Paranoid Ideation and Social Anxiety in Undergraduates and Clinical Populations

by

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To Brian for his unconditional support and advice,

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Abstract

Recent research suggests that paranoia, like other psychiatric symptoms, may exist on a continuum with normal experiences. What pushes people from the normal to the severe end of the continuum has yet to be determined. Theoretical models of paranoia place importance on negative emotion, especially social anxieties, and cognitive reasoning biases. To fully understand the differences in paranoid ideation in non-clinical and schizophrenia populations, more information is needed regarding the causal mechanisms. Experimental paradigms provide the mechanism to test potential pathways through which persecutory ideation can develop. The goal of this study is to reveal mechanisms that may contribute to increases in paranoid ideation by experimentally manipulating fear and by identifying other potential individual factors.

A sample of 253 undergraduates was randomly assigned to a neutral or fearful experimental emotion induction. In both conditions, the presence of self-referential thoughts and persecutory ideation was assessed. Following the induction, participants completed ratings of self-referential and persecutory ideation and additional measures of social anxiety, general anxiety, depression and cognitive reasoning biases. These responses were compared to the level of self-referential and persecutory ideation in a sample of 46 individuals diagnosed with schizophrenia who completed self-report ratings of self-referential and persecutory ideation, general anxiety and depression but did not participate in the emotion induction. We found that the fear manipulation increased persecutory and self-referential thoughts in undergraduates. Further, social anxiety and cognitive reasoning biases were related to increases in persecutory ideation, such that the undergraduate group who were high in social anxiety or cognitive biases

at baseline had paranoia at equivalent level as the schizophrenia group following emotion induction. This study provides evidence that ideas of reference and persecutory thoughts are not confined to individuals diagnosed with psychotic disorders as they can be enhanced by fear in individuals high on social anxiety and cognitive biases. Together, the results suggest that fearful states, cognitive biases and social anxiety are potential mechanisms for increases in paranoid thought.

Chapter 1

Introduction

Severe forms of unfounded suspicion and mistrust of people are referred to as paranoia and it is one of the most common symptoms of schizophrenia, occurring in roughly 50% of diagnosed individuals (Cutting, 1997). Recent research suggests that paranoia, like other psychiatric symptoms, may exist on a continuum from suspiciousness and ideas of reference at the mild end to persecutory ideation at the severe end (e.g., Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Freeman & Garety, 1999; Freeman, Garety, Bebbington, Smith, et al., 2005; Martin & Penn, 2001). Within the general population, suspiciousness and ideas of reference have occurred in 10-15% of the general population within the last month. Moreover, 30-40% of people believe that negative comments have been made behind their back in the past week (Freeman, Garety, Bebbington, Smith, et al., 2005). What causes people to move from the mild to the more severe end of the spectrum is unknown. Therefore, the first purpose of this study is to determine whether a fearful emotion induction can move individuals from one end of the spectrum to the other. The second purpose of this study is to determine whether there are individual differences (social anxiety, and cognitive biases) that are also associated with increases in these processes.

Freeman and colleagues (2005) suggest that there are two dimensions that make up the continuum of paranoid thoughts: ideas of reference and persecutory ideation. Ideas of reference and persecutory ideation have a hierarchical relationship. In this model, suspicious thoughts and

ideas of reference (i.e., the feelings that neutral stimuli in one's environment may refer to them), are common in the general population. However, persecutory thoughts (i.e., feeling that others are out to get you or cause you harm) are rarer and characteristic of clinically significant pathology. Thus, while 48% of people endorse that, on a weekly basis, strangers or friends look at them critically, only 8% of people endorse that on weekly basis that they have a suspicion, "that someone has it in for me (Freeman, Garety, Bebbington, Smith, et al., 2005)." Furthermore, the development of persecutory ideation is predicated on the experience of increases in the amount of suspicious and referential thoughts (Combs & Penn, 2004; Freeman, Garety, Bebbington, Smith, et al., 2005; Green et al., 2008). Taken together, while persecutory thoughts are rarer and indicative of clinical presentation of paranoid ideation, concerns regarding social evaluation or vulnerability are quite common in the general population.

Freeman's Threat-Anticipation Model suggests that the occurrence of paranoid thoughts depends upon affective processes (particularly anxiety), perceptual anomalies and cognitive reasoning biases. Such that, in the case of a stressful and anxiety-provoking life event, if and when an individual experiences a confusing anomalous internal state (provide brief example), persecutory ideation at a clinical or delusional level is more likely to occur (e.g., Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002) in the presence of cognitive reasoning biases (e.g., jumping to conclusions--the tendency to gather small amounts of information when making judgments) (e.g., Freeman, Gittins, et al., 2008; Moritz & Woodward, 2005).

Cognitive models, such as the Threat-Anticipation Model, suggest that biases in reasoning play an integral role in the development of paranoid thoughts. Cognitive reasoning biases increase the likelihood that someone will interpret ambiguous, or even neutral information in a paranoid manner (Freeman et al., 2005). The 'jumping to conclusions' bias, or the tendency

to gather limited amounts of data to make a judgment, has been found consistently found in people with delusions and is thought to contribute to persecutory ideation formation (Garety & Freeman, 1999). Furthermore, dichotomous, or "all-or-nothing" thinking and a failure to consider other alternative are also associated with persecutory ideation (Fowler, Garety, & Kunipers, 1995; Freeman et al., 2004). Ambiguous situations can sometimes be difficult to interpret and individuals high in cognitive reasoning biases may be more likely to apply paranoid interpretations to ambiguous situations and perceive them as more threatening (e.g., Freeman et al., 2002)

While Freeman's (2002) model of paranoid thoughts is widely accepted, it is still unclear what exactly influences someone to shift from normal suspiciousness and ideas of reference to psychotic persecutory ideation. Reasoning biases (e.g., jumping to conclusions--the tendency to gather small amounts of information when making judgements) plus anomalous perception, are thought to influence the development of paranoid thoughts (e.g., Freeman, Gittins, et al., 2008; Moritz & Woodward, 2005) and distinguish individuals with psychosis from other populations (Peters et al., 2013). In addition to reasoning biases, anxiety and other forms of negative affect, like depression, cause increases in paranoid ideation and persecutory belief (Freeman, Garety, Bebbington, Smith, et al., 2005; Freeman et al., 2012). Furthermore, other work suggests that reasoning biases interact to increase the development of paranoid thoughts (Lincoln, Lange, Burau, Exner, & Moritz, 2010). Thus, it is reasonable to suspect that manipulating anxiety in individuals high in cognitive reasoning biases may lead to the development of psychotic symptoms through higher levels of paranoia, specifically persecutory thoughts, in non-clinical populations.

