Paranoia, Worry, Cognitive Avoidance and Intolerance of Uncertainty in a student population

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Abstract

Non-clinical populations experience paranoid ideations on a regular basis. Psychological models of paranoia hypothesize paranoid ideations are maintained by processes like worry. Previous links between anxiety, worry and paranoia are also evident in non-clinical populations. To overcome worry individuals may avoid mental images that cause distressing arousal by using an internal strategy of cognitive avoidance (CA). It has been further hypothesized the use of CA may develop because of a predisposition of having an intolerance of uncertainty (IOU). Based on this rationale the current study investigated through self-report questionnaires the relationship between; worry, paranoia, CA and IOU in a student population (*N*=102) and specifically, if CA and IOU are maintaining factors of paranoia. The findings revealed significant relationships between all of the variables. A hierarchical regression affirmed that CA, IOU and Depression, Anxiety and Stress (DASS) accounted for 43% of the variance in paranoia when combined with worry, gender and age. This study provides a foundation of evidence for the presence of CA and IOU in paranoia. If replicated in a clinical population the findings could help the formulation and assessment for the treatment of paranoia.

Keywords: worry, paranoia, cognitive avoidance, intolerance of uncertainty, students

Paranoid ideation and persecutory delusions centre on the fear that others are intentionally trying to harm you (Freeman, 2007). Current research argues psychotic symptoms such as paranoid ideations may be understood as existing on a hierarchy. People with psychotic persecutory ideas or delusions in the context of a psychiatric disorder would represent the top of the hierarchy and individuals who do not meet the criteria for a psychiatric disorder but still experience the milder symptoms would represent the lower end of the scale (Johns, 2005; Van Os & Verdoux, 2002) The lower end would include individuals from the general population who experience suspiciousness, mistrust and mild paranoia (Freeman, 2007).

Around 15-20% of non-clinical individuals experience paranoia (Freeman et al., 2005; Olfso, 2002) and approximately 5% report persecutory ideation (Freeman et al., 2005). It has been hypothesised that paranoid and persecutory ideation in non-clinical populations is the result of a cultural level of a fear of others, which has increased based on the climate of today's political and social structure, which increases awareness of being wary of others' intentions (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Freeman et al., 2005). These findings illustrate how common paranoid thinking is in non-clinical individuals, and highlights the benefit of research on individuals who do not necessarily meet the standard diagnostic criteria for paranoia, but still experience the milder symptoms of the psychiatric disorder. Furthermore, early research has recognized a link between non-clinical symptoms and the possibility of developing psychosis in later life (Chapman, Chapman, Kwapil, Eckblad & Zinser, 1994; Poulton et al., 2000). Therefore, research based on the non-clinical population could provide a valid insight into the early development of clinical persecutory delusions.

In terms of understanding what leads people to feel suspicious and paranoid, Freeman, Garety, Kuipers, Fowler and Bebbington's (2002) multifactorial model proposes that paranoia and persecutory delusions are triggered by threat beliefs that lead to anxiety processes such as worry. These threat beliefs are entrenched from a pursuit of meaning that can be internal or external and are usually based on pre-existing emotionally significant beliefs. and personality. Furthermore delusions are maintained through the use of avoidance and safety behaviours that prevents disconfirmation of the threat belief. Therefore, the current model cements the role of worry in maintaining paranoia, alongside other cognitive and behavioural strategies.

Establishing a link between worry and paranoia is helpful. Worry is a common and normal process. Around 38% of the population worry at least once a day (Davey, Tallis & Capuzzo, 1996). Freeman (2007) emphasised the importance of worry in the cognitive model of persecutory ideations and stated "Worry may keep the suspicions in mind and develop the content in a catastrophizing manner" (p. 450). Worry is associated with greater reporting of delusional ideation (Morrison & Wells, 2007; Bassett, Sperlinger & Freeman, 2009), and those who experience persecutory delusions also experience worry, paranoia and anxiety (Startup, Freeman & Garety, 2007). Research with non-clinical participants indicates that anxiety, worry and depression help to maintain persecutory delusions (Freeman et al., 2008). A recent longitudinal study (Freeman et al., 2012) comprising of 2,382 participants found a significant association between worry and paranoia. Furthermore, if worry is treated it has some beneficial effects on the level of delusional ideation reported (Foster, Startup, Potts & Freeman, 2010; Freeman et al., 2015). Therefore, a clear link between paranoia and worry is apparent in both the clinical and non-clinical populations.

