



# Immediate and short term effects of values-based interventions on paranoia

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## ABSTRACT

**Background and objectives:** Paranoia is a common, distressing, and persistent experience that can negatively impact on health, wellbeing, and functioning. This study examined the immediate and short term (2-weeks) effects of two values-based interventions, versus a non-values control, on paranoia, as well as the moderating effect of self-esteem.

**Methods:** 171 non-clinical adults were randomised to a value-affirmation and goals task (VAG: clarifying and reflecting on core values and setting value-based goals) ( $n = 57$ ), a value-affirmation task (VA: clarifying and reflecting on core values without setting value-based goals) ( $n = 57$ ), or a non-affirmation control task (NAC) ( $n = 57$ ). Paranoia was assessed at baseline (T1), post-intervention (T2), and two weeks post-intervention (T3). Self-esteem was measured at baseline.

**Results:** VAG participants had significantly lower state paranoia scores at T3 than VA ( $d = .34$ ) and NAC ( $d = .31$ ) participants. This effect was moderated by trait self-esteem: At follow-up, the differential effect of condition on state paranoia was greatest amongst those with low self-esteem, with the VAG condition being most beneficial for participants with low self-esteem and the VA condition being least beneficial.

**Limitations:** Without a goals only control group it is possible that the benefits of VAG over VA were attributable to setting and achieving goals. Use of a nonclinical sample limits generalisability to clinical groups.

**Conclusions:** The findings suggest that focusing on a deeply held value and setting goals in line with that value reduced paranoia. This intervention may be most beneficial for individuals with low self-esteem.

## 1. Introduction

Paranoia describes the unfounded belief that another person will, or is currently, acting in a way to intentionally cause one harm (Freeman & Garety, 2000). Although paranoia is a symptom of many severe mental disorders, research suggests it is exponentially distributed in the general population (Bebbington et al., 2013; Combs, Michael, & Penn, 2006; Ellett, Lopes, & Chadwick, 2003; Freeman et al., 2005). This is consistent with continuum models that embed paranoia within normal social psychological processes (Freeman et al., 2005; Linscott & van Os, 2010; Strauss, 1969), which is revolutionising theory and treatment. In young adult and student populations, paranoia can be more prevalent, distressing, and preoccupying than in the general population (Lincoln & Keller, 2008), with prevalence rates of 30–40% reported in the literature (Freeman et al., 2005; Peters, Joseph, & Garety, 1999). As in clinical groups, paranoia in students is associated with isolation, feelings of powerlessness, anxiety, and depression (Ellett et al., 2003; Freeman et al., 2011), and has been found to be preoccupying (Ellett et al., 2003; Freeman et al., 2011), persistent (Allen-Crooks & Ellett, 2014), and slow to dissipate once activated (Ellett & Chadwick, 2007).

Paranoia in nonclinical samples can also be a risk factor for developing clinical disorders (Heriot-Maitland, Knight, & Peters, 2012; Kelleher et al., 2012; Poulton et al., 2000). These findings signify the importance of developing effective, targeted, and process-driven interventions that are available for individuals experiencing paranoia across the continuum of experience.

Several factors have been implicated in the development and maintenance of paranoia, including self-processes (e.g., Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001; Udachina, Bentall, Varese, & Rowse, 2017). Across the continuum of experience, paranoia is associated with negative self-concepts (Tiernan, Tracey, & Shannon, 2014), low implicit and explicit self-esteem (Combs & Penn, 2004; Ellett et al., 2003; for a review see; Kesting & Lincoln, 2013), and unstable self-esteem (Thewissen et al., 2007). In individuals with psychosis as well as people in the general population, momentary reductions in self-esteem have been shown to predict the onset of paranoia in naturalistic settings (Kesting, Bredenpohl, Klenke, Westermann, & Lincoln, 2013; Thewissen, Bentall, Lecomte, van Os, & Myin-Germeys, 2008; Thewissen et al., 2011). Manipulating stress in experimental conditions, low self-esteem has been associated with heightened paranoia,

