

# Unpacking the Role of Mindfulness in Conscientiousness and Spirituality

Boyce, M & Sawang, S

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## **Unpacking the role of mindfulness on conscientiousness and spirituality**

The present study examined relationships between conscientiousness and intrinsic spirituality, with the proposed trait 'mindfulness' as mediator. The results from 161 functioning adults within an Australian context revealed that mindfulness was significantly predicted by conscientiousness. This study examined the relationship among conscientiousness, trait mindfulness and intrinsic spirituality. It was hypothesised that trait mindfulness would mediate the relationship between conscientiousness and spirituality. We found this hypothesis partially supported. Practically, these results suggest that conscientious individuals do significantly connect with mindfulness, and it was only the more mindful of conscientious individuals that also displayed high levels of intrinsic spirituality. Additional analyses also suggest that conscientious individuals connect with mindfulness through attending to current actions or regulating impulses (act aware) and have an accepting attitude towards thoughts and feelings (non-judge). Possible explanations and implications of these results are discussed in relation to theory, practice and delivery mechanisms of mindfulness.

Keywords: trait mindfulness; conscientiousness; intrinsic spirituality; mindfulness mechanism.

### **Introduction**

Mindfulness is an important and emerging interdisciplinary research area because as a non-judgemental quality of consciousness, attention and awareness, grounded in each present moment (Kabat-Zinn, 1990), high levels of mindfulness have been associated with high levels of subjective well-being (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2004; Brown & Ryan, 2003; Brown, Kasser, Ryan, Linely, & Orzech, 2009, Falkenstrom, 2010). Although mindfulness's therapeutic impact has been established, the mechanisms by which it delivers benefits as diverse as improved quality in intimate relationships (Brown, Ryan, & Cresswell, 2007) to reduced stress in the workplace (Mackenzie, Poulin & Seidman-Carlson, 2006) are not yet well understood, nor is why some individuals are more mindful than others. Researchers like

Giluk (2009) have advocated for more research comparing mindfulness to established personality traits, to valuably connect and extend mindfulness research to broader literatures. For example, it has been well-substantiated that individuals high in everyday mindfulness score correspondingly low in neuroticism and high in agreeableness. While these relations are relatively intuitive, meta-analysis (Giluk, 2009) revealed a less understood, positive relationship between mindfulness and conscientiousness. Although both are associated with greater subjective well-being it remains a largely unexplored, theoretical and practical question as to why mindful individuals might be more conscientious, or conscientious individuals more mindful. Giluk suggested examining this relationship at the dimensional levels of these constructs to provide insight.

The present study set out to first replicate previous findings regarding the associations between conscientiousness and overall trait mindfulness. Secondly, it set out to examine this association at the dimensional levels of mindfulness (*observe, describe, act aware, non-judge* and *non-react*) to test explanations for the link between mindfulness and conscientiousness, building on a *reperceiving* model (Shapiro, Carlson, Astin, & Freedman, 2006). This model posits that mindfulness works through a shift in perspective that fosters self-regulation, flexibility, values clarification and exposure. Conscientiousness and mindfulness have both been linked to self-regulation. Examining relationships between these constructs at the deeper dimensional levels of mindfulness could potentially provide insight into theoretical and practical understandings of the mechanisms of mindfulness and perhaps inform strategies for well-being and interventions for psychological distress.

### **Mindfulness as a concept**

Clinical psychology has customarily been concerned with curing and treating mental diseases and only recently begun research into the promotion of positive mental health. In contrast, 2500 years of Buddhist experiential and theoretical inquiry has identified and treated the reasons behind mental imbalances with procedures for attaining mental well-being. Mindfulness meditation or contemplation is one such central Buddhist principle and practice, which aims to

free individuals from suffering and promote happiness. The word 'mindfulness' originated from the ancient Pali concept of 'sati', meaning possessing awareness, attention and remembering (Bodhi, 2000). Kabat-Zinn's (2000, p. 233) description of mindfulness incorporates psychology's understanding but includes Buddhist contextual references:

Mindfulness was taught by the Buddha in the Mahasattipathana Sutta, which speaks of the four foundations of mindfulness; the contemplation of the body, the contemplation of feelings (pleasant, and neutral sensation), the contemplation of mind states (including thoughts and emotions), and the contemplation of mind objects (suffering, impermanence, emptiness).

Thus a rich intersection has ensued between traditional Buddhism and Western psychology with immense potential to enhance scientific explorations of well-being.