This leads to questions about why people worry. Research has suggested that individuals may start worrying as they think it may help solve the problem (Davey, Tallis & Capuzzo, 1996; Wells & Carter, 1999). However, once started it may be maintained by a number of strategies such as cognitive avoidance. Borkovec, Alcaine and Behar (2004) proposed that people with high levels of worry try to avoid the mental images associated with the distress. Furthermore, Borkovec and Inz (1990) have suggested that the verbal content of worry is a cognitive avoidant strategy in itself.

Cognitive avoidance (CA) is understood to be an internal strategy that intends to reduce negative threatening thoughts and images (Dugas, Marchand & Ladouceur, 2005). However, there is limited research available; an explanation for this could be due to complexity of the internal experience, which makes it more difficult to examine (Lavy, & van den Hout, 1994). Hayes, Wilson, Gifford, Follette and Strosahl (1996) argue that understanding the process of avoidance as a functional dimension could lead to new testable treatments for behavioural disorders. Research has suggested that the use of CA plays a key role in influencing later health problems (Salkovskis, 1991), however its role in sustaining paranoid ideation has not been examined in depth (Martin & Penn, 2001; Udachina et al., 2009). CA strategies and worry are both related to a person's intolerance of uncertainty (Rassin, Merckelnach & Muris, 2000).

Intolerance of uncertainty (IOU) is manifested in a predisposition to view ambiguous situations as negative, distressing and worrying (Laugesen, Dugas & Bukowski, 2003). Worry arises from an individual's reduced ability to cope with uncertainty (Freeston, Rheaume, Letart, Dugas & Ladoucer, 1994; Dugas, Gosselin, & Ladouceur, 2001). Moreover, it has been specifically linked to worry when compared with panic, obsession symptoms, need for control and perfectionism (Ladouceur, Talbot & Dugas 1997; Burh & Dugas, 2006; Dugas et al., 2001). Experimental research has established when IOU is manipulated, changes in worry have occurred, increasing levels IOU resulted in higher levels of worry and decreasing IOU resulted in reduced the levels of worry (Ladouceur, Gosselin, & Dugas, 2000). The role of IOU with psychosis is limited but individuals with psychosis have also confirmed high levels of IOU (White & Gumley, 2010); however, no studies to date have explored the relationship between paranoia. IOU, and CA in a non-clinical population.

To conclude, previous findings have revealed a relationship between worry and paranoia (e.g. Freeman et al., 2012). Research suggests the process of worry is maintained by the coping mechanism of CA (e.g. Freeman et al., 2002) and develops based on an IOU (e.g. Freeston et al., 1994). However, the role of CA and IOU as key mechanisms in the maintenance of paranoid ideation in a non-clinical sample has not been investigated. Therefore, the aim of the current study is to investigate the contribution of multiple clinical and social cognitive variables within paranoid ideations. It is expected that 1) There will be a significant relationship between all of the variables and a significant modest/strong relationship between worry and paranoia 2) Cognitive avoidance and intolerance of uncertainty will account for a substantial amount of variance found in paranoia, when other factors are controlled.

Method

Participants and Procedure

The participants were 102 students (43 Males 59 Females) with an age range of 18-48 (M = 24; SD= 5.95). With regards to ethnicity, 56.7% of the participants were white British, 16.3% were white other, 5.8% were Chinese, 5.8%, were black African, 4.8% were black Caribbean, 3.8% were Indian, and 4.8% classed themselves into the other category.

The study was reviewed and approved by Newcastle University ethical review panel. It was single group cross sectional design measuring worry, paranoia, depression, anxiety, stress, cognitive avoidance, intolerance of uncertainty in a student population. Students were offered either research credits or were entered into a prize draw for a small sum of money. Participants were given an information sheet, signed the consent form and then filled in the questionnaire pack. It took participants approximately 20 minutes to complete the pack. After completing the study participants were provided with a debrief of the study which encouraged participants to seek help if they felt any distress from completing the questionnaire, and included appropriate contact numbers and websites.

Measures

Paranoia. The Green Paranoid thoughts scale (GPTS; Green et al., 2008) is a scale consisting of two parts. Part A contained 16 statements on social referencing (e.g. "I spent time thinking about friends gossiping about me") and Part B contained 16 statements measuring persecutory idea (e.g. "Certain individuals have had it in for me"). The questions assess the presence of persecutory ideation over the past month. A higher score indicated greater levels of persecutory thinking, answers were assessed using a scale of one ('not at all') to five ('extremely'), answers were based on the degree to which participants thought the statements were applicable to them. This scale has been devised for use in non-clinical or healthy control groups, such as student participants. The measure has excellent internal reliability (Cronbach's α = .90) and convergent validity with other measures such as the Paranoia scale (Fenigstein, & Vanable, 1992; Freeman et al. 2005). The alpha coefficient for this data set was .91.

