, as both categories were presented at once. Trial 4 then retested the strength of associations between these categories and Trial 5 reversed the required responses to the 'Moral' and 'Immoral' pairing. Trial 6 then added in the 'Self' and 'Other' pairings. Finally, Trial 7 repeated and tested the procedure, as described within Trial 6. Based on this test structure (see Table 1), the TLI-IAT demonstrated good reliability through a Cronbach's α of .88 (Greenwald et al., 2003). Further, both of the compatible and incompatible blocks correlated with their respective test block (compatible test r = .96, incompatible test r = .67).

Procedure

After obtaining institutional ethical approval and permission from the relevant gatekeepers (i.e., academic institutions, businesses, sport teams, and health service providers), participants were approached by their human resources representative (i.e., business and health contexts), a staff email list (i.e., academia), or through emailing local teams (i.e., sport). Participants were informed of the study's aims, that participation was voluntary, and that the data would be kept strictly confidential and used solely for the purpose of research. Prior to participation, written informed consent was received from each participant. To avoid any order effects, participants were rudimentarily counterbalanced into one of two groups based on their order of attendance. Group 1 completed the direct, pencil and paper instrument first, before undertaking the indirect, computer task (i.e., the IAT). In contrast, Group 2 completed the computer task first before then completing the pencil and paper assessments.

[insert Table 1 around here]

Results

TLI-IAT Data Preparation

The IAT data were prepared according to the improved algorithm recommended by Greenwald et al. (2003). While the algorithm includes steps to remove respondents who consistently provide exceptionally fast (i.e., <300ms) or slow responses (i.e., >10,000ms), in this instance, such action was not necessary. As Greenwald et al. (2003) suggest, error responses were replaced with the mean latency from the block plus additional 600ms penalty. The overall standard deviation was then calculated for Trials 3 and 6, and 4 and 7, and the mean response latencies for Trials 3, 4, 6 and 7 were computed individually, before the two mean differences (M_{Trial} 6 – M_{Trial} 3) and (M_{Trial} 7 – M_{Trial} 4) were each divided by the previously calculated standard deviation. This equation creates a D value, which is the equal weighted average of the two resulting ratios (Greenwald et al., 2003). D scores range between -2 and +2, with a score of zero demonstrating an equal or no preference for the IAT's two target constructs. In this instance, a positive D score indicates an association with true transformational leadership integrity, while a negative D score represents an association with pseudo-transformational leadership integrity. Finally, the strength of the association is demonstrated by the amount the D score deviates from zero.

Descriptive statistics. Descriptive statistics for all variables are presented in Table 2.

[insert Table 2 around here]

Reliability. Analysis of the test-retest data for indirectly assessed self-attitudes demonstrated a high degree of reliability when the test is completed in either the same or similar environmental contexts (ICC [2,1] = .78, 95% CI [.47,.91]).

Convergent validity. To investigate the convergent validity of the TLI-IAT, we studied the association between self-reported leader integrity and TLI-IAT D scores. As the PLIS data were non-normally distributed a Spearman's Rho was utilized. This analysis demonstrated a moderate correlation (r_s = .25, p < .05) between the two variables, providing evidence for the convergent validity of the TLI-IAT. Further, classification frequencies suggested that the TLI-IAT was more sensitive than the PLIS, as demonstrated by the greater range of responses (see Table 3).

[insert Table 3 around here]

Discussion

Study 1 had a single primary aim, which was to develop and offer initial validation of an empirical, indirect measure of self-attitudes towards transformational leadership integrity. The findings presented suggest that this aim was achieved. While the PLIS is able to assess those who are willing or able to share their self-perceptions regarding their leadership integrity, results suggest the self-report version used within the present study lacks sensitivity. In contrast and consistent with the literature (Greenwald, Poehlman, Uhlmann, & Banaji, 2009), the TLI-IAT identified a broader range of associations (see Table 3). As a measure of self-attitudes towards both true and pseudo-transformational leadership integrity, the increased sensitivity offered by the TLI-IAT is key to identifying those who may be unwilling or unable to report their beliefs (Fazio & Olson, 2003; Hofmann et al., 2005; Nosek et al., 2007).

Next, study 1 provided evidence for the internal and test-retest reliability of the TLI-IAT. Based on the present sample, internal consistency was in this instance good (i.e., α = .88), which suggests that respondents reliably categorized the terms presented within the TLI-IAT into their respective categories (i.e., moral or immoral, and self or other). Further, the self-attitudes appear to be relatively stable, as demonstrated by the strong correlation between the test-retest D values (r = .67, p <.01). As the measure demonstrated a high level of temporal stability, this may suggest that the instrument measures primarily trait rather than state self-attitudes.

The findings also offer evidence that supports the convergent validity of the TLI-IAT, due to its positive association with a previously validated and direct measure of ethical integrity. Although demonstrating convergence between direct and indirect measures is notoriously difficult (Greenwald & Nosek, 2008), the results presented here suggest that TLI-IAT scores are moderately and positively related to the direct measure of ethical integrity. This finding provides initial evidence for the convergent validity of the TLI-IAT. Moreover, the moderate relationship established is consistent with the findings of a meta-analysis of 152 and 126 independent samples that found the degree of convergence between direct and indirect measures to be r = .23 and r = .24, respectively (Greenwald et al., 2009). Although these figures represent a small effect, the reasons for this disparity are unclear. However, it is thought that direct measures are more easily influenced by self-presentation strategies (Fazio & Olson, 2003). Further, culture is thought to influence the relationship. For example, coaches and players may claim that there is a culture of unethical behavior within sport that, while separate from their view of how their respective sport should be played, still influences their attitude (Greenwald & Nosek, 2008). Finally, others such as Strack and Deutsch (2004) have suggested that directly and indirectly assessed attitudes may be distinct constructs. However, this view has since been challenged by Gawronski, Hofmann, and Wilbur (2006)

who suggest that while the attitude may be accessed in different ways (i.e., via associative evaluations or reflective propositions), the attitude itself remains the same.