As mindfulness attracted interest from Western scholars, working definitions have varied between descriptions of a psychological trait, the practice of cultivating a meditative state and a psychological process (Germer, Siegel, & Fulton, 2005). Western mindfulness definitions share some commonalities with Eastern definitions, but are more grounded in an information-processing perspective and thus differ conceptually (Weick & Putnam, 2006). For example, social psychologist Ellen Langer (2009) characterised mindfulness as the process of noticing new things, thereby staying present-focused. Westernised definitions have been critiqued as risking over-simplification (Hofmann & Asmundson, 2008). Conceptually though, these condensed definitions also seek to capture the same psychological freedom offered by Eastern mindfulness: the flexible viewing of events or life experiences, detached from any particular point-of-view.

### ***Mindfulness definitions***

Although Western definitions have focused on the attentional aspects of mindfulness (Brown & Ryan, 2003) most research has operationalised mindfulness with two distinct but interconnected components from Bishop et al.'s model (2004). The first component possessed a self-regulated, present-centred awareness, with increased identification of mental events like thoughts, feelings

or sensations while the second involved an orientation of curiosity, openness, acceptance and non-judgment towards one's present experiences. This orientation encompassed a 'beginner's mind' of seeing each moment afresh (Marlatt & Kristeller, 1998) that was theorised to minimise purely habitual reactions and preconceived ideas, while maximising reflective, accepting and non-judgmental immersion in arising life experiences (Keng, Smoski, & Robins, 2011). This study aims to consider mindfulness at the deepest dimensional levels in functioning adults and so will focus on mindfulness characterised by Kabat-Zinn (1990) as possessing the quality of consciousness: an orientation of self-regulation and an awareness of the unfolding experience of each moment with a non-judgmental and accepting focus. This definition has been frequently used in similar studies, allowing comparison, and retains the original depth of the Eastern Buddhist concept.

### *Trait mindfulness*

Research into mindfulness has examined both the collection of skills that can be learned and practiced, like the meditation-based stress reduction (MBSR) program first developed by Kabat Zinn (1990), and dispositional or trait mindfulness. Mindfulness practice (through mindfulness states) aims to help cultivate trait mindfulness and thereby support well-being (Thompson & Waltz, 2007). Some individuals are characteristically in a mindful state more than other individuals (Brown et al., 2007) and research increasingly positions mindfulness as an innate quality that supports adaptive human functioning (Hollis-Walker & Colosimo, 2011). For example past research has shown that trait mindfulness supports well-being (Broderick, 2005). Further, some evidence suggests that the efficacy of mindfulness training interventions varies because of innate individual differences (Cordon, Brown, & Gibson, 2009), as trait mindfulness has been shown to moderate the effects of MBSR (Shapiro, Brown, Thoresen & Plante, 2011). Recent research also indicates that these individual differences in mindfulness exist even more subtly in non-meditating individuals (Baer et al., 2006). However, Thompson and Waltz (2007) speculated that non-meditators, through sitting quietly or reflecting, might achieve similar

beneficial results to trained, practising meditators. Given innate mindfulness impacts the delivery of mindfulness interventions and training and is implicated in a range of positive psychological outcomes, including subjective well-being, it is therefore important to understand more about trait mindfulness in functioning adults, controlling for reflective practices.

### **Mindfulness within the context of personality research**

Measurement of trait mindfulness has surged after recent interdisciplinary trends centred individual differences at the cutting-edge of evolutionary psychological mechanisms and behavioural-functioning research (Shapiro et al., 2011). The five-factor model has proved a useful, universal language in organising personality trait research because it integrates emerging biological underpinnings (DeYoung, Peterson, & Quilty, 2007). Trait mindfulness has been compared to the five well-established factors of neuroticism, extraversion, openness, agreeableness and conscientiousness, because these traits have demonstrated stability over time (McCrae & Costa, 2008), predictive power in forecasting behaviour (Fleeson & Gallagher, 2009) and moderate heritability in evolutionary genetics (Penke, Denissen, & Miller, 2007). These stable differences have established substantial consequences for parenting, work performance, longevity and well-being and have also demonstrated dynamic growth and continuity. For example, research (Roberts, Wood, & Smith, 2005) demonstrated individuals become more conscientious over time, across different cultures and cohorts. People may act 'out of character' momentarily but the validity of traits is built upon the consistency of states across operationally-similar situations over time (Roberts, 2009). A personality trait is defined in this study as a relatively enduring pattern of thoughts, feelings and behaviours (Johnson, 1997).

