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Mindfulness and Paranoia: A Cross-Sectional, Longitudinal and Experimental Analysis

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Abstract

Objectives The purpose of this article was to examine the role of mindfulness, and its facets, in predicting (Studies 1 and 2) and attenuating (Study 3) paranoia in students.

Methods Study 1 used cross-sectional questionnaire-based methodology ($N = 410$) to examine the association between mindfulness and paranoia whilst controlling for their shared association with anxiety and depression. Study 2 used longitudinal design to test the prospective influence of mindfulness facets on state paranoia over a 2-week period ($N = 84$). Study 3 used a single-blind between-group experimental design to examine the effects of 1-week self-administered mindfulness training ($N = 34$) versus 1-week self-administered guided visual imagery (GVI) training ($N = 34$) on state paranoia.

Results In study 1, controlling for anxiety and depression, low levels of non-judgement were significantly associated with high levels of paranoia ($p < .001$). In study 2, high levels of non-judgement buffered the impact of trait paranoia on daily experiences of state paranoia, whilst statistically controlling for the influence of rumination (interaction: $p = .02$). In study 3, both mindfulness and GVI significantly reduced state paranoia ($p < .001$).

Conclusion Findings highlight the importance of mindfulness, and non-judgement specifically, in understanding paranoia in students and provide further evidence for mindfulness and relaxation as effective methods for reducing paranoia. Across studies, participants were predominantly white female students. Findings cannot, therefore, be assumed to generalise to other populations.

Keywords Mindfulness · Non-judgement · Paranoia · Nonclinical · Relaxation

Paranoia describes the belief that another person is, or is planning, to intentionally cause one harm—be that physical, social or psychological (Freeman & Garety, 2000). There is now substantial evidence that rare and severe forms of paranoia exist on a continuum with milder and everyday suspicion and mistrust of others (e.g., Elahi, Algorta, Varese, McIntyre, & Bentall, 2017; Freeman et al., 2005), which is common in the general population (e.g., Bebbington et al., 2013). Research suggests that in university students, paranoia can be more prevalent, distressing and pre-occupying than in the general population (Lincoln & Keller, 2010), and prevalence rates of 30–40% amongst students have been reported (Freeman et al., 2005; Peters, Joseph, & Garety, 1999). As in clinical groups, paranoia in students is associated with isolation, feelings of powerlessness and depression (Ellett, Lopes, & Chadwick, 2003; Freeman et al., 2005), and has been found to be pre-occupying (Ellett et al., 2003; Freeman et al., 2011), persistent (Allen-Crooks & Ellett, 2014), slow to dissipate once activated (Ellett & Chadwick, 2007) and associated with anxiety and depression (Freeman et al., 2011). Collectively, these findings signify the importance of understanding and reducing paranoia in nonclinical and student populations.

Over the last decade, there has been increasing interest in applying third-wave, cognitive-behavioural therapies (CBTs) to understanding and treating distressing experiences such as paranoia (e.g., Chadwick, 2006; Khoury, Lecomte, Gaudiano, & Paquin, 2013; O'Donoghue, Morris, Oliver, Johns, & Hayes, 2016). These therapies highlight the way in which an individual relates and responds to internal experiences (such as paranoid thoughts), rather than the specific content of experiences, as being fundamental to understanding and treating psychological distress. Mindfulness is a common and core component of these therapies. Within Western clinical practice contexts, mindfulness is often described as "moment-to-moment awareness, cultivated by paying attention in a specific way, in the present moment, as

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non-reactively, non-judgementally, and open-heartedly as possible" (Van Dam et al., 2018, p. 38, based on Kabat-Zinn, 1990). From this perspective, it has been suggested that mindfulness comprises five inter-related facets: the ability to *observe* and *describe* experience, to *act with awareness*, to respond *non-reactively* and to be *non-judgemental* towards inner experiences (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006).