Worry. The Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger & Borkovec, 1990) consisted of 16 self–report statements measuring the tendency, intensity and uncontrollability of worry (e.g. "my worries overwhelm me, once I start worrying I cannot stop"). Answers were based on a scale of one ("not at all typical of me") to five ("very typical of me"). This questionnaire has high internal consistency (Cronbach's α = .91) and good test-retest reliability (r = .92) it has also been found to have a reduced influence of social desirability (Meyer et al., 1990). The alpha coefficient for this data set was .91.

Cognitive avoidance. This scale measures cognitive avoidance with five subsections (Thought Suppression, Thought Substitution, Distraction, Avoidance of Threatening Stimuli, and the Transformation of Images into Thoughts; Original: Gosselin et al., 2002, English translation: Sexton & Dugas, 2008). The questionnaire consisted of 25 self-report statements (e.g. "I say "stop' to myself to stop thoughts that I do not want to have"). Answers were measured on a scale of "not like me at all" to "entirely like me". This scale is under development, but has been used in a number of previous DClin Psy, and undergraduate research projects using young people and students at university (Sexton & Dugas, 2008). It has demonstrated good psychometric properties with excellent internal consistency (Cronbach's $\alpha = .95$), good test–retest reliability ($r = .85$) and moderate criterion-related validity with measures of worry (Sexton & Dugas, 2008). The alpha coefficient for this data set was .91.

Intolerance of Uncertainty. This scale measured people's views on coping with uncertainty and its future implications (Original French version: Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994 Short version: Carleton, Norton & Asumndson, 2007). It consisted of 12 self-report statements about intolerance of uncertainty (e.g. "When things happen suddenly, I get very upset"; "Even if you plan things really well, one little thing can ruin it"). Participants' answers were based on a scale ranging from "not like me at all" to "entirely like me". This scale has been previously used with both students and clinical groups indicating it is valid and reliable (Freeston et al., 1994) and has excellent internal consistency ($\alpha = .91$; Dugas, Freeston, & Ladouceur, 1997). The alpha coefficient for this data set was .85.

Depression, anxiety and stress. A person's levels of depression, anxiety and stress are important control variables and were assessed with the short version of Depression Anxiety Stress Scale, (DASS; Original: Lovibond & Lovibond, 1995; Short version: Henry, & Crawford 2005). This scale contains 21-item (e.g. "I found it hard to wind down, I felt I was close to panic") developed from the original 42-items but still retains the coverage of the full symptom content of each of the three affective states (Lovibond & Lovibond, 1995). Higher scores indicate higher levels of emotional distress. It is a widely and frequently used measures and has been shown to have good reliability (Cronbach's $\alpha = .88$) and convergent validity (Henry & Crawford, 2005).

Sample size considerations. A power calculation indicated a sample of 103 (n=103) was needed to detect a modest effect size (r^2=0.50), with six independent predictor variables (age, gender, DASS, worry, CA, IOU), $\alpha=0.05$, $Power=0.80$, (danielsoper.com). The basis for expecting a modest effect size was constructed on previous research findings in paranoia indicating a medium effect size with clinical populations (e.g. Freeman et al. 2007; Startup et al., 2007). Based on participants of this study being students a more conservative modest effect size was considered.

Results

Data distribution and screening

Each variable's normality was assessed and the data was screened for missing items. Participant results that were missing less than four items were substituted with the sample mean on that question (n= 12). One outlier was removed based on their paranoia total score being more than 3 standard deviations away from the mean, to reduce biases in the regressions coefficients. Making the total participants used 102.

Table 1 presents the descriptive statistics for each separate measure used in the questionnaire pack. These results are comparable results to previous studies researching worry, paranoia, cognitive avoidance and intolerance of uncertainty in non-clinical populations (e.g. Freeman et al., 2012).

Table 1

Summary statistics for scale variables (n=102)

	Mean	Standard Deviation	Range Total
PSW total	39.7	6.7	23-58
IOU Total	26.4	7.9	12-47
PA	28.6	11.7	16-66
PB	22.9	10.4	16-70
P Total	51.6	20.6	32-129
DASS Total	13.4	12.0	0-59
CA Total	57.6	16.0	25-91

Notes. PSW = Penn State Worry, IOU = Intolerance of Uncertainty, PA – Paranoia section A, PB = Paranoia section B, P = Paranoia Total, DASS = Depression Anxiety Stress Scale, CA = Cognitive avoidance.