### **Why compare Mindfulness to Conscientiousness?**

A meta-analysis by Giluk (2009) on 32 samples in 29 studies comparing mindfulness to Big Five personality traits and affect, concluded the highest, positive relationship existed between mindfulness and conscientiousness, although this relationship was the least investigated and

understood. It remains a largely unexplored question as to why mindful individuals might be more conscientious, or conscientious individuals, more mindful presenting a gap in theory and research. Therefore, our study directly responded to a need for a research to provide the greatest insight into the association between mindfulness and conscientiousness.

### **The link between conscientiousness, mindfulness and spirituality**

Conscientiousness has been described as the tendency to be task- and goal-orientated, to plan and delay gratification, to strive to achieve through self-discipline and follow societal-approved norms and rules to manage impulses (Srivastava, 1999). Conscientiousness may present similar positive life benefits because it has proven associations with parenting, well-being, longevity, work performance and behaviour benefits (Fleeson & Gallagher, 2009). For example, conscientiousness is the best predictor of longevity (Martin, Friedman, & Schwartz, 2007) and job performance across occupations and training performance (Barrick, Mount, & Judge, 2001). Another study (Holliday, Musisca, & Fleeson, 2004) found conscientiousness related to less conflict and positively related to work–family outcomes like satisfaction. A meta-analysis found conscientiousness-related traits were negatively related to risky health-related behaviours (tobacco use, diet and activity patterns, excessive alcohol use, violence, risky sexual behaviour, risky driving, suicide and drug use) and positively related to beneficial health-related behaviours (Bogg & Roberts, 2004), suggesting self-regulation may be the driver of positive outcomes. For example, conscientiousness is characterised by deliberation before responding to a situation (Costa & McCrae, 1992). Similarly, mindfulness adopts awareness, rather than impulsivity (Kabat-Zinn, 1990). Both traits are also associated with positive self-esteem (Costa & McCrae, 1992; Brown & Ryan, 2003).

The last 15 years have not only witnessed an upsurge in interdisciplinary research into mindfulness but also research examining religion, spirituality and health outcomes (Mills, 2002), demonstrating that spiritual beliefs may also deliver benefits for health, longevity and recovery

from physical illness (Rippentrop et al., 2005). Spirituality is conceptualised as having humanistic values, personal qualities and a sense of life, meaning and purpose beyond any material values and goals (Brady, Peterman, Fitchett, Mo, & Cella, 1999), but further, a shared, universal mystery that inclusively extends self and connects with others where religion might divide (Hall, Meador & Koenig, 2008). Accordingly, spiritual experience is seen as distinctly separate (or secular) to religious practice for many individuals (Thoresen & Harris, 2002). In short, an individual may be spiritual but not religious, religious but not spiritual, with spirituality positioned as a universal life experience (Hall et al., 2008). This study therefore focuses on spirituality as Cosmic Meaning, not constructed by an individual but gifted by life experience that transcends an individual and around which an individual may construct meaning (Frankl, 1988).

Mindfulness, centred within Buddhism, might appear related to spirituality because as a life practice its aim is spiritual development (Wallace & Shapiro, 2006). However, Buddhism is considered the most psychologically-grounded of all spiritual traditions (Smith, 1991) because, unlike many other traditions, it is not founded upon faith in a supernatural being but is concerned with investigating the nature of human experience (Wallace, 2003) and identifying the inner causes of suffering, with the intention of finding freedom and relief from suffering (Wallace & Shapiro, 2006). As Buddhism presents a philosophy that is integrated into the discipline of experiential enquiry into the mind's workings and associated phenomena it uniquely has empirical and analytical elements that sit alongside religious ones (Segall, 2003). Additionally, Western conceptualisations of mindfulness have taken the principle and practice out of their original spiritual context, process and content.

It could be argued that mindfulness and spirituality might share overlapping life benefits and may also be life orientations, as spirituality has been measured as an orientation since the 1960s and mindfulness is described as an orientation. However, limited and inconsistent data comparing mindfulness and spirituality present a gap in theory and research. One study (Carmody, Reed, Kristeller, & Merriam, 2008) examined mindfulness (trait and state), spirituality



and health in 44 university students, before and after MBSR training using measures from the Mindfulness Attention Awareness Scale (MAAS) (trait) and Toronto Mindfulness Scale (TMS) (state), psychological distress measures, reported medical symptoms and spirituality measured through the Functional Assessment of Chronic Illness Therapy – Spiritual Well-being Scale (FACTIT-Sp, Peterman, Fitchett, Brady, Hernandez, & Cella, 2002). Results revealed that significant reductions in medical symptoms were associated with increased trait mindfulness and increases in spiritual well-being, but were limited to the ‘meaning’ and ‘peace’ (not faith) subscales of the FACTIT-Sp. This research suggested increased mindfulness may predict an increased spirituality across non-religious (secular) contexts (Carmody et al., 2008). Therefore levels of overall mindfulness are associated with levels of intrinsic spirituality among functioning adults.