Study 2

Overview and aims

Psychological assessments are often based on direct measures (e.g., questionnaires and structured interviews), which assess introspectively available components of an individual's self-concept. Unfortunately, however, people are not always able to provide accurate information about themselves (Greenwald et al., 2009). Although this may be due to a lack of conscious reflection, equally, inaccurate responses may be intentional (Yovel & Friedman, 2013). Although an issue within research generally (Fazio & Olson, 2003), impression management and socially desirable responding (Paulhus, 1991) is a particular limitation of research conducted within settings where individuals are particularly motivated to create an alternate version of the self (Leary & Tangney, 2003). With respect to the present research, leaders often have a vested interest in presenting an impression that may not represent the true self. For instance, this may be to obtain resultant benefits or to carry favor over significant others. As pseudo-transformational leadership is associated with deception and manipulation, those who associate with the concept will likely attempt to use various strategies to attempt to manipulate the perceptions of others (Price, 2003). Although leaders who demonstrate the character associated with base pseudo-transformational will likely be open about their values, those encompassing a disposition towards incontinent and opportunistic transformational leadership may use impression management strategies to conceal their true beliefs (Price, 2003).

To add an additional layer of uncertainty, presently, there is conceptual ambiguity regarding the awareness of individual attitudes. While leaders may be aware of their conscious decisions, Paxton and Greene (2010) suggest that individuals may hold separate

automatic and deliberate attitudes. As such, leaders may report one attitude, while also possessing a different subconscious attitude. However, Hahn, Judd, Hirsh, and Blair (2014) have begun to tease apart awareness of automatic attitudes and have challenged the popular representation that such attitudes are inaccessible to introspection. Although a promising line of enquiry, there are still a range of questions left to examine (e.g., at what point does awareness of attitudes begin).

Bandura (1991) holds a similar view and argues that rather than experiencing a lack of accessibility to automatic attitudes, many actively avoid the act of introspection in an attempt to protect their desired identity image. When an individual is, for whatever reason, unaware of their automatic attitudes, they are likely to self-present attitudes in line with what they deem to be the social norm (Greenwald & Banaji, 1995). Within the present study, Price (2003) suggests there may be a further challenge in that the leader may be conscious of their beliefs, but choose to conceal them in order to present themselves in a more favorable light (i.e., Social Desirability Bias; Crowne & Marlowe, 1960). Therefore, this creates two problems when assessing transformational leadership integrity: (1) those who display a disposition towards pseudo-transformational leadership may know their beliefs and attempt to manipulate the process, and (2) leaders may not consciously be aware of their beliefs (Nisbett & Wilson, 1977) and instead report perceived culturally accepted attitudes (Fisher & Katz, 2000).

The present study aims to go some way towards resolving this issue, by examining people's awareness of their self-attitudes towards transformational leadership integrity. Further, social desirability bias is also assessed and used as an indicator of a negative evaluation of the transformational leadership integrity association held. Following the position of Bandura (1991) and Hahn et al. (2014), it is hypothesized that directly assessed integrity attitudes will be positively and significantly associated with social desirability bias.

In contrast, due to the robust nature of the IAT, it is hypothesized that indirectly assessed automatic self-attitudes towards transformational leadership integrity will demonstrate a weak and nonsignificant correlation with social desirability. Thus, providing further evidence of the TLI-IAT's discriminant validity.

Method

Participants

The sample consisted of 51 sport coaches (*n* = 29 Males) representing 18 sports (i.e., American football [*n* = 2], association football [*n* = 14], athletics [*n* = 2], badminton [*n* = 1], boxing [*n* = 1], cricket = [n =5], cycling [*n* = 2], fencing [*n* = 1], handball [*n* = 2], hockey [*n* = 2], rowing [*n* = 1], rugby League [*n* = 3], rugby Union [*n* = 3], netball [*n* = 2], taekwondo *[n* = 2], tennis [*n* = 1], volleyball [*n* = 1], weightlifting [*n* = 1], and unreported [*n* = 5]). The mean age of the 46 coaches who completed their demographic questionnaire was 33.36 years (*SD* ± 13.12). Further, they coached a mean of 19.90 players (*SD* ± 19.09), and had been coaching for 8.20 years (*SD* ± 9.75). The sample was also reasonably well qualified (e.g., the highest qualification achieved was doctorate [*n* = 3], Masters [*n* = 11], Bachelors [*n* = 16], A-Level [*n* = 10], and vocational [*n* = 6]) and primarily spoke English as a first language (*n* = 45).

Measures

Indirect measure.

Transformational Leadership Integrity - Implicit Association Test. The test structure used within the TLI-IAT was carried forward from study 1 (see Table 1). Based on this test structure, the TLI-IAT demonstrated good reliability through a Cronbach's α of .83. Further, following the protocol established by Greenwald et al. (2003), both the compatible and incompatible blocks correlated with their respective test block (i.e., Blocks 3 and 4 *r* = .83, blocks six and seven *r* = .76).

Direct measures.

Feeling thermometers. Participants also completed paper-and-pencil questionnaire measures of their attitudes toward the two target concepts. Like Greenwald et al. (1998) the present study adopted a feeling thermometer. As such, participants were invited to describe their general level of warmth or coolness toward true and pseudo-transformational leadership integrity. The thermometer was labelled at one degree intervals from 0 to 10 and anchored at the 0 (i.e., cool), 5 (i.e., neutral), and 10 (i.e., warm) point intervals. Directly assessed transformational leadership integrity attitudes were then standardized. Finally, a difference score was calculated (skewness = -.87; kurtosis = .06) by subtracting ratings of the true transformational leadership category by the pseudo-transformational leadership category ($valance_{category}$).