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independent of baseline psychosis liability (Jongeneel, Pot-Kolder, Counotte, van de Gaag, & Veling, 2018) and social stress has been shown to increase non-clinical paranoia due to decreases in self-esteem (Kesting et al., 2013). These findings suggest that paranoia may be causally triggered by threats to self-esteem. A small number of studies have reported that self-esteem enhancing interventions can reduce paranoia. For example, Hall and Tarrier (2003) piloted a 7-week self-esteem intervention in individuals with psychosis, reporting a significant rise in self-esteem and a significant reduction in positive and negative psychotic symptoms compared to standard care. Likewise, Freeman et al. (2014) reported small reductions in negative self-beliefs and moderate reductions in paranoia when comparing a 6-week self-esteem based intervention to standard care. Effects were not maintained at one month follow-up, however. In non-clinical groups, brief, stand-alone, imagery-based interventions (e.g., compassionate imagery or positive self-imagery) have been found to increase self-esteem and reduce paranoia when assessed immediately following the intervention (e.g., Bullock, Newman-Taylor, & Stopa, 2016; Newman-Taylor, Kemp, Potter & Au-Yeung, 2017). Together, these findings suggest that enhancing self-esteem may reduce the risk of experiencing paranoia, although the durability of effects requires further examination.

Within social psychology research, an extensive literature indicates that the impact of negative experiences on the self can be mitigated by helping individuals to focus on a personal strength or strongly-held value (Steel, 1988). Such 'affirmations' have been shown to engage a broader and more positive perspective of the self when under threat (Sherman, 2013), de-couple the threat from meaningful aspects of the self-concept (Wakslak & Trope, 2009) and increase openness towards threatening information (Sherman & Cohen, 2002). In turn, momentary self-worth is thought to be less contingent on current threat and more stable and robust over time (Harris et al., 2018). Affirmations have shown immediate positive impacts on a range of outcomes such as health behaviours (e.g., Epton, Harris, Kane, van Koningsbruggen, & Sheeran., 2015), stress (Creswell, Welsh, Taylor, Sherman, & Mann, 2005), and academic achievement (Cohen, Garcia, Apfel, & Master, 2006) with some reporting sustained benefits over several years (e.g., Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Sherman et al., 2013). Although it has not been tested, affirmations are thought to achieve lasting benefits when they prompt an increase in affirming behaviours (Brady et al., 2016; Cohen & Sherman, 2014; Hayes, Strosahl, & Wilson, 1999). This hypothesis is consistent with values-based psychological interventions, such as Acceptance and Commitment Therapy (ACT; Hayes et al., 1999), where helping individuals to reflect on what they most care about in life, i.e., their values, and translating this into achievable, value-consistent, goals is an integral aspect of therapy. A few studies have investigated the independent effects of values tasks within ACT showing, for example, that value clarification, reflection, and value-based action can result in significant and lasting (3 month) improvements in anxiety and depression, as well as being associated with improved physical and psychological functioning in chronic pain patients (Vowles & McCracken, 2008; Vowles, McCracken, & O'Brein, 2011).

We propose that focusing on core values and setting value-based goals could provide a focused, brief, and theory-driven intervention for attenuating non-clinical paranoia. Affirmations have been shown to help individuals retain a positive view of the self when receiving negative feedback from others (Schimel, Arndt, Banko, & Cook, 2004), and reduce avoidance of others when negative information about the self is revealed to them (Jaremka, Bunyan, Collins, & Sherman, 2011). Furthermore, some authors have found that affirmations are most beneficial for individuals with low self-esteem (e.g., Daring & Jessop, 2015; Haddock & Gebauer, 2011; Lomore, Spencer, & Holmes, 2007; Spencer, Fein, & Lomore, 2001), perhaps because these individuals engage in less spontaneous affirmations than those with high self-esteem (Steele, Spencer, & Lynch, 1993) and are less likely to bring to mind personal strengths when faced with failure (Dodgson & Wood,

1998). This suggests that those with low self-esteem do not engage in affirming processes when faced with difficult experiences *and* that they benefit from being explicitly instructed to do so. Testing the effects of value-affirmation on paranoia in students, Kingston and Ellett (2014) compared a value-affirmation to a non-affirmation control task before exposure to a paranoia inducing laboratory environment (failure plus high self-awareness). Affirmed participants had significantly lower paranoia scores immediately following the affirmation task and following the paranoia induction task. The durability of these effects over time and context was not examined, nor was the role of self-esteem.

This study compared the immediate and short-term (2-week) impact of value-affirmation plus value-based goals task (VAG) to a standard value-affirmation (VA) and non-affirmation control task (NAC) on paranoia in a non-clinical sample. Hypothesis 1 predicted that the initial effects of VAG and VA on paranoia would be superior to NAC, but that VAG would be superior to VA and NAC at two week follow-up. Based on literature demonstrating that affirmations are most beneficial for individuals with low self-esteem (reviewed above), hypothesis 2 predicted that self-esteem would moderate the effect of group (VAG/VA/NAC) on paranoia, such that those with low self-esteem would derive most benefit from VAG, compared with both VA and NAC at two-week follow-up.