The non-judgement facet in particular has been associated with the ability to respond mindfully to psychotic experience, including paranoid thoughts (Chadwick, 2006). From this perspective, mindfulness skills, and in particular adopting a non-judgemental attitude towards internal experiences, play a central role in determining the psychological impact of paranoid thinking. A small number of studies are beginning to support aspects of this theorising. For example, a nonclinical correlational study (Oliver, McLachlan, Jose, & Peters, 2012) demonstrated that the tendency to accept experiences without judgement mediated the relationship between negative core schema at baseline and delusional distress 6 months later. Research is also starting to support the therapeutic benefits of responding mindfully to paranoid thoughts as they occur in both clinical (Chadwick, Hughes, Russell, & Russell, 2009; Collip et al., 2013; Ellett, 2013) and nonclinical (Shore, Strauss, Cavanaugh, Hayward, & Ellett, 2017) populations. Extending the current evidence base, the current paper employed cross-sectional, longitudinal and experimental methods to systematically examine the relationship between mindfulness and nonclinical paranoia in three studies.

Study 1

In study 1, we used a within-subject correlational design to examine the association between the aforementioned mindfulness facets and paranoia in a large nonclinical sample. Given the association of both mindfulness and paranoia with negative affect (Freeman et al., 2011; Van Dam et al., 2018), study 1 tested whether mindfulness and paranoia are associated above and beyond their shared association with anxiety and depression and examined what specific mindfulness facets are most relevant to paranoia. Given the emphasis in the literature on non-judgement mediating reactions to psychotic symptoms (Chadwick, 2006), we expected that the non-judgement mindfulness facet would be most strongly associated with paranoia.

Method

Participants

Previous research has reported a medium to large association between mindfulness and delusional ideation (Oliver et al., 2012); however, the proportion of variance accounted for by anxiety and depression is unknown. To be conservative, power calculations were based on finding a small correlation between paranoia and mindfulness when controlling for anxiety and depression. Using G*Power, with power at 0.80, alpha at 0.05 and 3 predictor variables (mindfulness, depression and anxiety), a sample of $N = 395$ was required. An opportunity student sample ($N = 410$) was thus recruited from a British University and from online research webpages. The majority were female (84%), White British (63%) psychology students (84%). The mean age was 21 years ($SD = 6.7$).

Procedure

Following ethical approval, consenting participants were sent an electronic link to take part in the study online. Questionnaires were randomised to reduce the possibility of order effects. After completion, participants were debriefed.

Measures

The Paranoia Scale (PS: Fenigstein & Vanable, 1992) is a 20-item measure of trait paranoia which measures the tendency to experience paranoid thoughts in nonclinical samples. Items, rated on a 5-point Likert scale ('1'—*not at all applicable to me* to '5'—*extremely applicable to me*), measure five aspects of paranoid thinking: the belief that other people or external powerful sources are trying to influence one's behaviour or thinking, the belief of a conspiracy against you, the belief of being spied on and talked about behind one's back, a general suspicion or mistrust of others and feelings of resentment. The authors reported good internal consistency across four separate samples ($N = 581$, $\alpha = 0.84$) and good test re-test reliability over a 6-month period (0.70). In this sample, internal consistency was good ($\alpha = 0.85$).

The Depression, Anxiety and Stress Scale (DASS: Lovibond & Lovibond, 1995) is a 42-item measure of distress (depression, anxiety and stress) over the last week. Items are rated using a 4-point Likert scale of frequency or severity. Good discriminant and concurrent validity (Antony, Beiling, Cox, Enns, & Swinson, 1998) and internal consistency values have been reported in normative samples (e.g. Lovibond & Lovibond, 1995). Anxiety and depression subscales had high internal consistency in this sample ($\alpha = 0.97$ and $\alpha = 0.94$ respectively).