Correlation analysis

Bivariate correlational analysis was performed on the data to examine the relationship between the variables (see Table 2)

Table 2

Pearson's correlations and significance values between variables (n=102)

	PSW Total	IOU Total	CA Total	PA	PB	P Total	DASS Total
PSW Total	1						
IOU Total	.43**	1					
CA Total	.31**	.44**	1				
PA	.34**	.47**	.32**	1			
PB	.27**	.43**	.25**	.73**	1		
PTotal	.35**	.50**	.32**	.94**	.92**	1	
DASS Total	.50**	.38**	.22*	.45**	.41**	.47**	1

Notes. PSW = Penn State Worry, IOU = Intolerance of Uncertainty, PA – Paranoia section A, PB = Paranoia section B, P = Paranoia Total, DASS = Depression Anxiety Stress Scale, CA = Cognitive avoidance. ** $p < .01$ *$p < .05$

Modest positive correlations were found between all of the variables. As predicted there was a significant relationship found between worry and cognitive avoidance ($r = .31$, $p < .01$) and cognitive avoidance and intolerance of uncertainty ($r = .44$, $p < .01$). Consistent with previous studies, there was also a positive relationship found between worry and paranoia (total scale $r = .35$, $p < .01$), worry and intolerance of uncertainty ($r = .43$, $p < .01$), and paranoia (total) and intolerance of uncertainty ($r = .50$ $p < .01$).

Further analysis using a hierarchical regression was performed on the data to help control for confounding variables and to gain a deeper understanding of the importance of each measure's ability to predict paranoia.

Hierarchical regression

A five stage hierarchical multiple regression was conducted with paranoia as the dependent variable. The hierarchical regression was performed using a blockwise entry system to explore the predictive utility of the predictor variables on the criterion variable of paranoia. Age and gender were entered in block one to control for these possible confounding variables. In block two the DASS scale was entered to control for the effects of depression, anxiety and stress. In block three the Penn state worry scale was entered to test the hypothesis that worry is related to paranoia in non-clinical samples (Freeman et al., 2012). In block four cognitive avoidance was entered to test the relationship with paranoia, as research suggests it is a maintaining factor of paranoia (e.g. Martin & Penn, 2001; Udachina et al., 2009). Finally, in block five intolerance of uncertainty was entered based on previous research indicating a link between IOU and worry (Berenbaum, Bredemeier, & Thompson, 2008).

Table 3

Hierarchical regression results

	R^2	ΔR^2	F	B	Standard Error	Beta B	T	Sig B	VIF
Block 1	.05	.05	2.88						
Age				.54	.35	.15	1.55	.12	1.01
Gender				-6.78	4.06	-.16	-1.66	.10	1.01
Block 2	.30	.25	34.65*	.43	.15	.50	5.89	.01*	1.02
DASS									
Block 3	.32	.07	3.18	.54	.30	.18	1.78	.08	1.39
Penn State Worry									
Block 4	.37	.05	6.84*	.29	.11	.13	2.62	.01	1.13
Cognitive avoidance									
Block 5	.43	.06	9.90*	.81	.26	.31	3.14	.02	1.65
Intolerance Of Uncertainty									

Note. $*p < .01$

Table 3 demonstrates that with six predictor variables the regression model accounted for 43% of the variance. Each additional predictor variable entered increased the proportion of variance accounted for by the model. The regression model offered a significant fit of the overall data (*F-ratio (6, 95)* = 11.87 $p < .01$).

The hierarchical regression demonstrated that both gender and age explained 5% of the variance for paranoia but the contribution was not significant overall. Addition of the DASS accounted for 25% of the variance for paranoia ($\Delta R2 = .25$, $\beta = -.50$), which was a significant contribution and the beta value was significant (β=0.5), indicating that individuals with higher levels of depression, anxiety and stress also had higher levels of paranoid ideation.

Worry explained an additional 2% of the variance of paranoia ($\Delta R2 = .02$, $\beta = .18$) but the contribution was not significant. The addition of cognitive avoidance explained a further 5% of variance of paranoia, making a significant contribution to the model, ($\Delta R2 = .05$, $\beta = .13$), as such cognitive avoidance helped to explain the presence of paranoia. Finally, the addition of intolerance of uncertainty explained a further 6% of variance, making a significant contributed to presence of paranoia ($\Delta R2 = .06$, $\beta = .31$). These findings suggesting that the overall model accounts for a substantial degree of variance.