Romero, Villar, Luengo and Gómez-Fraguela (2009) explored how specific strivings (defined as the practice of what individuals do frequently or typically) might function as personality adaptations in 405 Spanish adults, finding that personality traits influence emotional reactions and behaviours through characteristic adaptations. Results indicated conscientiousness was most associated with striving through importance and clarity of goals, available support, probability of success and environmental opportunities to progress, and the attribution of ‘ought to’ achieve. Moreover, conscientious individuals scored highly in a derived factor called intensity (effective goal pursuit). Strivings did slightly mediate personality traits and well-being, with traits and strivings significantly contributing to direct effects. The authors argued a stronger effect existed when considered with other fragmented but converging evidence. We therefore propose mindfulness as a mediator in a model where conscientious individuals strive to effectively self-improve through practicing mindfulness, because it also clarifies and presents support for their most important goals, increases opportunities and the probability of success to self-improve in spirituality – something they feel they ‘ought to’ improve in (Figure 1). Thus mindfulness is the underlying mechanism of striving that brings about increased intrinsic spirituality.

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FIGURE 1 ABOUT HERE  
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### **Methodology**

This study acknowledges the influence of a post-positivist paradigm (Guba & Lincoln, 1994) whereby social realities are acknowledged to be ‘real,’ complex and understandable, but also imperfect with inherent probabilistic limitations. This approach is motivated to be as objective as possible and acknowledges findings may only be converging on the ‘true’ state of affairs.

### ***Participants***

Table 1 summarises the demographics of 161 volunteer participants from the general community in this study (age range 18–91), who were all free from medication (interfering with self-perceptions). An incentive to receive results was offered; this is considered part of an ethical debriefing and research indicates high or low scores are not disturbing if presented in an easy-to-understand framework (McCrae & Costa, 2008).

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TABLE 1 ABOUT HERE  
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### ***Procedure***

Non-probability sampling was employed whereby each participant was selected somewhat on the basis of personal judgment and convenience. This strategy implies some participants are more likely to be selected than others (Bryman & Bell, 2003). The advantages of this sampling strategy, utilising online technology, were time and cost efficiencies in reaching a target sample, as well as potential bias associated with personal contact between the researcher and participants being minimised; therefore the advantages of this strategy outweighed any potential sampling

errors. Recruitment flyers were also placed on several free community noticeboards in Brisbane, Australia. Participants were encouraged to extend the invitation to others in their personal networks. Paper surveys (identical to the online one) were made available to participants for whom online access might be difficult.

A sample size requirement was considered before commencing research based on the recommended sample size estimates of 79–148 participants for mediation analysis, as calculated by Fritz and MacKinnon (2007) with .8 power to detect a medium to large effect ( $r = .26 - .39$ ). A total of 142 online responses and 19 paper surveys ( $N = 161$ ) were used, therefore the sample size represents an adequate ratio of cases for analysis by mediation.

## ***Measures***

### *Mindfulness*

The 39-item Five Facet Mindfulness Questionnaire (FFMQ) (Baer et al., 2006) measures overall mindfulness and five mindfulness dimensions, with higher scores reflecting higher mindfulness. Participants rate the degree the statement holds true for them, scored on a five-point Likert-type scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). For the dimension of *observe* (eight items, e.g., I notice the smells and aromas of things), *describe* (eight items, e.g. I'm good at finding the words to describe my feelings), *act aware* (eight items, e.g., I am easily distracted), *non-judge* (eight items, e.g. I criticise myself for having irrational or inappropriate emotions) and *non-react* (seven items, e.g. I watch my feelings without getting lost in them). Nineteen items are reverse-coded. Cronbach's alpha was high; overall mindfulness ( $\alpha = .76$ ), *observe* ( $\alpha = .83$ ), *describe* ( $\alpha = .88$ ), *non-judge* ( $\alpha = .91$ ), *act aware* ( $\alpha = .85$ ), and *non-react* ( $\alpha = .82$ ).