## 2. Method

### 2.1. Participants

An unselected sample of 171 adult volunteers (74% students; 77% female; 75% white;  $M_{age} = 25.6$ ,  $SD_{age} = 8.08$ ) were recruited from the general population through advertisements posted at the university, on social media, and in the local community and randomly assigned to one of two value-affirmation groups (VAG, VA) or the active control (NAC). Sample size was calculated a priori. Based on previous research on value-affirmation and paranoia (e.g., Kingston & Ellett, 2014), as well as the broader literature on affirmation and goal setting interventions (e.g., McQueen & Klein, 2006; Meevissen, Peters, & Alberts, 2011) a minimum sample size of 156 was required to detect medium between group effects (two-tailed  $\alpha$  of 0.05 and a  $(1-\beta)$  of 0.80 using a three group between-subjects ANOVA). Of the  $n = 171$  recruited,  $n = 159^1$  completed the study.

### 2.2. Self-report measures

Measures of trait and state paranoia and trait self-esteem were taken at baseline (T1). State paranoia was also measured immediately following the affirmation task (T2) and again 2-weeks later (T3).

Trait Paranoia was assessed using the Paranoia Scale (Fenigstein & Vanable, 1992) at baseline (T1). The Paranoia Scale is a 20-item questionnaire designed to estimate trait levels of non-clinical paranoid thinking (e.g., *Someone has it in for me; I sometimes feel as if I am being followed*). Items are rated on a five-point Likert scale ( $1 = not at all applicable to me; 5 = extremely applicable to me$ ). Total scores range from 20 to 100, with higher scores indicating higher levels of paranoia. Good internal consistency was shown in the present sample ( $\alpha = 0.91$ ). Six month test-retest reliability has also been reported as good in a non-clinical sample ( $\alpha = 0.70$ , Fenigstein & Vanable, 1992).

State paranoia was measured using the 7-item paranoia subscale of the Paranoia and Depression Scale (Bodner & Mikulincer, 1998) at baseline (T1), following the affirmation task (T2), and 2-weeks later (T3). Items (e.g., *I feel that people are hostile towards me; I do not trust other people's intentions*) are rated on a 6-point scale ( $1 = not at all to 6 = very often$ ) with total scores ranging from 7 to 42 (higher scores

<sup>1</sup> There was no evidence of systematic attrition as an effect of group allocation and no difference between completers and non-completers at baseline.

indicating higher state paranoia). In this study, as with previous experimental studies (e.g., Kingston & Ellett, 2014), participants were instructed to rate the paranoia items based on the timescale of *right now*. Good internal consistency was demonstrated at baseline in the present sample ( $\alpha = 0.87$ ), which is consistent with previous findings (Bodner & Mikulincer, 1998). Non-clinical test-retest reliability has also been reported as good over a 10-day period (interclass correlation coefficient = 0.75, Kingston, Lassman, Matias, & Ellett, 2019).

The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) was used to measure global self-esteem at T1. Ten items (e.g., *on the whole, I am satisfied with myself*) are rated on a four-point Likert scale (0 = *strongly disagree* to 3 = *strongly agree*) and total scores range from 10 to 40 (high scores indicating high self-esteem). Good internal consistency ( $\alpha = 0.88$ ) was obtained in the present sample, consistent with previous research (e.g. Vispoel, Boo, & Bleiler, 2001).

### 2.3. Affirmation tasks

In all conditions, participants began by reading a brief paragraph about values, informed by Harris (2013). Participants then completed a values card sort task, which involved sorting a pack of 58 values cards (see Appendix 1) into one of three categories: ‘very important to me’, ‘quite important to me’, ‘not important to me’ (Ciarrochi & Bailey, 2008; Harris, 2011, 2013). The conditions then differed in the following ways.