In particular, a specific form of anxiety, social anxiety, is predicative of increased paranoid ideation (Freeman, Pugh, et al., 2008). Both social anxiety and paranoia share the experiences ideas of reference (e.g., others are watching and judging you negatively or noticing certain aspects about you). Moreover, cognitive models of social anxiety suggest that socially anxious individuals interpret ambiguous information as threatening and this process maintains anxiety (Beard & Amir, 2009; Clark & Wells, 1995), analogous to the process that is believed to maintain paranoid ideation in schizophrenia (Freeman, Garety, Bebbington, Smith, et al., 2005). Likewise, similar to social anxiety, increases in self-consciousness lead to greater amounts of paranoid ideation. Self-consciousness is the tendency to direct attention inward and the awareness that the self as a social object, is a predictor of both social anxiety and paranoid ideation (Clark & Wells, 1995; Fenigstein & Vanable, 1992). Yet, how social anxiety and self-consciousness influences the experience of paranoid ideation is not fully understood, as these cognitive models have yet to be confirmed via experimental paradigms. Moreover, there has been limited experimental research on causal pathways to paranoid ideation and few studies have directly compared the manipulated levels of paranoid ideation in healthy populations that experience significant levels of stress (e.g., undergraduate populations) to that of individuals diagnosed with schizophrenia.

Experimental paradigms provide the ability to speculate about potential pathways that persecutory ideation can develop. There has been limited experimental research on causal pathways to persecutory ideation. Many investigators have capitalized on the knowledge that anxiety and stress is associated with increases in paranoid thoughts. For example, investigators have manipulated stress through loud noises and found increases in paranoid thoughts in people with schizophrenia (Moritz et al., 2010). Freeman's group has used a neutral virtual reality

environment where one can interact with avatars to study predictors of paranoid thoughts and persecutory ideation. They found that anxiety, depression and worry were associated with paranoid interpretations (Freeman et al., 2008). Fenigstein & Vanable (1992) found that sitting in front of a one-way mirror can lead to increases in paranoid thoughts in healthy individuals even when no mention of the mirror is made. Few studies have compared the manipulated levels of paranoid ideation in healthy populations to that of individuals diagnosed with schizophrenia. By making this comparison, we are better able to understand the continuum of paranoid thoughts and the process by which persecutory delusions develop in clinical populations. In sum, this study uses previous knowledge gained from past experiments to develop a short, easy fearful manipulation designed to increase paranoid ideation in healthy individuals and to determine how these levels of paranoid ideation compare to individuals diagnosed with schizophrenia.

To study the mechanisms that contribute to increases in paranoid ideation it is advantageous to look at the undergraduate populations. This time is characterized by frequent social encounters and stressful life transitions that may be a significant source of variance that contributes to adult psychopathology (Schulenberg, Sameroff, & Cicchertti, 2004). Specifically, community samples suggest that youth may be associated with increased paranoid thoughts (Van Os, Hanssen, Bijl, & Ravelli, 2000). Targeting this population, who is already at risk for increases in paranoid thoughts, for experimental manipulation provides us the ability to better characterize the contributing factors to paranoid ideation and more problematic persecutory ideation.

In sum, the goal of this study is to establish mechanisms that contribute to increases in paranoid ideation. Experimental paradigms that can induce paranoid ideation provide the ability to learn more about the pathways for the development of persecutory ideation in patients without

the confounds of medication and cognitive impairment. Therefore, this study will examine whether an experimental fearful emotion induction can increase ideas of reference and persecutory ideation. It will also determine how two individual factors (social anxiety and cognitive biases) moderate this relationship.

This study set out to establish anxiety as a mechanism that contributes to paranoid ideation such that following a fearful emotion inducing non-clinical populations respond in a "psychotic" fashion by reporting similar amounts of persecutory ideation compared to people diagnosed with schizophrenia. Lastly, it is expected that the fear-induced state will interact with social anxiety symptoms and reasoning biases to predict the development of self-referential ideation and persecutory thoughts. First, undergraduates high in social anxiety will report greater amounts of ideas of reference compared to undergraduates low in social anxiety symptoms at baseline. Secondly, at baseline undergraduates high in cognitive reasoning biases will report greater amounts of persecutory ideation compared to undergraduates low in cognitive reasoning biases. Following the fearful emotion manipulation, individuals high in cognitive reasoning biases or social anxiety will report similar amounts of persecutory ideation compared to a group individuals diagnosed with schizophrenia.

Chapter 2.

Methods

Participants and procedures

Undergraduate Participants. The present study recruited college students from the University of Michigan Introductory Psychology Subject Pool who participated for course research credit and provided informed consent. . Participants (n=253) were randomly assigned to read a neutral story or a fearful story (Appendix 1 & 2) and were instructed to, "…experience the event as vividly as possible. Imagine what type of room you are in, the smell of it, what type of day it is, the sounds around you, and how you are feeling in reaction to each event-really try to experience the event as if it were happening to you." To further increase feelings of paranoia and self-consciousness, students sat in a darkened room facing a one-way mirror while reading the story (Fenigstein & Vanable, 1992). After five minutes, participants were instructed to complete an in the moment self-report survey of paranoid thoughts. Following completion of the survey, participants participated in a separate study lasting 20 minutes in duration, the findings of which are not reported. This was followed by a debriefing to extinguish any residual effects of the mood induction. Participants then completed additional surveys to establish baseline levels of paranoia, social anxiety, and cognitive biases. Based on previous literature, it was expected that the effect of the emotion manipulation would wear off prior to questionnaire completion since past evidence suggests that emotion inductions are short lived, between 10-15 minutes, which would be prior to the completion of these surveys. Thus, even though our baseline measures

were collected at the end of the experiment, it is unlikely that the induction influenced the responses. Six participants were excluded for incomplete or missing data on paranoid ideation. The study protocol was approved by the University of Michigan IRB.