### *Spirituality*

The six-item 'intrinsic spirituality scale' (Hodge, 2003) measures the importance of spirituality in

an individual's life through its impact on life decisions, with high scores indicating spirituality plays a greater role. Respondents read an incomplete statement (e.g., *Growing spiritually is ...*) with two opposite, possible endings (i.e., *more important than anything else in my life* or *of no importance to me*) represented by zero and ten respectively on a sliding numerical scale. Respondents choose a number between zero and ten (with five denoting somewhere in the middle) that reflects where they stand between the two possible responses. Three questions are reverse-coded. Cronbach's alpha was high ( $\alpha = .77$ ).

### *Conscientiousness*

Conscientiousness was measured using conscientiousness subscale questions from the adult short form of the NEO Five-Factor Inventory-3 (NEO FFI-3, McCrae & Costa, 2010). Participants rate the degree to which they agree with 12 statements, rated on a five-point Likert scale from 0 (*Strongly disagree*) to 4 (*Strongly agree*). Four items are reversed-coded. Higher scores indicate higher levels of conscientiousness. Cronbach's alpha was high ( $\alpha = .76$ ).

## **Results**

Table 2 shows the means or modes, standard deviations and correlations for all measures and socio-demographics, using non-parametric Spearman's correlations because of the non-normal distributions of conscientiousness, intrinsic spirituality and *non-react*. As expected, all five dimensions of mindfulness within the sample correlated significantly and positively with the variable of overall mindfulness.

In order to assess our proposed relationships the mediation regression (Baron & Kenny, 1986) and bootstrapping method (Preacher & Hayes, 2004) tested whether trait mindfulness would mediate the relationship between conscientiousness to intrinsic spirituality (Table 3). The indirect effect was found to be non-significant using the bias corrected (BC) bootstrapped confidence interval (95% BC CI [-.00, .54]) with 5000 re-samples because the 95% BC

confidence interval included zero, did not differ significantly from zero, and thus did not mediate. The same analyses controlling for socio-demographics were run as correlations, revealing significant positive associations between marital status and age ( $r_s = .52, p < .001$ ), marital status with conscientiousness ( $r_s = .27, p < .01$ ) and significant negative associations between education and age ( $r_s = -.24, p < .001$ ) and marital status with education ( $r_s = -.29, p < .001$ ); but as the results did not differ significantly reports of these were limited accordingly.

Examination of path coefficients (see Table 3) between conscientiousness and mindfulness (*path a*) reveal that the higher the conscientiousness levels were the higher overall mindfulness levels were ( $p = .001$ ). Inspection of *path b* between mindfulness and intrinsic spirituality indicated that the higher mindfulness levels were the higher intrinsic spirituality levels were, although just falling short of statistical significance ( $p = .067$ ). The reduction of the direct effect (*c* path) coefficient from the total effect (*c'* path) shows that overall mindfulness has not significantly influenced the effect of conscientiousness on intrinsic spirituality ( $t = 0.75, p = .457$ ). The explained variance in the dependent variable (DV) (intrinsic spirituality) in model 'A' was  $R^2 = .03$  and adjusted  $R^2 = .02$  indicates that 2–3% of variance in intrinsic spirituality (DV) was accounted for by the model and this was not significant ( $p = .07$ ).

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TABLE 2 AND TABLE 3 ABOUT HERE  
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### **Additional analyses**

Although it was not hypothesised, we ran additional regression to examine the sub-construct of mindfulness and its impact on the relationship between conscientiousness and spirituality.

Pathway effects for mediation are displayed in Table 4. The indirect effect was found to be non-significant using the BC bootstrapped confidence interval (95% BC CI [-.27, 0.50] with 20,000 re-samples (increased with more mediators) because the 95% BC confidence interval included zero, does not differ significantly from zero, and thus does not mediate. The same analyses were

run controlling for socio-demographics but as the results did not differ significantly reports of these were limited accordingly.