#### 2.3.1. Value-affirmation plus values-based goals condition (VAG)

Participants in this condition were instructed to attend to those cards in the ‘very important to me’ pile and to choose one that was most important to them. Next, following standard value-affirmation procedures (e.g. Sherman, Nelson, & Steele, 2000), participants in this condition wrote for up to 10 min about their most important value (i.e., describing why this was meaningful to them and a time it made them feel good about themselves). Participants were then guided to devise a SMART goal (e.g. Harris, 2013) that was in line with their most important value and that they would work towards over the subsequent two weeks (e.g., *Respect*: Try to understand people’s opinions which aren’t the same as mine so that I can see their point of view more clearly. *Contribution*: To start looking into voluntary charity work over the next fortnight, specifically those which only require a few hours a week). After the two weeks had elapsed, and after completing T3 measures, these participants were asked whether they had completed their value-based goal (Yes/No).

#### 2.3.2. Value-affirmation

Participants in this group also completed the value affirmation task described for the VAG participants, but they did not go on to devise value-based goal.

#### 2.3.3. Non-affirmation control

After completing the card sort, participants in this group were instructed to select their *least* important value and to write about it from the perspective of someone else. This control condition is typically used within self-affirmation literature as it controls for non-specific aspects of the experimental condition (i.e., a ranking task followed by a focused writing task), but crucially does not involve reflecting on one’s top values (McQueen & Klein, 2006).

### 2.4. Manipulation check

After completing the value affirmation/non-affirmation writing task, all participants rated the following four statements: “This value or personal characteristic has influenced my life”; “In general, I try to live up to this value”; “This value is an important part of who I am”; “I care about this value” (adapted from Sherman et al., 2000) using the scale 1 = *strongly disagree* to 6 = *strongly agree*. These items were used as a

manipulation check, to verify that affirmed participants had written about top values and that non-affirmation participants had written about values that were not important to them.

### 2.5. Procedure

Following ethical approval, the study was advertised using paper and electronic posters, which were distributed at a British University, in the local community, and on social media. These described the study as investigating ‘how values relate to our thinking style and thoughts about others’. Participants contacted researchers BC and NE to enroll in the study, who also carried out data collection procedures. All participants provided written informed consent, and then completed baseline measures on a laptop. Participants then opened a sequentially numbered sealed envelope containing the affirmation task instructions so that researchers were blind to allocation. The affirmation task was completed using the card sort provided and by writing about the given value using pen and paper. Participants then completed T2 measures on the same laptop. Two-weeks later, participants were emailed a link to the final measures, which were completed online (T3). T1 and T2 data were collected in a private university campus room, or a similarly suitable location in the local community. T3 data were collected via email link. There were no changes to the design after commencement of the trial. Undergraduate first year Psychology students received course credits for participation and all other participants were entered into a prize draw.

### 2.6. Randomization

Randomization was carried out by an independent researcher using an online randomization service ([www.randomization.com](http://www.randomization.com)). Simple randomization with three randomly permuted blocks of balanced ratio (1:1:1) was used to generate a randomization key through which sequentially numbered envelopes containing affirmation instructions were produced.

### 2.7. Data analysis strategy

Between-group ANOVA and chi-square analyses were computed to examine equivalency of baseline scores and differences were controlled for in all subsequent between-group analyses (Age, see Results 3.1). To examine the effect of condition on paranoia scores overtime (Hypothesis 1) a 3 (Condition: VAG, VA, NAC) X 3 (State paranoia: T1, T2, T3) repeated measures ANCOVA was computed, with subsequent post-hoc ANCOVAs examining the interaction effect from T1-T2, T2-T3 and T1-T3, followed by independent and paired t-tests. To explore whether the act of completing one’s goals influenced the effectiveness of VAG on reducing state paranoia, an exploratory 3 (T1, T2 and T3 state paranoia) X 2 (goal completion versus non-completion) repeated measures ANOVA was computed on the subsample of participants completing the VAG condition.

Hypothesis 2 predicted that the effect of condition on state paranoia differed as a function of baseline self-esteem such that those with low self-esteem would derive most benefit from VAG compared with VA and NAC at two-week follow-up. This was tested using a 3 (Condition: VAG, VA, NAC) X 3 (State paranoia: T1, T2, T3) repeated measures ANCOVA, co-varying for baseline self-esteem. Moderation was tested by examining the self-esteem\*Condition\*Time interaction (i.e., whether self-esteem moderates the effect of condition on state paranoia over time). This was decomposed using Hayes’s (2013) PROCESS macro (Model 1) with 5000 bootstrapped samples. Because it was predicted that self-esteem would moderate the effect of condition on T3 paranoia, the interaction was initially decomposed by examining the self-esteem\*condition interaction at each time point (whilst controlling for previous time points). For time points showing a significant self-esteem\*condition interaction, the effect of condition on paranoia was

examined at low, moderate and high levels of self-esteem.