Emotion Manipulation (undergraduate participants only). Two stories were created to elicit two emotional states. The neutral story was adapted from previously published work (Raghunathan & Pham, 1999; Raghunathan, Pham, & Corfman, 2006). (See appendix 1). The paranoid condition (fearful) story was developed by a study collaborator for separate emotion induction study. (See appendix 2). The story was adapted for this project to include ambiguous social evaluation from a stranger and ambiguous intent of harm with someone following the character down a dark street. SCZ participants did not complete the emotion manipulation.

Participants with Schizophrenia. Individuals diagnosed with schizophrenia and schizoaffective disorder (SCZ) were part of two previous studies at the University of Michigan Departments of Psychology and Psychiatry. Data from these participants (SCZ; n=46) was included as a comparison group. A DSM-IV diagnoses of schizophrenia or schizoaffective disorder was established using the Structured Clinical Interview for the DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1997) conducted by graduates students under the supervision of doctoral level clinical psychologists. Participants with SCZ were between the ages of 18-65 and were excluded if they met criteria for current DSM-IV Axis I substance abuse or dependence. The participants in the schizophrenia group, participated in studies examining clinical and cognitive variables. The data was collected under different circumstances than the undergraduate sample. In addition to the measures included in this study they completed other self-report measures, computer tasks and clinical interviews not included in these analyses. The

schizophrenia participants also did not complete the emotion manipulation task that the undergraduate participants completed. Participant characteristics are reported in Table 1.

Assessments

Demographics. Age and gender information were obtained from both groups. Due to an error in data collection, age data was missing from forty-seven undergraduate participants.

Completed by SCZ and Undergraduate Participants

Paranoid Ideation. All participants completed the Green Paranoid Thoughts Scale to assess baseline levels of paranoia over the past month (GPTS-B; Green et al., 2008). This measure includes two 16-item subscales that will be the focus for the current study; ideas of reference ($GPTS^{REF}$) and persecution ($GPTS^{PERS}$) and higher scores indicating greater amounts of paranoid thoughts. Each item (e.g., 'I was stressed out by people watching me') is rated on a 5-point Likert-style scale from 1 (*not at all*) to 5 (*totally*). The scale shows good internal consistency in clinical and non-clinical populations, and is sensitive to clinical change. GPTS correlates with other measures of positive symptoms in individuals diagnosed with psychotic disorders (Green et al., 2008). In a study designed to determine psychometric properties of the GPTS, non-clinical participants mean total for 353 non-clinical participants was 22.1 (range 16-77, S.D. = 9.2) for the persecution subscale and 26.8 (range 16-72, S.D. = 10.4) for the reference subscale. In the validation study by Green and colleagues, the mean age of the non-clinical sample was 26.1 (S.D. = 8.9). Clinical participants (N = 50) with current persecutory delusions (those that rated mild to severe on the Scale for Assessment of Positive Symptoms; SAPS; Andreasen, 1984) had a mean GPTS score of 55.4 (range 24-80, S.D. = 15.7) for the persecution

subscale and 46.4 (range 16-80, S.D. = 16.4) for social reference (Green et al., 2008). The mean age of the clinical sample was 43.2 (S.D. = 12.4).

State Anxiety. The state subscale of the State- Trait Anxiety Inventory (Form X-1; STAI-S; Spielberger, 1983) was used to compare levels of state anxiety between the fearful and neutral condition in the undergraduate sample. Participants rated their anxiety on a Likert-style scale from 1 (*not at all*) to 4 (*very much so*). This scale has been used in clinical and non-clinical populations and is well correlated with other measures of negative affect (Nitschke, Heller, Imig, McDonald, & Miller, 2001).

Completed by Undergraduate Participants

Emotion manipulation measures. Following the mood induction, the Green Paranoid Thoughts Scale (post-induction GPTS; Green et al., 2008) was modified with the instructions to rate how the participant, "feels in the moment in response to the story," instead of "feelings you may have had about others over the last month." This was compared to their level of paranoia experienced over the last month. This story was adapted from a previous emotion induction used in Vickers, Carpenter & Ellsworth (in prep).

Social anxiety. Social anxiety was assessed using a short 3-item screening tool for generalized social anxiety disorder developed from the Social Phobia Inventory (SPIN; Connor et al., 2001). The Mini-SPIN utilizes the same Likert scale as the SPIN, ranging from 0, (*not at all*) to 4 (e*xtremely),* with a maximum total score of 12. It has been used in clinical, non-clinical and undergraduate populations. The three items are those questions that exhibit the greatest ability to differentiate individuals with generalized social anxiety and control participants and has been used in a variety of samples, including undergraduates. The items included are: "Fear of

embarrassment causes me to avoid doing things or speaking to people," "I avoid activities in which I am the center of attention, and "Being embarrassed or looking stupid are among my worst fears." A cut-off of 6 was used in this study to psychometrically identify participants who were high vs. low on social anxiety. This cut-off has demonstrated a sensitivity of 88.7% and a specificity of 90%, and a diagnostic efficiency of 89.9% in a group of individuals with generalized SA and HC (Connor, Kobak, Churchill, Katzelnick, & Davidson, 2001).