Path coefficients (see Table 4) between conscientiousness and mindfulness dimensions (path *a*) indicate the higher the conscientiousness levels were the higher *act aware* and *non-judge* levels were ( $p = .001$ ;  $p = .01$ ) respectively. Inspection of *path 'b'* between mindfulness dimensions and intrinsic spirituality indicate that the higher *non-react* levels were the higher intrinsic spirituality levels were ( $p = .016$ ). The indirect pathway *ab* shows only *observe*, *non-judge* and *non-react* as significant ( $p = .033$ ;  $p = .001$ ;  $p = .005$  respectively) though only two-tailed with *non-judge*. *Describe* and *act aware* displayed negative unstandardised beta (B) values in pathway *ab*. The reduction of the direct effect (*c* path) coefficient from the total effect (*c'* path) shows, however, that the mindful dimension of *non-judge* significantly and minimally influenced the total and direct effects of conscientiousness on intrinsic spirituality ( $t = 3.49$ ,  $p = .001$ ). A significant model fit was produced but one that explained only 3–4% of variance in intrinsic spirituality (Adjusted  $R^2 = 0.39$ ). However, indirect effect confidence intervals included zero and thus the model was not significant. The ratio of indirect effects to total effects indicates *observe* (13%; one-tailed), *non-judge* (4%; two-tailed) and *non-react* (13%; one-tailed) meant 26% of the effect of conscientiousness on intrinsic spirituality goes through these variables and about 67% of the effect is direct.

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TABLE 4 ABOUT HERE  
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## **Discussion**

This study examined the relationship among conscientiousness, trait mindfulness and intrinsic spirituality. It was hypothesised that trait mindfulness would mediate the relationship between conscientiousness and spirituality. We found this hypothesis partially supported.

We hypothesised that conscientious individuals would strive, via being mindful, to affect a self-orientated, personal transformation resulting in increased intrinsic spirituality.

Conscientiousness was moderately correlated with overall mindfulness but not enough to indicate they were tapping the same construct (Tabachnick & Fidell, 1996). The results revealed that mindfulness was significantly predicted by conscientiousness. Overall mindfulness reduced the direct effect by 45% suggesting overall mindfulness partially influenced (although not significantly) the effect of conscientiousness on intrinsic spirituality. Practically these results suggest that conscientious individuals do significantly connect with mindfulness, and it was only the more mindful of conscientious individuals that also displayed high levels of intrinsic spirituality. Additional analyses also suggested that conscientious individuals connect with mindfulness through attending to current actions or regulating impulses (*act aware*) and an accepting attitude towards thoughts and feelings (*non-judge*). The biggest connection between being mindful and having high intrinsic spirituality was through *non-react* (through detachment) possibly representing a shift in reactivity and possibly a shift in how you view yourself (identity). However, only those conscientious individuals that develop the processes of attending to experiences (*observe*) and who are able to detach from those (*non-react*) but, most importantly, accept these thoughts and feelings (*non-judge*) develop higher levels of intrinsic spirituality.

The Buddhist model posits thought modification as central to mindful behaviour so perhaps these pathway results reflect a type of transcendence from the action or behaviour-bases like *act aware* to the more internalised thought processes of *observe*, *non-react* and *non-judge*. Alternatively these relationships might reflect the reason why conscientiousness has a significant relationship with mindfulness, which ends there. Perhaps conscientiousness individuals strive towards self-orientated, adaptive perfectionism, but their motivations are more centred in the social world so they do not connect well with internalised, individual-driven values (intrinsic spirituality). Uncorrelated with intrinsic spirituality but associated significantly with conscientiousness, *non-judge* (an accepting attitude towards your own inner thoughts and

feelings) was the only mindful dimension significant (two-tailed) in direct and indirect pathways (as well as path *a* with conscientiousness) of model 'B' which might indicate that the adaptation of an accepting attitude in conscientious individuals may be the active mechanism of one pathway between being conscientious and developing intrinsic spirituality.

### **Limitations, implications and further research**

Using mostly online data, our study was examined in a sample of highly-educated, non-clinical adults with limited cultural and spiritual diversity. Other personality attributes were not controlled for and may have contributed to effects. Nonetheless, an extensive meta-analysis by Giluk (2009) clearly stated a strong, positive correlation of conscientiousness with mindfulness. This result should be of interest to researchers. Yet, conscientiousness, in particular, is often ignored by mindfulness researchers. Therefore, our study responded to the lack of investigation and/or reporting with respect to conscientiousness and mindfulness. Our study thus aimed to unpack a natural theoretical relationship with mindfulness and conscientiousness.

Further, given Jorm and Christensen (2004) found the most and least spiritual are more educated, a more conscientious and educated sample may potentially provide deeper insight into the subtlety and complexity of the relationships under investigation. Given online data produces comparable results generating diverse, representative samples (Gosling, Vazire, Srivastava & John, 2004) and consensus accepts that convenience sampling can detect replicable relationships among different phenomena (Fowler, 1984) the sample may provide replicable insights for different groups including non-clinical adults. Thus future research could extend our insight through a more educationally, culturally and spiritually diverse (Buddhist and secular) representative sample, controlling for other potentially confounding variables.