Social desirability. Social desirability was measured using Reynolds's (1982) 13-item scale. The scale attempts to assess whether participants attempt to present socially favorable and acceptable image of themselves to others when answering self-evaluative questions. Each item is based on a true or false scale (e.g., 'It is sometimes hard for me to go on with my work if I am not encouraged'), with socially undesirable responses awarded one point. The social desirability scale demonstrated acceptable reliability through a Cronbach's α of .69.

Procedure

The procedure was the same as that used in Study 1 with the exception that assessments were not completed within a laboratory setting, but rather via a web-experiment platform. To achieve this a custom platform was developed whereby the assessments were completed within the participant's java-approved website browser. Essentially, the test presents the stimuli in the same manner as the laboratory based assessments. However, rather than being directly recorded onto a local computer, data are captured by an external server. While such an approach does not allow for the experiment to be controlled as rigorously as

the laboratory setting (i.e., distractions and monitor refresh rate), by following the data preparation approach adopted by Greenwald et al. (2003), these issues are unlikely to have impacted upon the results.

Results

Data Preparation

TLI-IAT data were prepared according to the revised algorithm recommended by Greenwald et al. (2003), as described in study 1. As a result, three of the 51 coaches who completed both test and retest were excluded for exceeding the <300ms or >10,000ms boundaries and were removed from the dataset.

Descriptive statistics. Descriptive statistics for all variables are presented in Table 4. Across both test and retest, participants demonstrated a moderate association towards true transformational leadership integrity.

[insert Table 4 around here]

Reliability. Analysis of the same session test-retest data for indirectly assessed self-attitudes demonstrated good test-retest reliability (ICC [2,1] = .75, 95% CI [.60,.86]).

[insert Figure 2 around here]

Discriminant validity. Pearson correlations were conducted to determine the bivariate relationships amongst the study variables and were interpreted in accordance with Cohen's (1992) guidelines. As such, correlations of .10, .30, and .50 were viewed to represent small, medium, and large effect sizes, respectively. These analyses identified a moderate positive relationship between directly assessed transformational leadership integrity and

social desirability bias (i.e., $r = .33$. $p < .05$) and a weak insignificant association between social desirability bias and mean (i.e., average between two test-retest scores) automatic transformational leadership integrity scores (i.e., $r = .11$. $p = .51$).

Discussion

The primary aim of study 2 was to investigate people's awareness of their automatic self-attitudes towards transformational leadership integrity. To do this, we examined whether (a) a correlation existed between direct and indirectly assessed attitudes towards transformational leadership integrity, and (b) if either attitude was prone to social desirability bias. As social desirability bias assesses an individual's attempts to present themselves favorably within a social environment, it is realistic to suggest that a motivation to present such an impression is due to either a desire to enhance a positive or reverse a negative evaluation of the construct one is attempting to conceal (Leary & Kowalski, 1990).

Either way, the motivation to manipulate the impression formed suggests some awareness of the attitudes assessed. Rather than experiencing a lack of accessibility to introspective attitudes, Bandura (1991) suggests many choose to avoid the act of introspection in an attempt to protect their desired identity image. Instead of considering their automatic self-attitudes, coaches may instead attempt to cognitively restructure their morally questionable conduct as benign or worthy through the use of one or more moral disengagement mechanisms: (a) moral justification, (b) sanitizing their language and or through the construction of advantageous comparisons, (c) by diffusing or displacing personal responsibility, (d) disregarding or minimizing the impact of their actions, or (e) attributing blame to, and dehumanization of, those whom they have abused (Bandura, 1999). For example, Moore (2009) interviewed former England international and Harlequins (i.e., rugby union) head coach, Dean Richards, after he had admitted to asking his players to use of fake blood capsules to imitate injury in order for his team to gain an additional substitution:

> "It was quite prevalent and the players felt other teams were having a material advantage by using it and they felt we were missing out. There's a sense of loyalty [to the people around you]; you're trying to safeguard their position. It was the wrong decision made for the right reasons. I did cheat, I knew it was wrong, [but] I thought it was an accepted practice in rugby".

As seen within the previous example, it is not uncommon for coaches to attempt to conceal attitudes that may be seen as socially undesirable until challenged. As such, when dealing with socially sensitive topics, such as transformational leadership integrity, it is important to consider more than potentially cognitively restructured and deliberately reported statements alone.

Within the present study, a positive and significant correlation between directly assessed transformational integrity attitudes and social desirability was identified. However, the relationship between social desirability and the indirect measure of automatic self-attitudes towards transformational leadership integrity were non-significant, which offers additional evidence of the TLI-IAT's discriminant validity. This suggests that, unsurprisingly, the indirect measure of transformational leadership integrity self-attitude was less prone to social desirability bias than directly assessed measure of transformational leadership integrity attitudes. This may be due, in part, to the process of cognitively restructuring morally disengaged attitudes. Although the study design used prevents causal questions around why social desirability bias was related to directly assessed transformational leadership integrity from being answered. The findings would appear to suggest that there was a level of awareness regarding transformational leadership integrity attitudes within the sample in order to attempt to present a socially desirable impression. Such findings are consistent with the literature (Hofmann & Wilson, 2010) in as far as, while automatic and deliberate attitudes may demonstrate relatively high correlations during the examination of mundane topics,

should the topic be socially sensitive (as in the present example), correlations are likely to be low (Fazio & Olson, 2003). Although correlations for socially sensitive topics may be low, this should not be deemed to reflect a lack of awareness, but rather that the results, as suspected in the present study, are as a result of either self-presentation or self-deception (Hahn et al., 2014; Hofmann et al., 2005).