The Five Facet Mindfulness Questionnaire (FFMQ, Baer et al., 2006) is a 39-item measure of five mindfulness skills: describing, non-reactivity, acting with awareness, non-judging and observing. Items are rated on a 5-point scale ('1'—*never or very rarely true*, '5'—*very often or always true*). Williams, Dalgleish, Karl, and Kuyken (2014) reported that the *Observer* factor does not load significantly on to the overarching mindfulness factor in student samples so this was excluded from analyses. The FFMQ composite and subscales showed acceptable-excellent internal consistency in this sample (composite $\alpha = 0.90$; facets ranged from $\alpha = 0.76$ to $\alpha = 0.91$).

Data Analysis

First, a correlation matrix was computed to observe associations between study variables. Next, to test the association between paranoia and non-judgement, whilst controlling for the shared association with anxiety and depression, a hierarchical regression was computed, entering anxiety and depression into step 1, and non-judgement into step 2.

Results

Table 1 reports means, standard deviations and correlations for all study variables. Paranoid thinking was evenly distributed across the sample with a mean score ($M = 43$, $SD = 14.13$) that was comparable to Fenigstein and Vanable (1992).

Correlations indicated that mindfulness facets were differentially associated with paranoia; non-judgement was the only facet that was significantly associated with paranoia. Computing the hierarchical regression showed that the regression equation for step 1 was significant ($F_{(2,\ 408)} = 83.50$, $p < .001$, $R^2 = .29$, adjusted $R^2 = .29$): combined anxiety and depression accounted for 29% of variance in paranoia (β = 0.21 (95% CI 0.08, .48), $p = .007$ and β = 0.35 (95% CI 0.21, 0.54), $p < .001$ respectively). In step 2, non-judgement accounted for an additional 10% of variance ($F_{(3,\ 407)} = 85.32$, $p < .001$, $R^2 = .39$ adjusted $R^2 = .38$), with all three predictors contributing uniquely to paranoia scores: anxiety (β = 0.16 (95% CI 0.03, 0.41), $p = .03$), depression (β = 0.25 (95% CI 0.11, 0.42), $p = .001$) and non-judgement (β = − 0.34 (95% CI − 0.87, − 0.53, $p < .001$). Non-judgement thus accounted for an additional 10% of variance in paranoia.

Discussion

Study 1 provided evidence for an association between low levels of non-judgement and high levels of nonclinical paranoia that remained significant when statistically controlling for their shared variance with anxiety and depression. Interestingly, the remaining mindfulness facets (non-reactivity, acting with awareness and describe) were not significantly associated with paranoia. This is consistent with the emphasis on non-judgement as being central to responding mindfully to distressing psychotic (including paranoid thoughts) experience (Chadwick, 2006). The study does have some limitations. Most notably, the cross-sectional design means that causality (i.e., that a non-judgemental attitude towards experiences increases paranoia) cannot be established.

Study 2

Having established an association between non-judgement and paranoia, study 2 tested the prospective influence of non-judgement on paranoia in daily life. We predicted that non-judgement would moderate the effects of trait paranoia on subsequent experiences of state paranoia in daily life: that is, those individuals with high trait paranoia and low non-judgement would be especially vulnerable to experiencing state paranoia in daily life. Additionally, we expected high levels of non-judgement to buffer or protect the individual against experiencing state paranoia in daily life. Study 2 examined this using a within-subjects prospective design, testing the interactive effect of trait paranoia and non-judgement on state paranoia over a 2-week period. Our predictions were tested whilst statistically controlling for rumination, given its shared association with both paranoia (e.g. Martinelli, Cavanagh, & Dudley, 2013) and mindfulness (e.g. Raes & Williams, 2010).