Cognitive Reasoning Biases. Cognitive biases that are considered to be important in the development and maintenance of psychosis were assessed using a recently developed questionnaire, the Cognitive Biases Questionnaire for Psychosis (CBQ-P; Peters et al., 2013). The CBQ-P consists of 30 psychosis-relevant vignettes describing everyday events. For each item, participants were asked to choose one of three statements that, 'best describes how you might think about the situation.' The directions explained that there were no right or wrong answers and participants should pick their immediate reaction. Vignettes were designed to measure 2 separate themes, 'anomalous experiences' and 'threatening events,' and 5 different cognitive biases, intentionalizing, catastrophizing, jumping-to-conclusions, emotional reasoning, and dichotomous thinking, considered. A total score is used to determine the level of general cognitive biases and the scale has shown good internal consistency and test-retest reliability in people diagnosed with a psychotic or depressive disorder and also non-clinical comparison groups. Taken together, the authors suggest that the scale taps into general biases of interpretation rather than specific thinking errors (Peters et al., 2013).

Chapter 3

Analysis

Data from 248 undergraduates and 46 SCZ were analyzed for group characteristics, demographics, trait anxiety, social anxiety status, and cognitive biases status within the undergraduate groups by condition. All analyses were completed using the Statistical Package for the Social Sciences (SPSS) version 23.0.

Experimental manipulation analyses. First, for the neutral and fearful condition groups, differences in post-induction GPTS total and subscales (ideas of reference and persecutory ideation) were determined with a mixed analysis of variance (ANOVA), with time (post-induction induction rating, baseline rating) as the within-subjects factor and emotional condition (neutral, fearful) as the between-subjects factor. If significant, post-hoc ANOVAs or simple effect analyses were conducted. Second, differences in baseline GPTS total and subscales between the neutral group, fearful group, and SCZ were determined with one-way ANOVA. Third, we compared the post-induction GPTS total and subscales of the neutral and fearful groups with SCZ using one-way ANOVA and Tukey's HSD for post-hoc analysis.

Social Anxiety. The undergraduate sample was split into high social anxiety (high SA) and low social anxiety (low SA) groups based on published Mini-SPIN scores (> 6 = high SA, < 6 = low SA). Differences in baseline and post-induction GPTS between the groups (up to five with neutral low and high SA, paranoid low and high SA, and SCZ) were determined with one-way ANOVAs and Tukey's HSD for post-hoc analysis.

Reasoning Biases. The undergraduate sample was split into high cognitive biases (high CB) and low cognitive biases (low CB) group based on responses on the CBQp. Individuals who scored above the median 42.0 (M = 43.2, range 32 to 64, S.D. = 5.5) were categorized in the low CB group and those above the median were in high CB group. Differences in baseline and post-induction GPTS between the three groups (up to five with neutral low and high CB, paranoid low and high CB, and SCZ) were determined with one-way ANOVAs and Tukey's HSD for post-hoc analysis.

All analyses were completed using the Statistical Package for the Social Sciences (SPSS) version 23.0. An alpha below 0.05 was considered significant.

Chapter 4

Results

Demographic information, depression, general state anxiety, social anxiety, cognitive biases and group differences by condition (fearful, neutral, schizophrenia) are displayed in Table 1. A significant difference in age between the groups (undergraduates and SCZ) were observed. However, there were no significant group differences for STAI-S (Table 1).

Table 1. Demographics, participant means (standard deviations) and group comparisons on all measures.

		Undergraduate Sample			Clinical Sample	
Participant Details & Scales		**Neutral** (n = 131)	**Fearful** (n = 121)	χ^2/t *(healthy groups)*	**SCZ** (n = 46)	χ^2/F *(all groups)*
	Age	19.1 (1.2)	19.2 (1.3)	0.49	41.2 (12.7)	317.41***
	Sex	65 M, 66 F	58 M, 63 F	0.07	29 M, 17 F	3.23
	STAI-S	39.5 (9.9)	41.5 (10.4)	1.56	38.8 (12.4)	1.59
Monthly Ratings	$GPTS^{TOTAL}$	48.9 (17.1)^a	52.0 (17.6)^a	1.46	64.7 (30.4)^b	10.79***
	$GPTS^{REF}$	27.3 (10.0)^a	29.5 (11.0)^{a,b}	1.67	32.5 (15.3)^b	3.78*
	$GPTS^{PERS}$	21.5 (8.6)^a	22.5 (8.1)^a	0.94	32.2 (16.5)^b	20.16***
MI - Ratings	$GPTS^{TOTAL}$	50.7 (17.0)^a	67.1 (21.2)^b	6.94***	64.7 (30.4)^b	20.51***
	$GPTS^{REF}$	30.0 (10.8)^a	38.3 (11.8)^b	6.68***	32.5 (15.3)^a	19.04***
	$GPTS^{PERS}$	21.7 (7.8)^a	28.9 (11.2)^b	5.99***	32.2 (16.5)^b	21.52***
	Mini-SPIN	6.3 (3.0)	6.0 (3.3)	-0.65	--	
	$CBQp^{TOTAL}$	43.2 (6.1)	43.1 (4.9)	-0.16	--	

Note. STAI-S = State Trait Anxiety Inventory-S. $GPTS^{TOTAL}$ = Green Paranoid Thoughts Scale-Past Month Total Score. $GPTS^{REF}$ = Green Paranoid Thoughts Scale- Past Month Ideas of Reference Subscale. $GPTS^{PERS}$ = Green Paranoid Thoughts Scale-Past Month Persecutory Ideation Subscale. Mini-SPIN = Mini Social Inventory. $CBQp^{TOTAL}$ = Cognitive Biases Questionnaire for Psychosis Total Score. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Groups within rows that have different superscripts are significantly different at a Tukey correction threshold of $p < .05$.

Effect of Emotional Fear Manipulation.