### 3. Results

#### 3.1. Descriptives and preliminary analyses

In the full sample, trait paranoia scores ranged from 20 to 80 ( $M = 34.51$ ,  $median = 31$ ,  $SD = 11.87$ ), state paranoia at baseline ranged from 7 to 33 ( $M = 12.50$ ,  $median = 11$ ,  $SD = 5.34$ ) and trait self-esteem scores ranged from 6 to 30 ( $M = 19.23$ ,  $median = 19$ ,  $SD = 5.04$ ). Trait and state paranoia scores were positively skewed. These were corrected using Log 10 and Reciprocal transformations respectively. One-way ANOVAs and chi-square analyses indicated between group baseline equivalence on all sociodemographic (gender  $\chi^2_{(4)} = 6.17$ ,  $p = .192$ , ethnicity  $\chi^2_{(8)} = 6.23$ ,  $p = .624$ ) and study variables (trait paranoia:  $F_{(2, 168)} = 1.58$ ,  $p = .225$ , state paranoia:  $F_{(2, 168)} = 0.12$ ,  $p = .890$ , and trait self-esteem:  $F_{(2, 168)} = 0.35$ ,  $p = .707$ ). However, age differed across groups: VA participants were significantly younger ( $M = 23.74$  years) than those in NAC ( $M = 27.56$  years;  $t_{(112)} = -2.82$ ,  $p < .01$ ). Age was therefore controlled for in all subsequent analyses.

Manipulation check analyses confirmed that conditions differed in the extent to which participants wrote about a meaningful and valued domains ( $F_{(2, 168)} = 261.53$ ,  $p < .001$ ; VA  $M = 18.88$ ; VAG  $M = 18.39$ ; NAC  $M = 9.84$ ). NAC participants scored significantly lower than VA ( $t_{(72.51)} = 17.96$ ,  $p < .001$ ) and VAG participants ( $t_{(76.99)} = 16.65$ ,  $p < .001$ ), whilst there was no significant difference between the two affirmation conditions ( $t_{(110.23)} = -1.82$ ,  $p = .071$ ). In the affirmation groups (VA and VAG), a total of 34 values were selected as *most important*, indicating a broad range of valued domains in this sample. *Love* ( $n = 11$ ; 19.3%) and *Trust* ( $n = 9$ ; 15.8%) were most commonly selected as *most important*. A relatively smaller range of values ( $n = 14$ ) were selected by participants in the NAC condition. *Power* ( $n = 27$ ; 47.7%) was the most commonly selected *least important* value.

#### 3.2. Effect of affirmation group on state paranoia

Table 1 reports means and standard deviations for state paranoia at T1, T2 and T3. The repeated measures ANCOVA revealed a significant Time\*Condition interaction ( $F_{(4, 152)} = 2.90$ ,  $p = .030$ ). Examining the interaction effect from T1-T2, T2-T3 and T1-T3 showed that the Time\*Condition interaction was significant when comparing T1-T3 scores only (T1-T3:  $F_{(2, 154)} = 3.84$ ,  $p = .024$ ; T1-T2:  $F_{(2, 155)} = 1.93$ ,  $p = .149$ ; T2-T3:  $F_{(2, 154)} = 2.13$ ,  $p = .122$ ). This was decomposed using within and between group post-hoc analyses. Between group analyses showed that T3 state paranoia scores were significantly lower in the VAG group as compared to the VA ( $t_{(104)} = 2.95$ ,  $p = .004$ ,  $d = .34$ ) and NAC ( $t_{(102)} = 2.38$ ,  $p = .019$ ,  $d = .31$ ) group, which did not differ ( $t_{(104)} = 0.432$ ,  $p = .666$ ).<sup>2</sup> Paired samples t-tests indicated a significant reduction in state paranoia scores from T1-T3 for VAG participants only ( $t_{(51)} = 3.95$ ,  $p < .001$ ,  $d = .58$ ) (VA,  $t_{(51)} = 0.838$ ,  $p = .406$ ,  $d = .10$  and NAC  $t_{(53)} = 0.698$ ,  $p = .488$ ,  $d = .05$ ).