Discussion

As predicted and in keeping with previous research the current study demonstrated a positive relationship between paranoid ideation, worry and more generally with elevated levels of depression, anxiety and stress. Moreover, there were modest but important relationships with the less explored variables of IOU and CA. Whilst the relationship between worry and paranoia is now well established the factors that increase the chance that people may worry (IOU and CA) have not previously been simultaneously investigated in people with non-clinical levels of paranoid ideation.

It was evident that there was a relationship between all variables, in accordance with the first hypothesis of the current study. More specifically, the results provide support for the role of worry in paranoid ideation as theorised by the cognitive model of persecutory delusions (Freeman, 2007). Similarly, previous research has demonstrated moderate relationship between worry and IOU as was found in this study ($r = .43$) and as shown in people with psychosis (White & Gumley, 2010). A moderate correlation between worry and CA was also present ($r = .31$), congruent with research that has hypothesised CA to play a key role in worrying (e.g. Borkovec et al., 2004; Freeman et al., 2005). Additionally, findings support the less researched relationship between CA and paranoia, the results revealed a moderate correlation ($r = .32$),

supporting previous research that has linked the use of CA strategies in paranoid ideations (e.g. Martin & Penn, 2001; Udachina et al., 2009).

In addition, a strong correlation between paranoia and IOU (r = .50) was apparent. Given the strength of the relationship it is important to consider whether these variables are distinctly separate from each other, and to understand the consequences of this relationship. Correlations are important but given the overlap between many of the variables a regression was utilised to help understand the relationships further. The hierarchical regression accounted for 43% of the variance in paranoia. Unsurprisingly, the most amount of variance found was explained by negative affect was high (DASS, 25%).

Even when controlling for the contribution of negative affect, worry explained an additional 7% of variance within paranoia, once elevated distress (DASS) was controlled for; however, the contribution was not significant and the beta value did not reach significance (p = .08). This may owe in part to the recruitment of a non-clinical population and the relatively small sample size meaning the study was not powered to detect this difference. Previous studies have demonstrated smaller effect sizes in low worriers when compared with high worriers (Tallis, Eysenck & Mathews, 1991). A second possible explanation could be due to distress (DASS) being controlled which could have suppressed the effect worry revealed on paranoia. This explanation is further supported by the strong overlap found between DASS and worry (r = .50). This suggests that the constructs of DASS could have also incorporated areas of the construct of worry, and therefore inhibited the effect worry alone revealed on paranoia.

Importantly, even after controlling for negative affect and worry, IOU and CA were still important predictors of paranoia. The hierarchical regression revealed that a total of 11% of the variance in paranoia was explained by CA (5%) and IOU (6%), providing support for the second hypothesis and identifying the importance of IOU and CA in paranoia. These findings provide support for the cognitive behavioural model for persecutory delusions (Freeman et al., 2002), which hypothesises CA to be a maintaining factor in persecutory delusions. Moreover, it provides further support for the proposed use of cognitive avoidant strategies used to overcome undesirable delusions associated with paranoia (Borkovec et al., 2004; Borkovec, Ray & Stöber, 1998). This appears to indicate strong preliminary evidence for the value of CA and IOU in understanding paranoid ideation in non-clinical participants. Theoretically the work is important

as it helps explain the nature of the relationship between worry and paranoia. Rather than being a direct relationship the results suggest that paranoia may be explained by some of the other processes such as IOU and CA, more than worry alone.

Worry is a normal process, and has been successfully treated in a number of previous trials. This approach has been adapted and shows preliminary value in helping paranoia. So, even though the focus of treatment is worry and does not address paranoia directly, the treatment can be helpful in reducing paranoid ideation (Foster, Startup, Potts & Freeman, 2010). The current findings may encourage researchers to consider targeting IOU or CA instead of, or in addition to worry, which would provide a potentially novel intervention option for people with paranoia. However, further studies are required to fully support the role of IOU and CA before embarking on treatment studies.

This research is not without limitations. First, the use of a cross-sectional design reduces the ability to draw conclusions about causality. Nevertheless, this type of design was appropriate for this preliminary stage of investigation to provide a foundation of research that could support future analysis. Future experimental studies could examine causal manipulations of IOU or CA to help assess the directionality of the relationship with paranoia. A second potential limitation of this study is the use of the CA scale. Although previous significant and reliable results have been found using this scale in a non-clinical population (Sexton & Dugas, 2008), the items may not be specific enough to paranoid ideations. Therefore, it is possible that people are reporting cognitive avoidant strategies they use for non-paranoid thoughts.