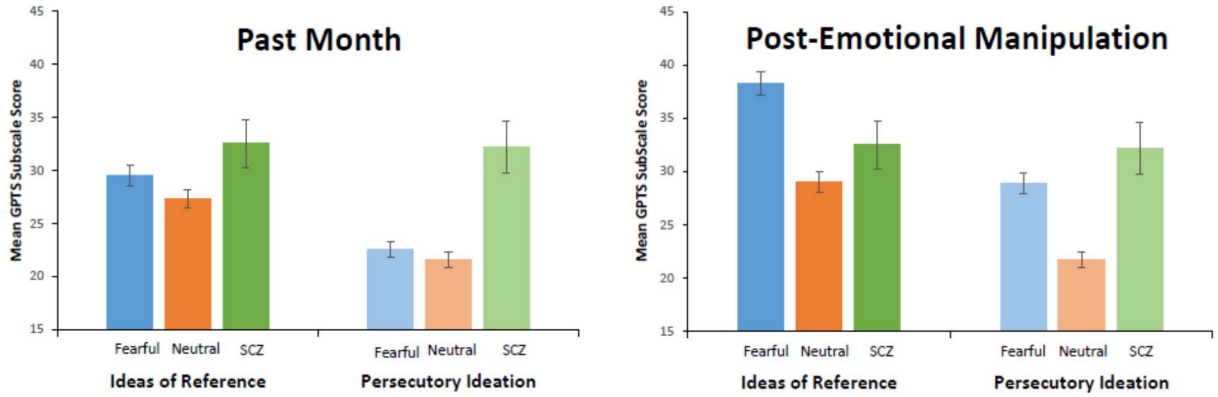
The mixed-ANOVA showed that the interaction of time (post-induction induction rating, baseline rating) the emotional condition (fearful, neutral) reported significantly different amounts of GPTS ideas of reference, $F(1,250) = 49.51$, $p > .001$, and GPTS persecutory ideation, $F(1,250) = 43.91$, $p > .001$. The neutral emotion induction group reported significantly elevated post-induction GPTS ideas of reference (M= 1.67, SD = 7.06; $t(130) = 2.71$, $p = .008$ CI [.45, 2.90]), but did not report elevated post-induction GPTS persecutory ideation (M = .14, SD = 5.46; $t(130) = .292$, $p = .77$ CI [.84, 1.08]) compared with baseline GPTS ideas of reference and persecutory ideation. The fearful emotion induction reported both significantly elevated post-induction GPTS ideas of reference (M = 8.92, SD = 9.23; $t(120) = 10.63$, $p < .001$ CI [7.26, 10.58]) and post-induction GPTS persecutory ideation (M = 6.41, SD = 9.22; $t(120) = 7.65$, $p < .001$, [CI 4.75, 8.07] compared with the post-induction GPTS ideas of reference and persecutory ideation for the neutral emotion induction group.

Baseline GPTS differences between fearful, neutral and SCZ groups. One-way ANOVA showed that the fearful, neutral, and SCZ groups reported significantly different levels of baseline GPTS ideas of reference, $F(2,295) = 3.78$, $p = .02$, and baseline GPTS persecutory ideation, $F(2,295) = 20.16$, $p < .001$. Tukey's HSD post-hoc analysis showed that the SCZ group reported significantly higher levels of baseline GPTS persecutory ideation than both the fear-induced group, $p < .001$, CI [5.57, 13.71], and the neutral group, $p < .001$, CI [6.56, 14.65]. The SCZ group also reported significantly elevated baseline GPTS ideas of reference compared with the neutral group, $p = .02$, CI [.618, 9.77], only. The fear-induced and neutral groups reported similar levels of baseline GPTS ideas of reference, $p = .27$, CI [1.16, 5.57] and baseline GPTS persecutory ideation, $p = .72$, CI [1.99, 3.97]. Taken together, these data suggest that the two

emotion induced groups did not differ in GPTS at baseline, but had lower levels of baseline GPTS persecutory ideation and ideas of reference than SCZ.

Post-induction GPTS differences between fearful, neutral, and SCZ groups. One-way ANOVA tests showed that the fearful, neutral, and SCZ groups reported significantly different GPTS ideas of reference, $F(2,296) = 19.04$, $p < .001$, and GPTS persecutory ideation, $F(2,295) = 20.16$, $p < .001$ (post-induction GPTS for fearful and neutral groups compared with baseline GPTS for SCZ). Tukey's HSD post-hoc analyses showed that participants in the fearful group reported both significantly increased post-induction GPTS ideas of reference, $p < .001$, CI [5.73, 12.83], and post-induction GPTS persecutory ideation, $p < .001$, CI [3.93, 10.42], compared with the neutral condition. Participants in the neutral condition reported significantly less post-induction GPTS persecutory ideation than SCZ baseline GPTS persecutory ideation, $p < .001$, CI [-14.89, -6.05]. The fearful group reported similar amounts of post-induction GPTS persecutory ideation compared with SCZ baseline GPTS persecutory ideation, $p = .19$, CI [-7.76, 1.17], but significantly higher levels of post-induction GPTS ideas of reference than SCZ baseline GPTS ideas of reference, $p = .02$, CI [0.87, 10.65] (Figure 1).

Figure 1. One-way ANOVA Results for Green Paranoid Thoughts Scale Subscales- Ideas of Reference and Persecutory ideation by condition in the undergraduate sample compared to the schizophrenia sample's monthly ratings. Reported are means of each group and bars represent standard error. Left panel: Monthly GPTS ratings for each subscale in fearful, neutral and schizophrenia groups. Right panel: Post- Emotional Manipulation ratings for each subscale.



Effect of Emotional Manipulation and Social Anxiety.

Baseline GPTS differences between high SA, low SA, and SCZ groups. One-way ANOVA showed that undergraduates high and low on SA and stratified by condition reported significantly different levels of baseline GPTS ideas of reference, $F(4,292) = 4.76$, $p < .001$, and baseline GPTS persecutory ideation, $F(4,292) = 10.57$, $p < .001$. Tukey's HSD post-hoc analysis showed that baseline GPTS ideas of reference and persecutory ideation was not significantly different between the high and low SA groups stratified by fearful or neutral manipulation (*ps* > .46 for all). Both high SA groups, regardless of condition, and SCZ reported similar levels of baseline GPTS ideas of reference, *ps* > .40. However, all SA groups reported significantly less baseline GPTS persecutory ideation compared with SCZ, $p < .001$ (Table 2).