#### 3.3. Effect of goal completion on state paranoia

Results suggest that adding a goals component to the value-affirmation task accounted for the superior effects of VAG as compared to VA alone. To examine whether the act of completing one's goals influenced this, an exploratory post hoc 3 (T1, T2 and T3 state paranoia) X 2 (goal completion (N = 34) versus non-completion (N = 17)) repeated measures ANOVA was computed. This revealed a main effect of Time ( $F_{(2, 49)} = 5.55$ ,  $p = .005$ ) but the Time \*Condition interaction

<sup>2</sup> Rerunning analysis excluding individuals who reported no state paranoia at baseline ( $n = 16$ ) did not alter these findings.

**Table 1**

State paranoia means (standard deviations) at T1 (baseline), T2 (immediately post-affirmation task) and T3 (two weeks later).

Study Variable <i>M(SD)</i>	VA Group	VAG Group	Control Group
T1 State Paranoia	12.28 (4.34)	13.04 (6.75)	12.18 (4.68)
T2 State Paranoia	11.63 (4.32)	11.98 (6.53)	12.00 (4.35)
T3 State Paranoia	11.94 (4.24)	10.38 (4.82)	11.96 (5.32)

was not significant ( $F_{(2, 49)} = 1.38$ ,  $p = .256$ ). This suggests that there was an overall reduction in state paranoia for VAG participants that was not qualified by goal completion.

#### 3.4. Effects of self-esteem as a moderator

The repeated measures ANCOVA revealed a significant Self-Esteem\*Condition\*Time interaction ( $F_{(4, 148)} = 2.59$ ,  $p = .037$ ). As predicted, self-esteem moderated the effect of condition on state paranoia at T3 ( $R^2$  change = 0.037,  $F_{(2, 148)} = 5.28$ ,  $p = .006$ ), but not at T1 ( $R^2$  change = 0.000,  $F_{(2, 161)} = 0.025$ ,  $p = .975$ ) or T2 ( $R^2$  change = 0.001,  $F_{(2, 160)} = 0.350$ ,  $p = .705$ ). These findings suggest that the relationship between trait self-esteem at baseline and state paranoia at T3 differed as a function of group allocation (see Fig. 1), with the difference residing between VAG and VA ( $t = -3.09$ ,  $p = .002$ ). For those low in self-esteem, participation in the VAG condition resulted in significantly lower T3 paranoia scores than participation in the VA condition ( $t = -3.54$ ,  $p = .001$ ). This was also the case for individuals with moderate levels of self-esteem ( $t = -2.43$ ,  $p = .016$ ), but not for those with high levels of self-esteem ( $t = -0.070$ ,  $p = .945$ ), suggesting that for those individuals with high self-esteem, conditions had an equivalent effect on T3 paranoia. For individuals with low self-esteem, adding the valued-goals component to the values-affirmation task (i.e., completing VAG as compared to VA) resulted in paranoia scores that were an average of 3.65 points lower than VA alone. This differential effect of condition on T3 paranoia reduced systematically as trait self-esteem increased.

## 4. Discussion

This study examined the relative effects of a values reflection task, versus a values reflection plus goal setting task and a non-values control task on state paranoia scores both immediately following the tasks and at 2-weeks follow up, as well as examining trait self-esteem as a moderator of intervention effects. The first key finding was that focusing on a core value and setting value-based goals (i.e., VAG) was associated with significant reductions in state paranoia from baseline to 2-week follow up, whereas focusing on a core value without setting a value-based goal was not. This suggests that the act of setting a value-based goal had a causal role in attenuating state paranoia. Interestingly, exploratory post hoc analysis in the VAG group suggested that goal completion did not moderate the effects of VAG on T3 state paranoia. Taken together, this suggests that setting a values-based goal, but not necessarily completing that goal, accounted for the superior effects of VAG. One interpretation of this is that the act of translating a core value into a tangible goal was more influential on subsequent paranoia scores than achieving one's pre-defined goal. Several mechanisms may account for this. For example, setting a values-based goal may have prompted an increase in value-based behaviour even if the specific goal was not itself actuated. Likewise, a felt sense of satisfactory progress towards a goal, but not attainment per se, may have driven the benefits observed (see Carver & Scheier, 1990). Another interpretation, however, is that goal completion did account for the differences observed, but this study did not have sufficient power to detect this. This would be an important area for future research.