It is important to consider the use of self-report questionnaires which could be criticised for increasing the likelihood of the results being socially desirable and only providing a snapshot of information. Future research may benefit from collecting more information on the individuals taking the questionnaire, such as drug and alcohol use and the circumstances around the paranoia (e.g., the possibility they were subject to harassment or threats from others) to gain a deeper understanding and increase the reliability of the findings further. Finally, the recruitment of a student population can have an effect on the generalisability of the results. A strength of recruiting a non-clinical sample is that it provides an ethical foundation of knowledge by recruiting a less vulnerable sample at this stage in the research and allows the recruitment of a larger sample size which was necessary with these analytic methods.

As noted future research could investigate the casual link between IOU, CA and paranoia. It would be helpful examine the relationship between the variables (IOU, CA and paranoia) in a large non-clinical sample before and after inducing IOU to determine if this causes an increase in the use of CA strategies and the level of paranoia. Replication of the present findings with a clinical group of people with paranoia would also be helpful.

In conclusion, the results suggest worry, CA and IOU play an important role in paranoia. If the findings are replicated with a clinical population or via experimental tests of causality it could lead to new testable treatments for paranoia that do not target the delusional belief directly, but the processes that lead to increased levels of worry and paranoia. Therefore, treatment could target IOU and CA as factors in paranoia, and discourage the use of CA strategies and help people manage the feelings of uncertainty could in principle help reduce levels of suspiciousness and mistrust. However, the findings are not conclusive due to the methodological issues, and the need for this to be replicated in people with clinical levels of paranoia before treatment studies are considered.

References

Bassett, M., Sperlinger, D., & Freeman, D. (2009). Fear of madness and persecutory delusions: Preliminary investigation of a new scale. *Psychosis*, *1*(1), 39-50. doi:10.1080/17522430802535031

Berenbaum, H., Bredemeier, K., & Thompson, R. J. (2008). Intolerance of uncertainty: Exploring its dimensionality and associations with need for cognitive closure, psychopathology, and personality. *Journal of Anxiety Disorders*, *22*(1), 117-125. doi: 10.1016/j.janxdis.2007.01.004

Borkovec, T. D., Alcaine, O., & Behar, E. (2004). *Generalized anxiety disorder: Advances in research and practice*. New York: Guilford Press.

Borkovec, T. D., & Inz, J. (1990). The nature of worry in generalized anxiety disorder: A predominance of thought activity. *Behaviour Research and Therapy*, *28*(2), 153-158. doi: 10.1016/0005-7967(90)90027-G

Borkovec, T. D., Ray, W. J., & Stober, J. (1998). Worry: A cognitive phenomenon intimately linked to affective, physiological, and interpersonal behavioral processes. *Cognitive Therapy and Research*, *22*(6), 561-576. doi: 10.1023/A:1018790003416

Buhr, K., & Dugas, M. J. (2006). Investigating the construct validity of intolerance of uncertainty and its unique relationship with worry. *Journal of Anxiety Disorders*, *20*(2), 222-236. doi: 10.1016/j.janxdis.2004.12.004

Carleton, R. N., Norton, M. A., & Asmundson, G. J. (2007). Fearing the unknown: A short version of the Intolerance of Uncertainty Scale. *Journal of Anxiety Disorders*, *21*(1), 105-117. doi: 10.1016/j.janxdis.2006.03.014

Chapman, L. J., Chapman, J. P., Kwapil, T. R., Eckblad, M., & Zinser, M. C. (1994). Putatively psychosis-prone subjects 10 years later. *Journal of Abnormal Psychology*, *103*(2), 171. doi: 10.1037//0021-843X.103.2.171

Claridge, G. (1994). Single indicator of risk for schizophrenia: probable fact or likely myth?. *Schizophrenia Bulletin*, *20*(1), 151-168. doi: 10.1093/schbul/20.1.151

Davey, G. C., Tallis, F., & Capuzzo, N. (1996). Beliefs about the consequences of worrying. *Cognitive Therapy and Research*, *20*(5), 499-520. doi: 10.1007/BF02227910

Dugas, M. J., Freeston, M. H., & Ladouceur, R. (1997). Intolerance of uncertainty and problem orientation in worry. *Cognitive Therapy and Research*, *21*(6), 593-606. doi:10.1023/A:1021890322153

Dugas, M. J., Gosselin, P., & Ladouceur, R. (2001). Intolerance of uncertainty and worry: Investigating specificity in a nonclinical sample. *Cognitive Therapy and Research*, *25*(5), 551-558. doi:10.1023/A:1005553414688