Study 3

Overview and aims

Groups are often successful, not because they have the most skilled individuals, but because of how well the group functions (Callow, Smith, Hardy, Arthur, & Hardy, 2009; Cronin, Arthur, Hardy, & Callow, 2015; Price & Weiss, 2013; Smith, Arthur, Hardy, Callow, & Williams, 2013). Leaders are vital to such group functioning, influencing it by: (a) creating a vision that encompasses the hopes of those whom they lead, (b) role modelling desired behaviors and (c) inspiring those around them to achieve more than they believe possible (Bass, 1985). Effective leaders embody the group, stimulate activity and when necessary, change (Bass, 1990). However, as discussed earlier, not all leaders behave in a way that benefits the group. Although many put the interests of the group ahead of their own and act on strong ethical values and moral standards for the good of their followers and/or organization (Barling, Christie, & Turner, 2008). Others are less altruistic and instead use their position to deceive and manipulate the group to work towards their own selfish interests (Bass & Steidlmeier, 1999). To achieve this, such leaders seek to shift the values and aspirations of followers to meet their own needs (Barling et al., 2008). The problem, however, is few leaders are open in their intentions and followers may be unaware that their values and aspirations have been manipulated for the leader's advantage (Price, 2003). As such, solely relying on traditional, direct instruments (i.e., self-or follower-report) is problematic because they may not accurately capture the target concept.

Within sport, should players become aware of a coach's self-attitude towards pseudo-transformational leadership integrity, then their commitment is likely to suffer (Avolio, Zhu, Koh, & Bhatia, 2004; Barling, Weber, & Kelloway, 1996; Bauman, 2013; Dirks & Ferrin, 2002; Podsakoff, MacKenzie, & Bommer, 1996; Zhu, Avolio, Riggio, & Sosik, 2011). However, it is expected that only a minority of players will have considered the attitude of their coach. Instead, it is expected that, when asked, many will form a perception of their coach without conscious deliberation. Further, without such effortful consideration, a variety of factors may affect the formation of such perceptions. For example, a player's opinion may be affected due to attribution error, whereby the player judges the coach's integrity as low based on decisions such as restricting game time (Ross, 1977). Further, junior or inexperienced players may have limited or no experience of other coaches to form a comparison and instead accept their present environment as the norm. Finally, when offering perceptions of their coach, players may also be fearful of retribution should they provide an accurate report – thus skewing the results. Therefore, due to the socially sensitive nature of leadership integrity, the likelihood that a section of coaches will successfully present a false impression (e.g., opportunistic pseudo-transformational), and that players may experience errors of attribution, it is hypothesized that, of the measures of integrity utilized, only indirectly assessed automatic self-attitudes towards transformational leadership integrity will act as a significant predictor of athlete-reported commitment.

Method

Participants

The sample consisted of 32 head coaches (n = 28 Males) and 133 UK based players (n = 106 Males) representing six team sports (i.e., association football, n = 7, rugby [both codes], n = 7, Gaelic football, n = 11, netball, n = 3, and basketball, n = 2). On average four players per coach (M = 4.23; SD ± 2.31, $Min.$ = 2, $Max.$ = 12) participated with a mean age of

25 years (*SD* ± 5.34), whilst coaches were aged 39.14 years (*SD* ± 11.41) on average. In order to facilitate accurate player perceptions, only players who had been coached by the target coach for a minimum of six-weeks before participation were included.

Measures

Indirect measure.

Transformational Leadership Integrity - Implicit Association Test. The test structure used within the TLI-IAT was carried forward from study 1 (see Table 1). Based on this test structure, the TLI-IAT demonstrated acceptable reliability through a Cronbach's α of .79. Further, following the protocol established by Greenwald et al. (2003) both the compatible and incompatible blocks correlated with their respective test block (compatible test $r = .70$, incompatible test $r = .75$).

Direct measures.

Perceived Leader Integrity Scale. As in study 1, the PLIS was adopted to assess players' perceptions of their coach's ethical integrity. The PLIS demonstrated excellent reliability through a Cronbach's α of .91.

Sport commitment. Sport commitment was measured using 12-items from the Athlete Opinion Survey (Scanlan, Carpenter, Simons, Schmidt, & Keeler, 1993) that assess commitment, enjoyment, and involvement opportunities. Example items include: 'How dedicated are you to continue playing for this team?', 'Do you feel encouragement and support from your coach for playing in this team?', and 'Would you miss the coach if you left?'. All items were scored on a 5-point Likert scale with anchors of 1 (*not at all*) to 5 (*very much*). Good to excellent internal consistency for all each of the subscales used within the present study (commitment = α > .88; enjoyment = α > .90; and involvement opportunities = α > .83) have previously been demonstrated (Scanlan et al., 1993). In this instance, the scale demonstrated good reliability, with Cronbach's α of .86 (sport commitment), .94 (enjoyment),

and .77 (involvement opportunities). Responses on the 12-items were also averaged to produce one score for perceived sport commitment; these scores were also internally consistent (i.e., Cronbach's α of .92).

Procedure

The procedure discussed within study 2 was also utilized in study 3 with the exception that, upon completion, the coaches were asked to forward a separate web address onto the players of their respective teams. Players were also provided with a participant information sheet, gave written consent, and were offered the researcher's email address and telephone number should they have questions. In order to facilitate transparency, players offered their observations anonymously and were identified simply by asking for the name of the coach and team in which they were referring to in their assessments. Similar to their coaches, players reported on their perceptions of coach integrity and their level of commitment to the team.