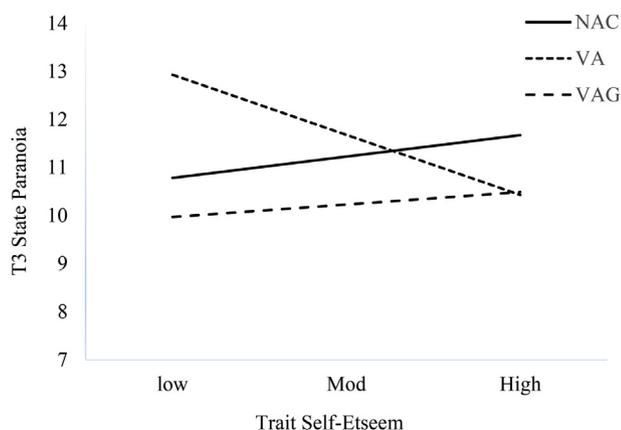


Fig. 1. Interaction between trait self-esteem and condition (VAG, VA and NAC) on follow-up (T3) state paranoia.

The second key finding was that self-esteem moderated the effect of group allocation on T3 state paranoia. The differential effect of condition on T3 state paranoia was most pronounced for those with low self-esteem. For participants with low self-esteem, reflecting on a core value *without* setting a value-based goal (i.e., VA participants) resulted in follow-up (T3) levels of state paranoia that were 3.65 times greater than low self-esteem participants who reflected on a core value and then completed the value-based goals task (i.e., VAG participants). In the VAG condition, T3 state paranoia was low for all participants, regardless of their level of trait self-esteem. This suggests that completing the VAG task offset the vulnerability towards state paranoia that is otherwise characteristic in individuals with low self-esteem. This is consistent with previous research showing the moderating effects of self-esteem on affirmation interventions, when assessing openness to risk information (During & Jessop, 2015) and perceptions of acceptance in close interpersonal relationships (Lomore et al., 2007). Overall, the current findings suggest that engaging individuals with low self-esteem in setting meaningful and valued goals is crucial for achieving improvements in paranoia that are durable over a 2-week period. Examining whether the effect of value-based goal setting results in longer-term improvements in paranoia would be important to establish in future research, as well as examining the effects of value-affirmation and value-based goals in individuals with higher levels of paranoia (i.e., individuals who experience persecutory delusions).

Findings should be considered in the light of several limitations. Firstly, we did not implement a goals only control group and, as such, it is possible that the superior effects of VAG as compared to VA and NAC were attributable to setting, planning and achieving goals per se, rather than values-based goals specifically (e.g., MacLeod, Coates, & Hetherington, 2008). This is an important area for future research. Secondly, participants were predominantly white, female, and well educated, which might limit the generalisability of the findings. As such, several of the characteristics associated with proneness to paranoia were not represented (e.g., ethnic minority groups, males) in this sample. However, low self-esteem is a well-recognised vulnerability for experiencing paranoia (e.g., Thewissen et al., 2011) and, in this way, the moderation findings are especially useful for the application of this work to more vulnerable groups. Thirdly, this study focused on reducing the occurrence of paranoid cognitions without examining key indices such as distress, conviction, and impact on daily functioning (Haddock, McCarron, Tarrier, & Faragher, 1999). Using experience sampling and/or virtual reality methodology and assessing distress, conviction, and impact on daily functioning would be an interesting avenue for future research.

Notwithstanding these limitations, the study has a number of important theoretical and clinical implications. Firstly, VAG may provide a low intensity intervention for attenuating non-clinical paranoia. This

is important, given that non-clinical paranoia can be distressing, pre-occupying (Ellett et al., 2003; Freeman et al., 2011) and persistent (Allen-Crooks & Ellett, 2014; Ellett & Chadwick, 2007), as well as being a potential risk factor for the development of clinical disorders (e.g. Heriot-Maitland et al., 2012; Kelleher et al., 2012). Although ACT has been used as an intervention for people with symptoms of psychosis (e.g., Shawyer et al., 2017), this is the first study to isolate and examine the therapeutic effects of values and value-based action on paranoia specifically. Secondly, the data suggest that for more vulnerable individuals (i.e., those with low self-esteem) simply reflecting on values, in the absence of setting a behavioural goal, may be causally associated with higher levels of paranoia. Conversely, when individuals with low self-esteem affirm a value and then set value-based goals, their level of subsequent state paranoia was equivalent to high self-esteem counterparts. This finding underscores the importance of adding value-based goals for more vulnerable individuals. Finally, the findings have broader implications for the use of affirmation interventions across a range of social and cognitive applications, suggesting that the explicit addition of value-based goal setting may causally enhance the durability of affirmation effects. This is an exciting avenue for future research examining the effects of values and value-based goals in clinical and social contexts.