Method

Participants

Power calculations were based on previous longitudinal research predicting paranoia from mindfulness, in the nonclinical

Table 1 Means (SD) and correlations for paranoia, depression, anxiety and mindfulness facets (study 1)

		Correlations					
	Mean, SD	1.	2	3	4	5	6
1. Paranoia Scale	42.92, 14.13	–					
2. DASS depression	18.26, 13.18	0.53*	–				
3. DASS anxiety	16.62, 10.65	0.51*	0.84*				
4. FFMQ-NJ	23.98, 6.90	− 0.51*	− 0.41*	−0.39*			
5. FFMQ-NR	20.21, 4.47	− 0.14	− 0.14	− 0.09	0.25*		
6. FFMQ-Des	25.34, 4.80	− 0.03	− 0.19*	− 0.17*	0.11	0.13	
7. FFMQ-Aw	22.94, 5.66	0.07	− 0.17*	− 0.21*	0.00	− 0.02	0.30*

DASS Depression anxiety and stress scale, *FFMQ* Five Factor Mindfulness Questionnaire, *NJ* Non-Judgemental Awareness, *NR* Non-React, *Des* Describe, *Aw* Acting with Awareness

* $p < .01$

population (e.g. Hartley, Haddock, Vasconcelos, Emsley, & Barrowclough, 2014; Oliver et al., 2012; Verdoux, Gindre, Sorbara, Tournier, & Swendsen, 2003). Predicting a medium effect, with power at 0.80, alpha at 0.05, with two independent variables (trait paranoia and mindfulness) and one covariate (rumination), a sample of $N = 84$ undergraduate students was recruited from a British University. Seventy-two (83.7%) participants were female, with a mean age of 20.71 years ($SD = 4.8$, range = 18–42 years), and 72% were psychology undergraduates. Forty-three percent of the sample were White British, 28% other White, 24% were Asian and 5% were 'other'.

Procedures

Following ethical approval, participants completed baseline measures of trait paranoia, mindfulness and rumination. Participants then completed the state paranoia (PDS) measure at three separate time points over the subsequent 2-week period. Participants received an e-mail prompt at three random time points over the 2-week period. Block randomisation to days (1–4, 5–8, 9–12) and time (09:00–12:00, 12:00–15:00, 15:00–18:00, 18:00–21:00) was used. At the end of the 2-week period, participants were thanked and debriefed.

Measures

Trait paranoia and mindfulness were measured using the same measures as described for study 1 (the Paranoia Scale and the Five Facet Mindfulness Questionnaire).

The Perseverative Thinking Questionnaire (PTQ; Ehring et al., 2011) was used to measure rumination. The PTQ is a 15-item measure of repetitive negative thinking with items rated on a 5-point scale ('0' -*never*, '4' -*almost always*) and higher scores indicating higher levels of rumination. In nonclinical samples, the PTQ has shown good internal consistency ($\alpha = 0.95$), adequate test-retest reliability ($r = 0.69$) and good construct validity, positively correlating with measures of depressive rumination ($r = 0.72$) and worry ($r = 0.70$) (Martinelli et al., 2013). In this sample, the PTQ showed good internal consistency ($\alpha = 0.93$).

The Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998) is a 17-item measure of state paranoia (7 items) and depression (10 items). Items are rated on a 6-point scale ('1' -*not at all*, '6' -*very often*) yielding a possible range of 7 to 42 for paranoia, such that higher scores indicated higher levels of state paranoia. Only paranoia items were used in this study. Participants completed the paranoia items over a 2-week period (see Procedures), and a mean state paranoia score was computed per participant. The paranoia subscale has shown good internal consistency, discriminate and convergent validity (Bodner & Mikulincer, 1998). In this sample, the PDS showed good internal consistency ($\alpha = 0.81$).

Data Analyses

To test whether non-judgement moderated the relationship between trait paranoia and state paranoia in daily life, bootstrapping methods (5000 resamples) and the SPSS PROCESS (Model 1) macro provided by Hayes (2013) was used, predicting mean (averaged across the three time points) state paranoia (PDS) whilst controlling for rumination.

Results

Table 2 reports means, standard deviations and Pearson's correlations for all study variables. As anticipated, trait paranoia was significantly associated with state paranoia, and both were significantly correlated with non-judgement.