Results

Data Preparation

Mean scores for the PLIS and each subscale assessing sport commitment (i.e., commitment, enjoyment, and involvement opportunities) were computed for each team by averaging the ratings of the team members. Initially, the degree of consensus in these ratings was assessed (Myers & Feltz, 2007), before computing within-team agreement index for each scale (r_{wg} (j); James, Demaree, & Wolf, 1984). On average, there were 4.27 players reporting on each team (*SD* ± 2.28, *range* = 2--12). One team had a low average r_{wg} (j) value (.59) across the three sport subscales and was removed from the analysis. Total commitment across all teams resulted in an r_{wg} (j) value of .89 (*SD* ± .06, *range* = .77 - .97), while the subscales were as follows: commitment = .91 (*SD* ± .07, *range* = .67 - .99); enjoyment = .89 (*SD* ± .10, *range* = .66 - 1.00); and involvement opportunities = .87 (*SD* ± .07; *range* = .71 - 1.00). In

terms of the PLIS, each team achieved an r_{wg} (j) value of >.70; *M* r_{wg} (j) = .94 (*SD* ± .07; *range* = .74 - 1.00). These values indicate sufficient within-team consensus in athlete reported commitment that justify aggregating individual data.

Across all three studies, the TLI-IAT data were prepared according to the revised algorithm recommended by Greenwald et al. (2003) and discussed in study 1. As a result, two coaches exceeded the <300ms criteria (46% and 52% responses respectively) and as such, their six associated players were also removed from the dataset.

Descriptive statistics and scale reliabilities. Descriptive statistics and Cronbach's (1951) alpha coefficients for all variables are presented in Table 5. On average, players perceived their coach as displaying integrity, while on average, the players were relatively committed to their teams. Finally, coaches reported moderate automatic self-attitudes towards transformational leadership integrity. Alpha coefficients for each of the player surveys indicated acceptable to excellent internal consistencies (Nunnally, 1978).

[insert Table 5 around here]

Correlation analyses. Initially the mean player score from each team was computed, before Pearson correlations were conducted to determine the bivariate relationships amongst the study variables (see Table 6).

[insert Table 6 around here]

Regression analyses. A two-step hierarchical multiple regression was performed to determine the role of direct and indirectly assessed coach integrity as predictors of athlete reported commitment. Potential confounds were entered in Step 1 of the regression to control

for sex, age, and sport type. Subsequently, the predictor variables of automatic self-attitudes transformational leadership integrity and perceived leader integrity were entered in Step 2. The hierarchical multiple regression revealed that in Step 1, the potential confound of age made a significant contribution to the regression model. The introduction of automatic transformational leadership integrity self-attitudes as a predictor in Step 2 then had a further significant positive effect on the model (see Table 7).

[insert Table 7 around here]

Discussion

As hypothesized, indirect transformational leadership integrity scores assessed through the TLI-IAT, significantly and positively acted as a predictor of athlete-reported commitment. Specifically, when the TLI-IAT scores of coaches indicated a stronger association between the concepts ‘moral’ and ‘self’, athletes were more likely to report higher levels of commitment than when coaches demonstrated a weaker association between these concepts. In contrast, athletes' perceptions of their coach's integrity were a non-significant predictor of commitment. While this may seem somewhat paradoxical, given the theorized manipulative and deceptive nature of pseudo-transformational leaders (Barling et al., 2008; Bass & Steidlmeier, 1999; Choi, 2006; Dasborough & Ashkanasy, 2002; Price, 2003), it is unsurprising that player perceptions alone were not a significant predictor of athlete-reported commitment. Although some players may be able to perceive the self-attitudes of their coach (as demonstrated within the present findings), there are a number of factors that may affect the accuracy of such perceptions. For example, their perception of how a prototypical coach should behave, and/or unduly mis-attributing coach attitudes based on their behavior (Ross, 1977). Coaches themselves may also be unwilling to show their self-

attitude towards transformational leadership integrity, which creates an additional problem when relying on player perceptions.

The results of the present study, while not a direct comparison (i.e., both direct and indirectly assessed attitudes were not collected from the same individual), are consistent with the literature. Based on a meta-analytical review of 61 studies, across 86 independent samples and 6,282 participants, Greenwald et al. (2009) found that the method utilized within the present study (i.e., the IAT) consistently outperformed direct measures when dealing with socially sensitive constructs. In contrast, direct assessment outperformed indirect when assessing mundane constructs. This further supports the position of Fazio and others (1990; Fazio & Olson, 2003; Gawronski et al., 2006; Greenwald & Nosek, 2008) that indirect assessments examine associative evaluations, while direct measures assess reflective or propositional attitudes. As previously stated, it is important to note that while access to, and the outcomes of, the assessments, may be different, the attitudes themselves are not thought to be separate (Hofmann, Friese, & Wiers, 2008).

The internal consistencies of the two predictor variables (i.e., TLI-IAT and PLIS) were good to excellent (i.e., $\alpha > .79$), as were those of the subscales (i.e., $\alpha > .83$) that fed into the outcome variable of athlete-reported commitment. Within-team agreement was also calculated for each of the athlete-reported variables (i.e., PLIS and Athlete Opinion Survey). All but one team demonstrated acceptable levels of agreement across each of the commitment subscales (i.e., r_{wg} [j] > .87). Similar levels of within-team consensus were also demonstrated for the PLIS (i.e., r_{wg} [j] = .94). All of which offers evidence to support the internal reliability and within-team consensus for each of the measures used.

General Discussion

The overarching aim of the research was to develop and validate an indirect measure of automatic self-attitudes towards transformational leadership integrity. The initial research

presented here offers evidence for the TLI-IAT's validity and reliability, while also offering evidence of the tool's potential to illuminate novel insights into the processes involved with transformational leadership integrity. In the three studies presented, evidence is offered for the reliability (i.e., internal, and test-retest) and validity (i.e., face, convergent, discriminant, and predictive) for the new instrument. Internal reliability was assessed across all three studies with Cronbach's alpha scores ranging from .79 to .88. Next, compatible test block correlations ranged from r = .70 to .96, while incompatible test block correlations ranged from r = .67 to .76. Test-retest reliability scores were consistent in both samples assessed (i.e., ICC [2,1] = .75 to .78). Validity was established through various types of content, construct, and criterion analyses, including comparing the TLI-IAT with other established measures of ethical integrity, social desirability, and group outcomes. Based on the results of these analyses, it appears the measure is able to reliably assess automatic self-attitudes towards transformational leadership integrity and that these attitudes act as a predictor of group outcomes.