Further, problematic issues of question context occurred in both mindfulness and conscientiousness measures highlighting an old debate in personality research: whether thoughts, feelings and behaviour are situation- or context-dependent or due to stable personality traits. To



counter this, personality research (Roberts, 2009; McCrae & Costa, 2010) has tended to emphasise the longitudinal consistency and stability of traits and their causal superiority over situation and context. Future investigations should utilise comprehensive measures of these constructs (including motivational complexity and dimensions) to reveal more about relationship dynamics.

Statistical limitations of both mediation models must be considered. If the relationship between conscientiousness and intrinsic spirituality had been sizable and significant, mediation models may have provided more insight into the role of mindfulness. Further, sophisticated statistical analysis like structural equation modelling may be helpful in exploring the dynamics of pathway effects at the dimensional level in future research. The current sample was based on a cross-sectional design, therefore causality cannot be interpreted from the mediation data.

As there is such a small body of comparable research available on interactions between the variables in this study, which also shares similar restrictions, more exploratory research might benefit from a qualitative design, evident from the insight offered by participants' comments. One possible qualitative design could involve participants initially keeping a digital diary of daily thoughts, feelings and experiences across different life contexts on conscientiousness, mindfulness and spirituality. After analysis of this primary material the researcher could develop semi-structured interviews to tease out rich areas for further in-depth investigation to provide practical insight as to how the proposed secondary mechanisms of mindfulness exist within people's experiences of these constructs in the social world. Qualitative research could thereby develop tentative hypotheses to help structure future empirical studies to inform understanding, improve practice and eventually evaluate programs which showcase mindfulness.

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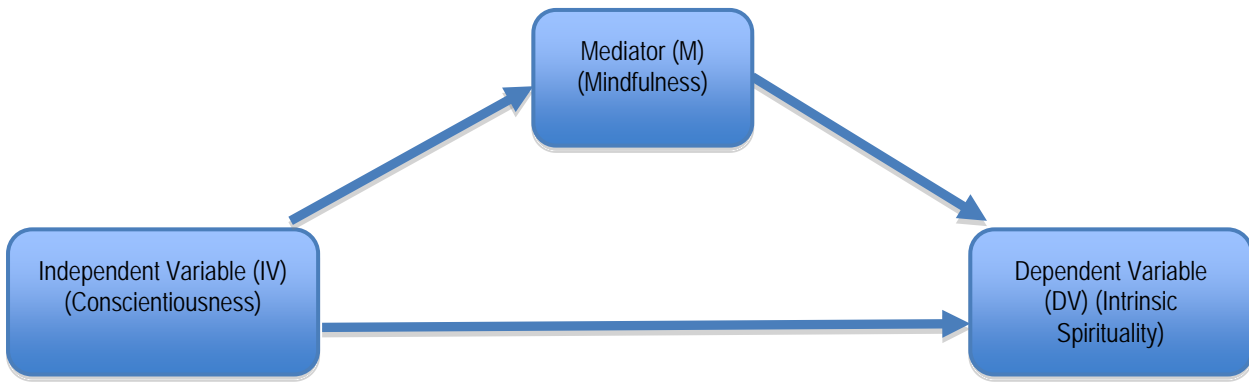
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*Figure 1 Proposed relationship among conscientiousness, mindfulness and spirituality*

Table 1

*Summary of Demographic Information for Study Participants (N=161)*

Variable	Number, Categories, (Percentage)	Number, Categories, (Percentage)
Gender	109 females (67.70%)	52 Males (32.30%)
Marital Status	64 Married with children (39.75%) 13 Married without children (8.07%)	52 Single without children (32.30%) 28 Single/Divorced/Widowed + children (17.39%)
Education	100 University Degree (62.11%) 15 High School (9.32%)	43 Technical/Apprenticeship (26.71%) 2 Less High School (1.24%) 1 Missing (0.62%)
Job Status	67 Fulltime Work (41.62%) 13 Casual Work (8.07%) 24 Students (14.90%)	25 Part-time Work (15.53%) 25 Semi-Retired or Retired (15.53%) 7 Unemployed (4.35%)
Culture	119 Australian/Anglo-Celtic (73.91%) 4 Indigenous Australian/Torres Straits (2.48%) 3 North African and Middle Eastern (1.86%)	23 North American/European (14.30%) 7 Asian (4.35%) 4 Oceania (2.48%) 1 Missing (0.62%)
Religion	106 No Religion (65.83%) 18 Catholic/Anglican (11.18%) 2 Jewish (1.24%)	27 Christian/Born-again Christian (16.77%) 6 Buddhist-based Traditions (3.74%) 2 Islam/ Mormon (1.24%)