Non-judgement interacted with trait paranoia to predict a significant proportion of variance in mean state paranoia scores (interaction: $\Delta R2 = .03$, $F_{(1,77)} = 5.91$, $p = .02$). Simple slope analysis (see Fig. 1) indicated that trait paranoia significantly predicted state paranoia (PDS) at low ($b = 0.28$, SE = 0.045, $p < .001$, CI = 0.19, 0.37) and average ($b = 0.21$, SE = 0.036, $p < .001$, CI = .13, .28) levels of non-judgement, but trait paranoia did not predict state paranoia when non-judgemental awareness was high ($b = 0.10$, SE = 0.055, $p > .05$, CI = − 0.01, 0.21).

Table 2 Mean (SD) and correlations for trait and state paranoia, non-judgement mindfulness facet and rumination

	Mean, SD	Correlations		
		1.	2.	3.
1. Paranoia Scale	44.18, 13.12	-		
2. State paranoia (PDS-P)	15.08, 5.00	0.74*	–	
3. Non-judgement (FFMQ-NJ)	24.00, 6.62	− 0.63*	− 0.61*	–
4. Rumination (PTQ)	30.76, 11.40	0.64*	0.57*	− 0.59*

PDS-P Paranoid and Depression Scale—Paranoia, *FFMQ-NJ* Five Factor Mindfulness Questionnaire Non-Judgement facet, *PTQ* Perseverative Thinking Questionnaire

* $p < .01$

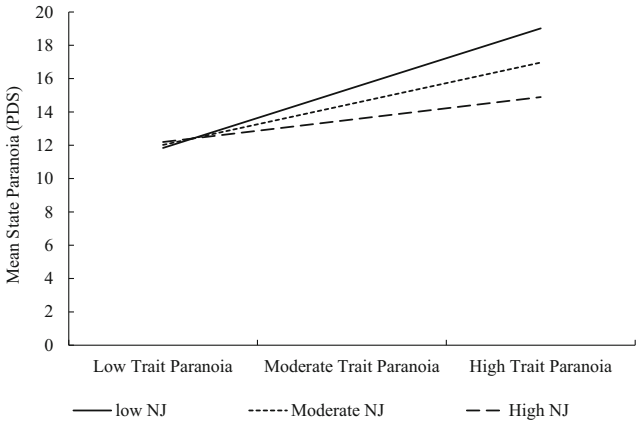

Fig. 1 Interaction effect of trait paranoia on state paranoia at different levels of non-judgement

Discussion

The current findings provide further evidence of the specific role of non-judgement in experiences of nonclinical paranoia. Furthermore, these are the first empirical data to show that high levels of non-judgement may buffer the impact of trait paranoia on daily experiences of state paranoia.

Study 3

Study 3 used a single-blind between-group experimental design to examine the effect of self-administered mindfulness training on state paranoia. Building on previous research, we chose an active control condition, guided visual imagery (GVI). GVI is a self-relaxation strategy that directs attention away from the present moment. GVI thus enabled isolation of the mindfulness facets thought to be theoretically active (e.g., non-judgemental awareness, present moment focus, letting go, etc.) whilst controlling for non-specific factors such as restful alertness, physical inactivity, mental activity and self-relaxation (see Kingston, Chadwick, Meron, & Skinner, 2007). We expected components specific to mindfulness training to reduce paranoia above and beyond any shared effects of relaxation. We therefore predicted that both mindfulness and GVI would lead to a reduction in paranoia, but that the effects of mindfulness would be superior.

Method

Participants

Comparing mindfulness to wait list control for paranoia in a nonclinical sample, Shore et al. (2017) reported a large ($d = 0.74$) between-group difference. Given that we anticipated GVI to be effective, albeit less so than mindfulness, a small-medium between-group difference was predicted. With power at 0.80 and alpha at 0.05, a total sample of $N = 58$ was indicated. To allow for attrition, 70 undergraduate students were recruited from a British University. Eighty-three percent were female with a mean age of 19.47 (ranging between 18 and 41).