In summary, notwithstanding these limitations, the current data show empirically, for the first time, that value-affirmation plus value-goal setting is effective in reducing non-clinical paranoia, and may be particularly useful for individuals with low self-esteem.

## Declarations

### Ethical standards

The study was approved by the institutional ethics committee and has therefore been performed in according with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

All persons gave their informed consent prior to their inclusion in the studies.

## Conflicts of interest

The authors declare that they have no conflict of interest.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jbtep.2019.101500>.

## Appendix

1. Acceptance: to be open to and accepting of myself, others, life, etc.
2. Adventure: to be adventurous; to actively seek, create, or explore novel or stimulating experiences
3. Assertiveness: to respectfully stand up for my rights and request what I want
4. Authenticity: to be authentic, genuine, real; to be true to myself
5. Beauty: to appreciate, create, nurture or cultivate beauty in myself, others, the environment etc.
6. Caring: to be caring toward myself, others, the environment, etc.
7. Challenge: to keep challenging myself to grow, learn, improve
8. Compassion: to act with kindness towards those who are suffering
9. Connection: to engage fully in whatever I'm doing and be fully present with others

10. Contribution: to contribute, help, assist, or to make a positive difference to myself or others
11. Conformity: to be respectful and obedient of rules and obligations
12. Cooperation: to be cooperative and collaborative with others
13. Courage: to be courageous or brave; to persist in the face of fear, threat, or difficulty
14. Creativity: to be creative or innovative
15. Curiosity: to be curious, open-minded, and interested; to explore and discover
16. Encouragement: to encourage and reward behaviour that I value in myself or others
17. Equality: to treat others as equal to myself and vice versa
18. Excitement: to seek, create, and engage in activities that are exciting, stimulating or thrilling
19. Fairness: to be fair to myself or others
20. Fitness: to maintain or improve my fitness to look after my physical and mental health and wellbeing
21. Flexibility: to adjust and adapt readily to changing circumstances
22. Freedom: to live freely; to choose how I live and behave, or help others do likewise
23. Friendliness: to be friendly, companionable, or agreeable toward others
24. Forgiveness: to be forgiving toward myself or others
25. Fun: to be fun loving; to seek, create, and engage in fun-filled activities
26. Generosity: to be generous, sharing and giving, to myself or others
27. Gratitude: to be grateful for and appreciative of myself, others, and life
28. Honesty: to be honest, truthful, and sincere with myself and others
29. Humour: to see and appreciate the humorous side of life
30. Humility: to be humble or modest; to let my achievements speak for themselves
31. Industry: to be industrious, hardworking, and dedicated
32. Independence: to be self-supportive, and choose my own way of doing things
33. Intimacy: to open up, reveal, and share myself, emotionally or physically in my close personal relationships
34. Justice: to uphold justice and fairness
35. Kindness: to be kind, compassionate, considerate, nurturing, or caring toward myself or others
36. Love: to act lovingly or affectionately toward myself or others
37. Mindfulness: to be conscious of, open to, and curious about my here-and-now experience
38. Order: to be orderly and organized
39. Open-mindedness: to think things through, see things from other's points of view, and weigh evidence fairly.
40. Patience: to wait calmly for what I want
41. Persistence: to continue resolutely, despite problems or difficulties.
42. Pleasure: to create and give pleasure to myself or others
43. Power: to strongly influence or wield authority over others, e.g. taking charge, leading, organizing
44. Reciprocity: to build relationships in which there is a fair balance of giving and taking
45. Respect: to be respectful towards myself or others; to be polite, considerate and show positive regard
46. Responsibility: to be responsible and accountable for my actions
47. Romance: to be romantic; to display and express love or strong affection
48. Safety: to secure, protect, or ensure safety of myself or others
49. Self-awareness: to be aware of my own thoughts, feelings and actions
50. Self-care: to look after my health and wellbeing, and get my needs met
51. Self-development: to keep growing, advancing or improving in knowledge, skills, character, or life experience.
52. Self-control: to act in accordance with my own ideals

53. Sensuality: to create, explore and enjoy experiences that stimulate the five senses
54. Sexuality: to explore or express my sexuality
55. Skillfulness: to continually practice and improve my skills and apply myself fully when using them
56. Supportiveness: to be supportive, helpful, encouraging, and available to myself or others
57. Trust: to be trustworthy; to be loyal, faithful, sincere, and reliable
58. Other:

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