Table 2

*Means, Standard Deviations and Correlations for all Measures and Socio-Demographics (N =161)*

Variable	Mean (SD)	1	2	3	4	5	6	7	8
1. Conscientiousness	2.77 (0.56)	(.76)							
2. Observe	3.53 (0.65)	.19*	(.83)						
3. Describe	3.57 (0.65)	.09	.25**	(.88)					
4. Non-judge	3.35 (0.77)	.18*	-.01	.14	(.91)				
5. Act aware	3.30 (0.62)	.39**	.03	.26**	.24**	(.85)			
6. Non-react	3.14 (0.58)	.17*	.26**	.24**	.20*	.25**	(.82)		
7. Intrinsic Spirituality	5.24 (2.57)	.14	.21**	.06	.05	.05	.22**	(.77)	
8. Overall Mindfulness	3.38 (0.39)	.32**	.50**	.65**	.53**	.57**	.59**	.16*	(.76)

*Note: \*\*p < .001 and \*p < .01. Cronbach alphas are reported in diagonal.*

Table 3

*The bootstrapping results between conscientiousness (IV), mindfulness (M) and intrinsic spirituality (DV)*

Pathway Effect	B Coefficient	Bootstrap (SE)	t	Sig	95% CI Bias Corrected*
a	.23	.05	4.45	.000	
b	1.01	.55	1.85	.067	
c	.51	.36	1.43	.154	
c'	.28	.38	0.75	.457	
a x b	.23	.22			[-.00, 0.54]

*Note:* B = unstandardized coefficients for the indirect effect of conscientiousness on intrinsic spirituality through mindfulness; CI = confidence intervals.

*a* = IV to MV; *b* = direct effect of MV on DV through M; *c* = total effect of IV on DV through M; *c'* = direct effect of IV on DV; *a x b* = indirect effect of IV on DV through M.

Table 4

*Additional bootstrapping results for the mindfulness dimensions*

Variables	IV to mediators (path <i>a</i> )			Direct Effect of M on DV (path <i>b</i> )			Total effect of IV on DV (path <i>c</i> )			Direct effect of IV on DV (path <i>c'</i> )			Indirect effects of IV on DV through proposed mediators (path <i>ab</i> )		95% CI Bias corrected		<i>Adjusted R</i> <sup>2</sup> ( <i>df</i> ) = <i>F</i>	
Mediators	B	SE	<i>t</i>	B	SE	<i>t</i>	B	SE	<i>t</i>	B	SE	<i>t</i>	B	SE				
<b>Totals</b>							0.51	0.36	1.43, ns	0.43	0.39	1.09, ns	0.09	0.20	[-.27, 0.50]	0.04	(6) = 2.24*	
Observe	0.14	0.09	1.58, ns	0.47	0.34	1.39, ns	0.51	0.36	1.43, ns	0.42	0.36	1.17, ns	0.07	0.07	[-.02, 0.29]	0.03	(2) = 3.49*	
Describe	0.13	0.09	1.37, ns	-.17	0.33	0.49, ns	0.51	0.36	1.43, ns	0.50	0.36	1.38, ns	-.02	0.06	[-.25, 0.05]	0.00	(2) = 1.11, ns	
Non-judge	0.28	0.11	2.66**	0.05	0.27	0.20, ns	0.23	0.05	4.46***	0.15	0.04	3.49***	0.01	0.09	[-.15, 0.21]	0.39	(2) = 52.30**	
Act aware	0.45	0.08	5.76***	-.23	0.38	-.60, ns	0.51	0.36	1.43, ns	0.55	0.40	1.37, ns	-.10	0.16	[-.43, 0.20]	0.00	(2) = 1.04, ns	
Non-react	0.13	0.08	1.69, ns	0.94	0.39	2.44*	0.51	0.36	1.43, ns	0.38	0.35	1.07, ns	0.13	0.10	[-.01, 0.41]	0.05	(2) = 5.37**	

Note, \*\**p* < .001 and \**p* < .01; B = unstandardized coefficients for the indirect effect of conscientiousness on intrinsic spirituality through each mindfulness dimension;