Post-induction GPTS differences between high SA, low SA, and SCZ groups. One-way ANOVA tests showed that groups high and low on SA and stratified by condition reported

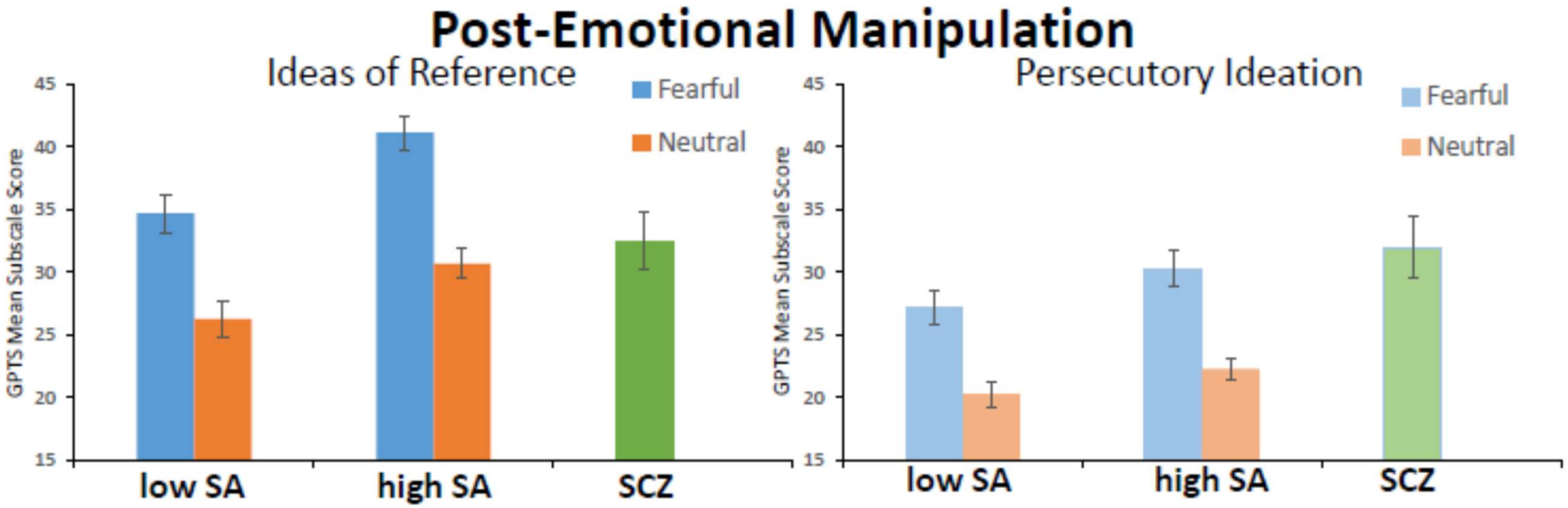
significantly different levels of post-induction GPTS ideas of reference, $F(4,292) = 13.58$, $p < .001$, and post-induction GPTS persecutory ideation, $F(4,292) = 12.37$ $p < .001$. Tukey's HSD post-hoc analysis showed that both the low and high SA participants who completed the fearful induction reported significantly increased post-induction GPTS ideas of reference and persecutory ideation compared with the neutral condition ($ps < .026$). In the neutral condition, low SA, reported significantly lower post-induction GPTS persecutory ideation than SCZ baseline GPTS persecutory ideation ($p = .07$, CI [-0.33, 12.78]), but not post-induction GPTS ideas of reference ($p = .07$, CI [-0.33, 12.78]) compared with SCZ baseline GPTS ideas of reference. The high SA group, regardless of condition, reported similar levels of post-induction GPTS ideas of reference compared with SCZ baseline GPTS ideas of reference ($p = .92$, CI [-4.17, 7.79]) and significantly lower post-induction GPTS persecutory ideation compared with SCZ baseline GPTS persecutory ideation ($p < .001$, CI [4.35, 15.40]). However, in the fear-induced condition, post-induction GPTS persecutory ideation scores were comparable to SCZ for both, high SA: $p = .892$, CI [-3.77, 7.54]; and low SA: $p = .154$, CI [-1.02, 11.09]. Post-induction GPTS ideas of reference in the fear-induced condition of low SA was similar to SCZ baseline GPTS ideas of reference, $p = .89$, CI [-8.77, 4.34], but significantly higher in the SA group, $p < .001$, CI [-14.762, -2.52] (Figure 2)

Table 2. Participant Means (standard deviations) and all group comparisons on all measures. The undergraduate sample split by low social anxiety (low SA; < 6) and high social anxiety (High SA; ≥6 on the Mini-SPIN).

		Undergraduate Sample					
		Low SA		High SA		SCZ	
Scales		Neutral	Fearful	Neutral	Fearful		*F*
Mean (SD)		(*n* = 51)	(*n* = 51)	(*n* = 79)	(*n* = 70)	(n = 46)	*(all groups)*
	STAI-S	38.0 (8.9)^{a}	37.6 (9.6)^{a}	40.6 (10.3)^{a,b}	44.2 (10.1)^{b}	38.8 (12.4)^{a}	4.397**
Monthly Ratings	GPTS^{TOTAL}	45.6 (17.8)^{a}	47.7 (15.8)^{a}	50.1 (16.5)^{a,b}	55.2 (18.3)^{b,c}	64.7 (30.4)^{c}	7.13***
	GPTS^{REF}	24.9 (9.7)^{a}	26.3 (9.4)^{a}	28.8 (10.0)^{b}	31.9 (11.5)^{b}	32.5 (15.3)^{b}	4.76**
	GPTS^{PERS}	20.6 (9.0)^{a}	21.4 (7.1)^{a}	22.0 (8.3)^{a}	23.3 (8.7)^{a}	32.2 (16.5)^{b}	10.57***
MI - Ratings	GPTS^{TOTAL}	46.6 (16.6)^{a}	61.8 (19.0) ^{b,c}	53.0 (16.7) ^{a,b}	71.4 (21.8)^{c}	64.7 (30.4)^{c}	13.31***
	GPTS^{REF}	26.3 (10.5)^{a}	37.7 (10.9)^{b}	30.7 (10.7)^{a,b}	41.1 (11.7)^{c}	32.5 (15.3)^{a,b}	13.58***
	GPTS^{PERS}	20.3 (7.3)^{a}	27.1 (9.8)^{b,c}	22.3 (7.7)^{a,c}	30.3 (12.1)^{b}	32.2 (16.5)^{b}	12.37***
	Mini-SPIN	3.3 (1.5)^{a}	2.8 (1.6)^{a}	8.3 (1.7)^{b}	8.5 (1.7)^{b}	--	223.10**
	CBQp^{TOTAL}	42.0 (7.0)^{a}	41.7 (4.0)^{a}	44.0 (5.3)^{a}	44.1 (5.3)^{a}	--	3.38*