Dugas, M. J., Marchand, A., & Ladouceur, R. (2005). Further validation of a cognitive-behavioral model of generalized anxiety disorder: diagnostic and symptom specificity. *Journal of Anxiety Disorders*, *19*(3), 329-343. doi: 10.1016/j.janxdis.2004.02.002

Fenigstein, A., & Vanable, P. A. (1992). Paranoia and self-consciousness. *Journal of Personality and Social Psychology*, *62*(1), 129. doi: 10.1037/0022-3514.62.1.129

Foster, C., Startup, H., Potts, L., & Freeman, D. (2010). A randomised controlled trial of a worry intervention for individuals with persistent persecutory delusions. *Journal of Behaviour Therapy and Experimental Psychiatry*, *41*(1), 45-51. doi:10.1016/j.jbtep.2009.09.001

Freeman, D. (2007). Suspicious minds: the psychology of persecutory delusions. *Clinical Psychology Review*, *27*(4), 425-457. doi: 10.1016/j.cpr.2006.10.004

Freeman, D., Dunn, G., Startup, H., Pugh, K., Cordwell, J., Mander, H., ... & Kingdon, D. (2015). Effects of cognitive behaviour therapy for worry on persecutory delusions in

patients with psychosis (WIT): a parallel, single-blind, randomised controlled trial with a mediation analysis. *The Lancet Psychiatry*, *2*(4), 305-313. doi:10.1016/S2215-0366(15)00039-5

Freeman, D., Garety, P. A., Bebbington, P. E., Smith, B., Rollinson, R., Fowler, D., Kuipers, E., Ray, K., & Dunn, G. (2005). Psychological investigation of the structure of paranoia in a non-clinical population. *The British Journal of Psychiatry*, *186*(5), 427-435. doi: 10.1192/bjp.186.5.427

Freeman, D., Garety, P. A., Kuipers, E., Fowler, D., & Bebbington, P. E. (2002). A cognitive model of persecutory delusions. *British Journal of Clinical Psychology*, *41*(4), 331-347. doi: 10.1348/014466502760387461

Freeman, D., Pugh, K., Antley, A., Slater, M., Bebbington, P., Gittins, M., ... & Garety, P. (2008). Virtual reality study of paranoid thinking in the general population. *The British Journal of Psychiatry*, *192*(4), 258-263.doi: 10.1192/bjp.bp.107.044677

Freeman, D., Stahl, D., McManus, S., Meltzer, H., Brugha, T., Wiles, N., & Bebbington, P. (2012). Insomnia, worry, anxiety and depression as predictors of the occurrence and persistence of paranoid thinking. *Social Psychiatry and Psychiatric Epidemiology*, *47*(8), 1195-1203. doi:10.1007/s00127-011-0433-1

Freeston, M. H., Rhéaume, J., Letarte, H., Dugas, M. J., & Ladouceur, R. (1994). Why do people worry? *Personality and Individual D*ifferences, *17*(6), 791-802. doi:10.1016/0191-8869(94)90048-5

Green, C. E. L., Freeman, D., Kuipers, E., Bebbington, P., Fowler, D., Dunn, G., & Garety, P. A. (2008). Measuring ideas of persecution and social reference: The Green et al. Paranoid Thought Scales (GPTS). *Psychological Medicine*, *38*(1), 101. doi: 10.1017/S0033291707001638

Gosselin, P., Langlois, F., Freeston, M. H., Ladouceur, R., Dugas, M. J., & Pelletier, O. (2002). Le Questionnaire d'Évitement Cognitif (QEC): Développement et validation auprès d'adultes et d'adolescents [The Cognitive Avoidance Questionnaire (CAQ): Development and validation among adult and adolescent samples]. *Journal de Thérapie Comportementale et Cognitive, 12*(1), 24-37.

Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M.,& Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and

treatment. *Journal of Consulting and Clinical Psychology,* 64, 1152–116. doi: 10.1037/0022-006X.64.6.1152

Henry, J. D., & Crawford, J.R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. British *Journal of Clinical Psychology, 44*(2), 227-239. doi: 10.1348/014466505X29657

Johns, L. C. (2005). Hallucinations in the general population. *Current Psychiatry Reports*, *7*(3), 162-167. doi:10.1007/s11920-005-0049-9

Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American journal of public health*, *87*(9), 1491-1498. doi: 10.2105/AJPH.87.9.1491

Ladouceur, R., Gosselin, P., & Dugas, M. J. (2000). Experimental manipulation of intolerance of uncertainty: A study of a theoretical model of worry. *Behaviour Research and Therapy*, *38*(9), 933-941. doi:10.1016/S0005-7967(99)00133-3