In the development and validation of this new instrument, the present research has answered Christie, Barling, and Turner's (2011) call for a measure of transformational leadership integrity that is (1) capable of identifying self-attitudes towards transformational leadership integrity, and (2) robust to the self-presentational issues associated with such a socially sensitive construct. Initial development and validation of the TLI-IAT suggests the instrument is capable of addressing each of these issues. Until the studies presented here, empirical research has exclusively examined the concepts of transformational leadership integrity as an deliberate, effortful, and controlled process (Barling et al., 2008; Christie et al., 2011). However, such an approach appears to conflict with Bass and Steidlmeier's (1999) framework, which states transformational leadership integrity is based on the leader's moral character. Although transformational leadership integrity is, in part, a two-way construction

between the leader and followers, the present research has shown, as Bass and Steidlmeier (1999) suggested, there is a third element to this process that moves beyond what is portrayed and perceived. As such, the current research presents the first empirical evidence that transformational leadership integrity may operate, in part, at an automatic level. Further, the present research has also highlighted that indirect measures may predict different types of behavioral responses when compared to direct measures, which may be particularly relevant in studies looking to identify and investigate those who display a disposition towards pseudo-transformational leadership.

Although the present research was focused primarily on measurement development, it would be somewhat remiss to not comment on the levels of transformational leadership integrity identified using the TLI-IAT. Across the three studies participants mean D scores illustrated moderate associations towards true transformational leadership tendencies (i.e., study 1 D = .66, study 2 D = .36, and study 3 D = .79). These results suggest that overall, the coaches assessed tended to act in the interest of others. However, it is also important to acknowledge that all three samples included participants who diverged from this tendency considerably, with participants in all three studies providing D scores that suggest opposite tendencies. Given developing the character of athletes is a key component of sport coaching (Boardley, in press; Feltz, Chase, Moritz, & Sullivan, 1999), the development of the TLI-IAT provides a tool capable of identifying sub-optimal self-attitudes that may indicate a limited ability to address this key aspect of sport coaching.

Lastly, during the course of the current research it has become increasingly apparent that direct and indirect measures are complimentary; particularly when the target concept is considered socially sensitive. Using a combination of such tools allows researchers to examine more than what has been directly reported or perceived by others (Hofmann et al., 2008). Such an approach to measurement was also be appropriate for researchers looking to

test hypotheses based on dual-process models of social cognition (Fazio, 1990; Gawronski & Bodenhausen, 2006; Strack & Deutsch, 2004). Further, research adopting a dual-process perspective allows for a more holistic approach to be taken (De Houwer, 2006).

The continued development of instruments designed to assess implicit social cognition opens up a plethora of new opportunities to researchers and practitioners who may wish to develop interventions that move beyond behavior and into the cognitive processes that occur before the behavior is displayed, perceived, and subsequently reported. Socially sensitive topics within coaching that are suitable for dual-process investigation include race (i.e., selecting a player based on their skin tone rather than ability) and sexuality (i.e., refusing to sign an athlete based on their sexuality). Prejudices against age, body shape, gender, and religion may also be relevant within specific sports. Further, instruments such as the TLI-IAT may also be used to illuminate socially undesirable attitudes that may lead to destructive and abusive coaching behavior (Fazio, 1990).

Limitations of the research and directions for the future

Although initial evidence for the reliability and validity of the measure has been offered, there are some limitations of the research, which should be considered when using the instrument. First, although the sample sizes for the three studies are acceptable for the development of an implicit association test (Lane, Banaji, Nosek, & Greenwald, 2007), statistical power across the three studies did not reach the desired level of .80 (Field, 2013) in all three studies. Specific levels of power to detect the identified effects for Study 1, Study 2 and Study 3 were .52, .66 and .87, respectively. Whilst larger sample sizes would have increased confidence in each of the effects detected, the ability of the TLI-IAT to detect predicted effects across three studies helps counter this limitation. Although we believe our samples sizes were adequate given our multi-study approach, future researchers should look to recruit larger samples when possible. Further, a larger sample in study 3 would have also

allowed for a multilevel approach to have been adopted, accounting for the nested nature of the athlete data. However, its use here would have been inappropriate as using a multilevel approach when the number of groups is substantially lower than 50 can lead to biased estimates (Maas & Hox, 2004).

Second, due to unforeseen high employee turnover, the sample for the test-retest in study 1 was smaller than anticipated. Although future researchers are encouraged to further examine the test-retest validity of the TLI-IAT with larger samples, it is worth noting, that again, such sample sizes are not unusually small when compared to other IAT reliability studies (Lane et al., 2007). Next, although the TLI-IAT has shown some promise, it is still in its infancy and more evidence for its discriminant validity is needed. As authentic leadership has some theorized conceptual overlap with true and pseudo-transformational leadership, but is generally considered a unique concept, future researchers may wish to use this framework to evaluate whether divergent validity between authentic leadership and transformational leadership integrity is supported.

Third, although female participants were represented in Study 3, the sample was largely dominated by male participants (i.e., 26 of the 30 teams were all male). Further, there were no examples of male athletes coached by female coaches or vice versa represented within the sample. As such, the results of study 3 are applicable mainly to male coaches working with male athletes. Future research should address this by placing an increased focus on maintaining equal gender representation. Such an approach would allow greater control over sex as a potential confound, and/or the examination of potential gender differences. Further, a greater emphasis on collecting demographic information is also necessary in order to highlight whether the findings presented here are consistent across coaches of all levels and employment status.