Note. STAI-S = State Trait Anxiety Inventory-S. GPTS^{TOTAL} = Green Paranoid Thoughts Scale-Past Month Total Score. GPTS^{REF} = Green Paranoid Thoughts Scale- Past Month Ideas of Reference Subscale. GPTS^{PERS} = Green Paranoid Thoughts Scale-Past Month Persecutory Ideation Subscale. Mini-SPIN = Mini Social Inventory. CBQp^{TOTAL} = Cognitive Biases Questionnaire for Psychosis Total Score. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Groups within rows that have different superscripts those groups are significantly different at a Tukey correction threshold of $p < .05$.

Figure 2. Post- Emotional Manipulation one-way ANOVA Results for each Green Paranoid Thoughts Scale Subscale- Ideas of Reference and Persecutory ideation by condition, with the undergraduate sample split by high social anxiety (SA; ≥6 on the Mini-SPIN) and low social anxiety (HC; < 6), compared to the schizophrenia sample's monthly ratings for each subscale. Reported are means of each group and bars represent standard error. The significant group differences are reported in Table 2. Right panel: Ideas of reference scores for each subscale condition (neutral, fearful) and the monthly schizophrenia scores. Left panel: Persecutory ideation scores for each subscale condition (neutral, fearful) and the monthly schizophrenia scores.



Effect of Fear Manipulation and Cognitive Biases.

Baseline GPTS differences between high CB, low CB, and SCZ groups. One-way ANOVA showed that groups high and low in CB and stratified by condition reported significantly different levels of baseline GPTS ideas of reference, $F(4,293) = 8.36$, $p < .001$, and baseline GPTS persecutory ideation, $F(4,293) = 15.60$, $p < .001$. However, Tukey's HSD post-hoc analysis showed that there were no significant baseline GPTS differences (ideas of reference and persecutory ideation) between the CB groups stratified by fearful or neutral condition (*ps* > .50). Both the high CB fearful and neutral groups reported significantly higher baseline GPTS persecutory ideation scores than the low CB fearful and neutral groups, *ps* < .04. The high CB fearful and neutral groups reported similar levels of baseline GPTS ideas of reference compared with SCZ, fearful: $p = .002$, CI [1.13, 10.50]; neutral: $p = .001$, CI [2.22, 12.69]. The low CB neutral group reported significantly less baseline GPTS ideas of reference compared with SCZ ($p < .001$, CI [3.22, 14.55]). The low CB fearful condition did not report significantly different baseline GPTS ideas of reference compared with SCZ, $p = .07$, CI [9.58, .18]. SCZ reported significantly higher baseline GPTS persecutory ideation compared with all other groups, *p*s < .002 (Table 3).

Post-induction GPTS differences between high CB, low CB, and SCZ groups. One-way ANOVAs showed that groups high and low in CB and stratified by condition reported significantly different levels of both post-induction GPTS ideas of reference, $F(4,293) = 13.610$, $p < .001$, and post-induction GPTS persecutory ideation, $F(4,293) = 14.24$, $p < .001$. Tukey's HSD post-hoc analysis showed that both the low CB and high CB groups in the fearful condition reported significantly increased post-induction GPTS ideas of reference and persecutory ideation relative to the neutral condition (*ps* < .01). Within the neutral condition, the low CB group

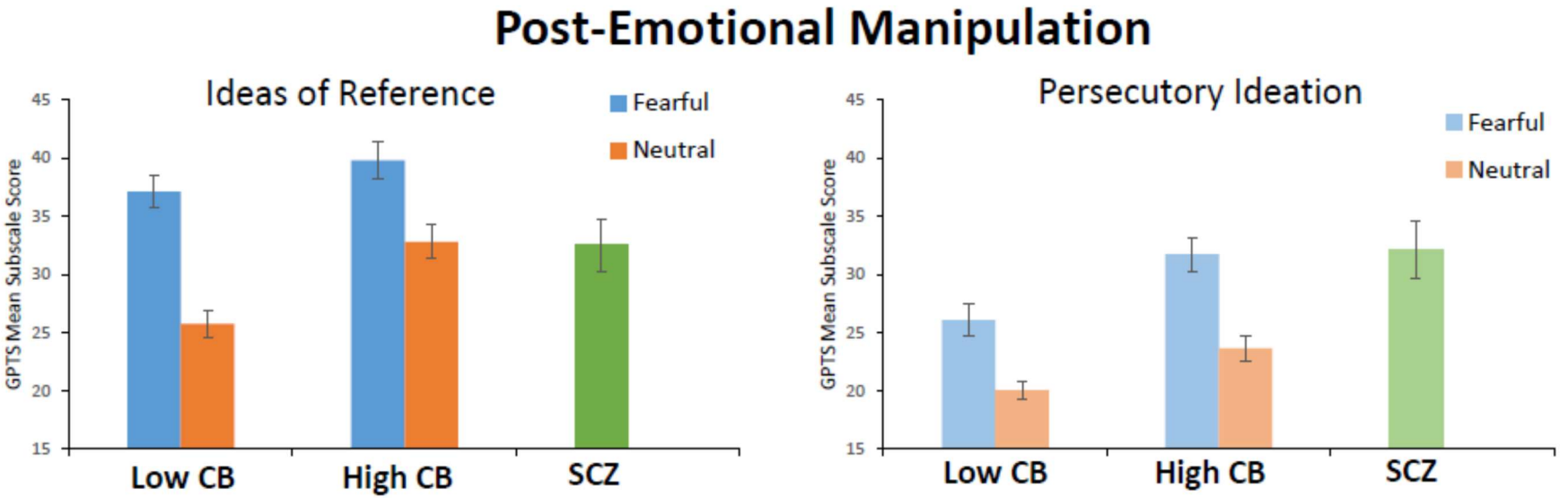
reported significantly less post-induction GPTS ideas of reference compared with SCZ baseline GPTS ideas of reference, p = .022, CI [.65, 12.8], while the high CB group reported similar levels of post-induction GPTS ideas of reference to SCZ baseline GPTS ideas of reference, p = 1.0, CI [6.60, 6.02]. Both groups (low CB, high CB) in the neutral condition reported significantly less post-induction GPTS persecutory ideation than SCZ baseline GPTS persecutory ideation, *ps* > 002. Within the fear-induced condition, both the low and high CB groups reported similar levels of post-induction GPTS ideas of reference, *ps* > .30. However, only the high CB group in the fear-induced condition reported post-induction GPTS persecutory ideation comparable to SCZ, p = 1.0, CI [5.36, 6.19] (Figure 3).