Procedure

A single-blind between-group experimental design was employed, with the researcher blind to group allocation. Participants were invited to take part in a study investigating *the effects of different relaxation techniques on mood* with no specific reference to mindfulness, GVI or paranoia, in order to reduce any expectancy effects. Following ethical approval, consenting participants completed baseline measures of mindfulness and state paranoia using an online survey tool. Participants were then randomised to either 1-week self-administered mindfulness training or 1-week self-administered GVI training (see below for details), which was delivered via CD or MP3. They were instructed to listen to the recording daily for the next week, or *at least four times* if daily was not possible. Participants were provided with a record sheet to record when they listened to the recording as well as any comments about their experience. Participants were encouraged to be honest when recording amount of home practice. Participants returned to the lab after 1 week to re-complete the state paranoia measure. Participants also submitted the record and comments sheet to the researcher, which provided the researcher with an account of home practice per participant.

Mindfulness and GVI interventions were matched on non-specific factors, including voice (both female), duration (10 min each) and conditions for administration (adopting a sitting or lying position, free from distractors etc). The mindfulness practice was based on the 10-min guided mindfulness meditation introduced by Chadwick (2006) for people with psychosis. This practice has been used in studies with both clinical (e.g. Chadwick, Newman-Taylor, & Abba, 2005; Chadwick et al., 2016; Dannahy et al., 2011; Ellett, 2013) and nonclinical (Cavanagh et al., 2013; Shore et al., 2017) populations. The self-administered practice involves a brief body scan, followed by mindful breathing and choiceless awareness. The practice guides participants in bringing a non-judgemental attitude towards experience. The GVI exercise was a self-administered 10-min GVI practice used by Kingston et al. (2007). The GVI practice began by centring participants with guided deep breathing. Participants were then guided to release tension from their bodies and to try and relax and were then encouraged to evoke mental images of a journey through a garden. Throughout the exercise, participants were reminded to try and release any tension and to relax.

To ensure random allocation to intervention condition (mindfulness versus GVI), an independent researcher

used an online website (www.randomisation.org) to randomise participants to each of the two conditions. This enabled the researchers to remain blind to intervention condition.

Measures

The Five Facets Mindfulness Questionnaire (FFMQ; Baer et al., 2006) was used to assess group equivalence at baseline. The paranoia scale of the Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998; paranoia items only) was used to assess state paranoia pre and post the 1-week intervention.

Data Analysis

Group comparisons were computed using repeated measures ANOVA.

Results

Sixty-eight participants completed the study (one participant dropped out of the study after completing baseline measures and a technical error resulted in the loss of data for another participant). Independent ***t*** tests and chi-square analyses were computed to assess group equivalence at baseline. There were no significant differences between the two groups on any of the sociodemographic or study variables. The groups scored equivalently for mindfulness (total FFMQ: mindfulness mean = 79.98 (SD = 13.95), GVI mean = 77.81 (SD = 14.88), $t_{(1,\ 68)} = -0.64$, $p = .52$) and state paranoia scores at baseline (mindfulness M = 14.01 (SD = 5.68), GVI M = 12.38 (SD = 4.18), $t_{(1,68)}$ = 0.99, $p = .33$). The amount of home practice over the 1-week period ranged from 3 to 10 days. Frequency of home practice did not differ between the two groups (mindfulness M = 4.97 times, GVI M = 4.69 times, $t_{(1,\ 67)} = 1.07$, $p = .28$) and was significantly correlated with change in state paranoia from baseline to post-intervention ($r = -.25$, $p = .045$) such that greater reductions in state paranoia were significantly associated with higher rates of home practice.

Repeated-measures ANOVA showed a main effect of time: paranoia scores significantly reduced pre-post-intervention (post-intervention state paranoia scores: mindfulness M = 11.03 (SD = 5.44), GVI M = 10.21 (SD = 3.79), $F_{(1,\ 66)} = 42.00$, $p < .001$) but there was no difference between the two groups ($F_{(1,\ 68)} = 1.29$, $p = .26$) and the time × condition interaction was not significant ($F_{(1,\ 66)} = 1.19$, $p = .29$).