Fourth, although we have begun the process of assessing the measure's predictive validity, there is much still to be done. As the notion of value congruence is discussed within the transformational leadership literature, scholars may wish to use the tool to longitudinally examine the long-term influence such self-attitudes have on those who follow and the length of said relationships. Given the findings of the present research, it is likely that those with a disposition towards pseudo-transformational leadership values may struggle to maintain long-term relationships. In contrast, those who possess a propensity towards true transformational leadership values may be able to establish long-term relationships built on trust and respect (Barling et al., 2008). There is also the potential to explore the influence an automatic self-attitude towards transformational leadership integrity may have on character development, motivational climate, prosocial and antisocial behavior, and sportspersonship. Further, within this line of inquiry there are also interesting avenues to explore related to leadership behavior, not least by specifically examining the ways in which those with a propensity towards true and pseudo-transformational leadership behave towards their followers. In addition, scholars should seek to establish whether the TLI-IAT explains variance in theoretically related outcomes over and above existing other-report scales (e.g., the Differentiated Transformational Leadership Inventory; Callow et al. 2009). In sum, transformational leadership integrity research has the potential to aid our understanding of the part leaders play in determining the development of those they lead, and to possibly help explain some of the unexpected findings reported in past research.

Conclusions

In sum, the present research has made a significant contribution to the transformational leadership integrity literature by providing an additional instrument that complements the existing measures available. Importantly, support for both the validity and reliability of the instrument developed here has been provided across multiple samples with

promising results demonstrated throughout. Although transformational leadership integrity has historically been an area that is somewhat slow to develop, it is hoped that the measure developed here will allow scholars to empirically move forward in this field with confidence. As an underexplored area of the transformational leadership literature there is much work to be done and future researchers are encouraged to start by examining the potential relationship between transformational leadership integrity and transformational leadership behavior. As highlighted, there are still a number of aspects relating to the TLI-IAT's validity that require further exploration. However, the findings presented here are encouraging and suggest additional research within this area is likely to prove worthwhile, and is therefore encouraged.

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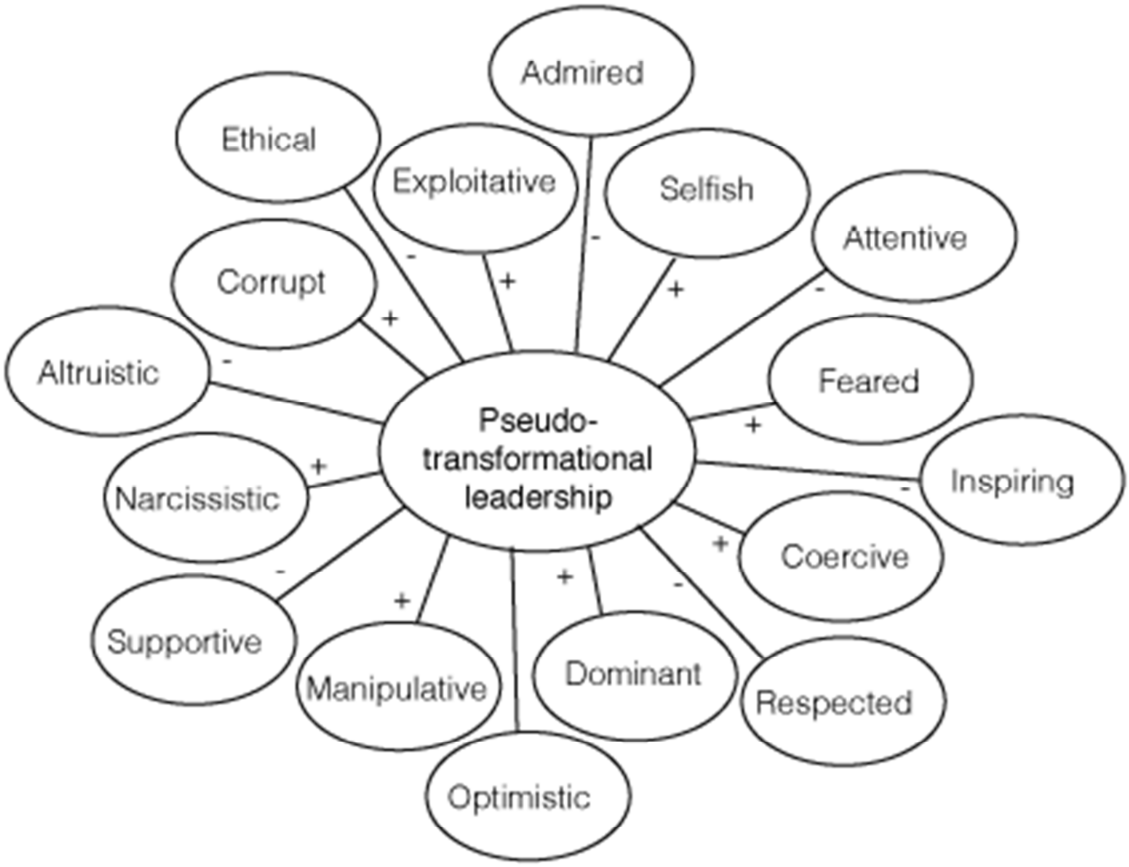

Figure 1. Weighted true and pseudo-transformational leadership terms used within the TLI-IAT.