Ladouceur, R., Talbot, F., & Dugas, M. J. (1997). Behavioral expressions of intolerance of uncertainty in worry Experimental findings. *Behavior Modification*, *21*(3), 355-371. doi: 10.1177/01454455970213006

Laugesen, N., Dugas, M. J., & Bukowski, W. M. (2003). Understanding adolescent worry: The application of a cognitive model. *Journal of Abnormal Child Psychology*, *31*(1), 55-64. doi:10.1023/A:1021721332181

Lavy, E. H., & van den Hout, M. A. (1994). Cognitive avoidance and attentional bias: Causal relationships. *Cognitive Therapy and Research*, *18*(2), 179-191. doi:10.1007/BF02357223

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*(3), 335-343. doi:10.1016/0005-7967(94)00075-U

Martin, J. A., & Penn, D. L. (2001). Social cognition and subclinical paranoid ideation. *British Journal of Clinical Psychology*, *40*(3), 261-265. doi: 10.1348/014466501163670

Meyer, T. J., Miller, M. L., Metzger, R. L, & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 28,* 487-496. doi:10.1016/0005-7967(90)90135-6

Morrison, A. P., & Wells, A. (2007). Relationships between worry, psychotic experiences and emotional distress in patients with schizophrenia spectrum diagnoses and comparisons with anxious and non-patient groups. *Behaviour Research and Therapy*, *45*(7), 1593-1600. doi:10.1016/j.brat.2006.11.010

Olfson, M., Lewis-Fernández, R., Weissman, M. M., Feder, A., Gameroff, M. J., Pilowsky, D., & Fuentes, M. (2002). Psychotic symptoms in an urban general medicine practice. *American Journal of Psychiatry*, *159*(8), 1412-1419. doi:10.1176/appi.ajp.159.8.1412

Poulton, R., Caspi, A., Moffitt, T. E., Cannon, M., Murray, R., & Harrington, H. (2000). Children's self-reported psychotic symptoms and adult schizophreniform disorder: a 15-year longitudinal study. *Archives of General Psychiatry*, *57*(11), 1053-1058. doi:10.1001/archpsyc.57.11.1053

Rassin, E., Merckelbach, H., & Muris, P. (2000). Paradoxical and less paradoxical effects of thought suppression: A critical review. *Clinical Psychology Review*, *20*(8), 973-995. doi:10.1016/S0272-7358(99)00019-7

Salkovskis, P. M. (1991). The importance of behaviour in the maintenance of anxiety and panic: A cognitive account. *Behavioural Psychotherapy*, *19*(01), 6-19. doi:10.1017/S0141347300011472

Startup, H., Freeman, D., & Garety, P. A. (2007). Persecutory delusions and catastrophic worry in psychosis: developing the understanding of delusion distress and persistence. *Behaviour Research and Therapy*, *45*(3), 523-537. doi:10.1016/j.brat.2006.04.006

Sexton, K. A., & Dugas, M. J. (2008). The cognitive avoidance questionnaire: validation of the English translation. *Journal of Anxiety Disorders*, *22*(3), 355-370. doi:10.1016/j.janxdis.2007.04.005

Tallis, F., Eysenck, M., & Mathews, A. (1991). The role of temporal perspective and ego-relevance in the activation of worry structures. *Personality and Individual Differences*, *12*(9), 909-915. doi:10.1016/0191-8869(91)90180-J

Udachina, A., Thewissen, V., Myin-Germeys, I., Fitzpatrick, S., O'Kane, A., & Bentall, R. P. (2009). Understanding the relationships between self-esteem, experiential avoidance, and paranoia: structural equation modelling and experience sampling studies. *The Journal of Nervous and Mental Disease*, *197*(9), 661-668. doi: 10.1097/NMD.0b013e3181b3b2ef

Verdoux, H., & van Os, J. (2002). Psychotic symptoms in non-clinical populations and the

continuum of psychosis. *Schizophrenia Research*, *54*(1), 59-65. doi:10.1016/S0920-9964(01)00352-8

Wells, A., & Carter, K. (1999). Preliminary tests of a cognitive model of generalized anxiety disorder. *Behaviour Research and Therapy*, *37*(6), 585-594. doi:10.1016/S0005-7967(98)00156-9

White, R. G., & Gumley, A. (2010). Intolerance of uncertainty and distress associated with the experience of psychosis. *Psychology and Psychotherapy: Theory, Research and Practice*, *83*(3), 317-324. doi: 10.1348/147608309X477572