Discussion

The findings of study 3 suggest that 1 week of self-administered mindfulness or GVI training can result in a statistically significant reduction in state paranoia. This replicates and extends the work of Shore et al. (2017), who compared the same mindfulness intervention (delivered for 2 weeks) to a wait list control and found a significant reduction in paranoia for the mindfulness group only and that this change was sustained over a 1-month period. Contrary to prediction, there were no superior effects of mindfulness as compared to relaxation. Based on the current data, it is not possible to determine whether the changes observed were due to shared or unique processes.

General Discussion

Our series of studies add to the evidence base demonstrating the importance of mindfulness for understanding and reducing nonclinical paranoia. Non-judgement emerged as the most important mindfulness facet, showing both the strongest and only significant correlation with paranoia in study 1. Study 2 provided additional support for the importance of non-judgement, demonstrating that it buffered the effect of trait paranoia on state paranoia in daily life, such that even individuals with high trait predisposition towards paranoia can be protected from experiencing state paranoia in daily life if levels of non-judgement are high. The tentative implication of studies 1 and 2 is that developing a non-judgemental attitude towards (paranoid) experiences (for example through socratic dialogue following a mindfulness practice) might help to reduce the incidence of daily experiences of paranoia, although this would need to be demonstrated in future research. It would also be important to determine if effects are specific to mindfulness interventions, or whether they can also be developed through other psychological interventions, such as compassion-focused therapy.

Consistent with previous research (Ellett, 2013; Shore et al., 2017), we also found that brief (1-week) training in mindfulness reduced levels of state paranoia in a nonclinical sample. However, GVI was equally as effective in reducing state paranoia. Based on the current data, it is not possible to determine whether factors unique to mindfulness, such as non-judgemental awareness, were causal in reducing paranoia, or whether both interventions tapped into common mechanisms, such as relaxation. Future research would benefit from examining the mechanisms that account for the observed reductions in paranoia, as well as testing the durability of these effects over time, and whether the interventions are effective for individuals with higher levels of paranoia.

Limitations and Future Research Directions

The series of studies reported here have a number of limitations that warrant consideration. Firstly, all studies recruited students who were predominantly white and female, and whilst this is typical in the literature, it does limit the generalisability of the findings. Additionally, findings cannot be assumed to generalise to other mindfulness interventions or to other populations, such as clinical groups. Secondly, we did not measure, or control for, other cognitive or emotional processes that are known to causally influence paranoia, such as worry (Freeman, Dunn, Startup, & Kingdon, 2012), self-awareness (Ellett & Chadwick, 2007; Kingston & Ellett, 2014) and jumping to conclusions (e.g., Freeman, Pugh, & Garety, 2008). Future studies using structural equation modelling would allow us to test the impact of multiple cognitive and emotional processes on paranoia and to examine whether and how mindfulness relates to those processes. Thirdly, in Study 2, we used three random measurement time points over a 2-week period to measure state paranoia. An alternative approach would have been to conduct multiple daily assessments, which is more typical in experience sampling methodology, and may have provided a more robust measure of state paranoia over time.

Author Contribution JK contributed to the design and analysis of all studies, supervised the execution of all studies and prepared the manuscript. FL contributed to design, execution and analysis of study 3. CM contributed to design, execution and analysis of study 2. LE contributed to the design of all studies and collaborated in the writing and editing of the final manuscript.

Compliance with Ethical Standards

Ethical Approval The study was approved by the Royal Holloway University of London ethics committee. Informed consent was obtained from all individual participants included in the study. The study adhered to the ethical guidelines published by the British Psychological Society.

This article does not contain any studies with animals performed by any of the authors.

Conflict of Interest Jessica Kingston declares no conflict of interest.
Francesca Lassman declares no conflict of interest.
Carla Matias declares no conflict of interest.
Lyn Ellett declares no conflict of interest.

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