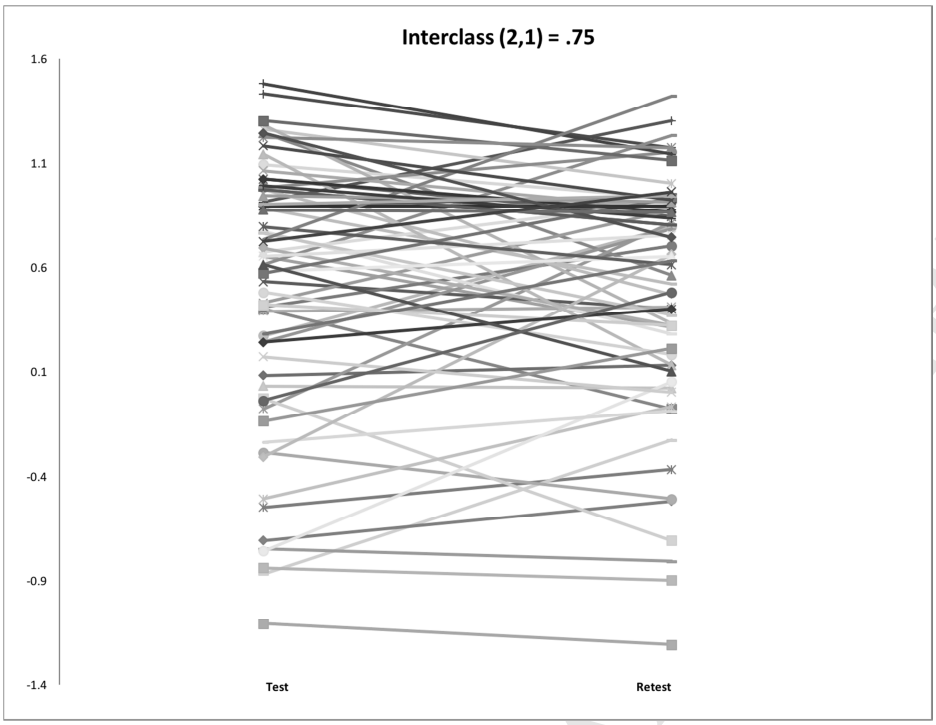

Figure 2. *N* = 48 TLI-IAT scores based on a same session test-retest.

Table 1. TLI-IAT Protocol.

Block	No. Trials	Function	E Key Assignment	I Key Assignment
1	20	Practice	Moral terms	Immoral terms
2	20	Practice	Self terms	Other terms
3	20	Practice	Moral and self terms	Immoral and other terms
4	40	Test	Moral and self terms	Immoral and other terms
5	20	Practice	Immoral terms	Moral terms
6	20	Practice	Immoral and self terms	Moral and other terms
7	40	Test	Immoral and self terms	Moral and other terms

Note: The positions of single and paired categories are presented in a counter balanced order.

Table 2. Descriptive Statistics (*N* = 61 Leaders).

Variable	M	Min.	Max.	SD	Skew	Kurtosis
1. TLI-IAT	.66	-.40	1.46	.45	-.42	-.50
2. PLIS	33.78	31	54	4.27	-2.52	7.51

Table 3. Direct and indirect measurement classification frequencies.

Instrument classifications	TLI-IAT	PLIS
Strong positive association / High integrity	33	51
Moderate positive association / Moderate integrity	11	12
Slight positive association / Low integrity	9	0
Neutral positive association / N/A	8	-
Slight negative association / N/A	1	-
Moderate negative association / N/A	2	-

Table 4. Descriptive Statistics (*N* = 48 Coaches).

Variable	M	Min.	Max.	SD	Skew	Kurtosis
1. Transformational leadership integrity feeling thermometer	-.10	-4.56	2.16	1.93	-.87	.06
2. Social desirability scale	7.83	49	7.55	18-60	-.20	-.61
3. TLI-IAT test	.36	-1.11	1.43	.66	-.67	.68
4. TLI-IAT retest	.35	-1.27	1.30	.59	-.71	.02

Table 5. Descriptive Statistics and Alpha Coefficients (*n* = 29 Coaches, *n* = 124 Players).

Variable	α	M	SD	Range	Skew	Kurtosis
1. Perceived leader integrity	.91	1.24	.33	.40-.1.90	.37	.60
2. Auto. trans. leadership integrity	.79	.42	.71	-.91-1.41	-.41	-.10
3. Athlete reported commitment	.92	44.85	5.20	30.50-53.00	-.76	.61

Note: Item two refers to indirectly assessed coach automatic transformational leadership integrity self-attitude. Items one and three are athlete reports.

Table 6. Zero order correlations between variables (n = 29 coaches; n = 124 players).

Variable	1	2	3
1. Athlete reported commitment	–		
2. Perceived leader integrity	.32	–	
3. Auto. transformational leadership integrity	.54**	.25	–

Note: **p <.01.

Table 7. Two-step hierarchical regression analysis of leadership integrity on the athlete reported commitment.

Variable	*B*	*SE B*	*β*	*t*	*f*	*adj. R^2*	*R Change*
Step 1					4.41	.26[a]	.34
Age	-.30	.08	-.61	-3.61			
Sex	.02	2.60	<.01	.01			
Sport	.35	.49	.13	.72			
Step 2					4.71	.39[b]	.16
Age	-.24	.09	-.47	-2.74			
Sex	1.02	2.41	.07	.42			
Sport	.15	.47	.06	.33			
PLIS	.11	2.74	.01	.04			
TLI-IAT	3.11	1.17	.43	2.67			

Note: *df* for Step 1= 3, 26 and Step 2 = 5,24; [a] = p <.05 and [b] = p <.01.

TLI-IAT Highlights

1. An indirect measure of transformational leadership integrity (i.e., the transformational leadership integrity implicit association test; TLI-IAT) is proposed.
2. Reliability and validity of the TLI-IAT is assessed across three studies and multiple samples.
3. Support for the validity and reliability of the instrument is provided.