Table 3. Participant Means (standard deviations) and all group comparisons on all measures. The undergraduate sample split by low cognitive biases (Low CB) and high cognitive biases (high CB) using the sample median.

		Undergraduate Sample					
		Low CB		High CB		SCZ	
Scales		Neutral	Fearful	Neutral	Fearful		*F*
Mean (SD)		(*n* = 71)	(*n* =60)	(*n* = 60)	(*n* = 61)	(n = 46)	
	STAI-S	37.8 (9.2)^{a}	39.2 (8.9)^{a}	41.5 (10.3)^{a,b}	43.8 (11.3)^{b}	38.8 (12.4)^{a,b}	3.33*
Monthly Ratings	GPTS^{TOTAL}	42.5 (12.4)^{a}	46.8 (14.6)^{a}	56.4 (18.9)^{b}	57.2 (18.9)^{b}	64.7 (30.4)^{b}	12.37***
	GPTS^{REF}	23.6 (8.0)^{a}	26.8 (9.8)^{a}	31.7 (10.3)^{b}	32.2 (11.4)^{b}	32.5 (15.3)^{b}	8.37***
	GPTS^{PERS}	18.9 (5.5)^{a}	20.0 (6.1)^{a}	24.7 (10.3)^{b}	25.0 (9.1)^{b}	32.2 (16.5)^{c}	15.60***
MI - Ratings	GPTS^{TOTAL}	45.8 (14.9)^{a}	63.2 (19.6)^{b,c}	56.5 (17.7)^{b}	71.5 (21.9)^{c}	64.7 (30.4)^{b,c}	14.24***
	GPTS^{REF}	25.8 (9.2)^{a}	37.1 (11.0)^{b,c}	32.8 (11.3)^{b}	39.8 (12.4)^{c}	32.5 (15.3)^{b}	13.61***
	GPTS^{PERS}	20.0 (6.7)^{a}	26.1 (10.5)^{b}	23.7 (8.7)^{a,b}	31.7 (11.3)^{c}	32.2 (16.5)^{c}	14.30***
	MI- Empathy	32.5 (7.2)^{a}	34.0 (7.0)^{b}	33.0 (6.0)^{a,b}	36.7 (6.0)^{c}	--	5.07**
	Mini-SPIN	5.7 (2.8)^{a,c}	5.3 (3.2)^{a}	7.2 (3.0)^{b}	6.9 (3.1)^{b,c}	--	5.80**
	CBQp^{TOTAL}	39.0 (2.7)^{a}	39.2 (2.1)^{a}	48.3 (5.0)^{b}	46.9 (3.8)^{b}	--	124.45***

Note. STAI-S = State Trait Anxiety Inventory-S. GPTS^{TOTAL} = Green Paranoid Thoughts Scale-Past Month Total Score. GPTS^{REF} = Green Paranoid Thoughts Scale- Past Month Ideas of Reference Subscale. GPTS^{PERS} = Green Paranoid Thoughts Scale-Past Month Persecutory Ideation Subscale. Mini-SPIN = Mini Social Inventory. CBQp^{TOTAL} = Cognitive Biases Questionnaire for Psychosis Total Score. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Groups within rows that have different superscripts those groups are significantly different at a Tukey correction threshold of $p < .05$.

Figure 3. Post- Emotional Manipulation one-way ANOVA Results for each Green Paranoid Thoughts Scale Subscale- Ideas of Reference and Persecutory ideation by condition, with the undergraduate sample split by low cognitive biases and high cognitive biases using the sample median, compared to the schizophrenia sample's monthly ratings for each subscale. Reported are means of each group and bars represent standard error. The significant group differences are reported in Table 3. Left panel: Ideas of reference scores for each subscale condition (neutral, fearful) and the monthly schizophrenia scores. Right panel: Persecutory ideation scores for each subscale condition (neutral, fearful) and the monthly schizophrenia scores.



Chapter 5

Discussion

The goal of this study was to shed light on causal mechanisms that contribute to increases in paranoid ideation. This study provides clear evidence that ideas of reference and persecutory thoughts are not confined to individuals diagnosed with psychotic disorders and can be experimentally enhanced in an undergraduate population utilizing a fear mood induction.

Specifically, undergraduates who completed a fearful mood induction reported heightened levels of persecutory thoughts that were comparable to people with schizophrenia, along with higher levels of self-referential ideas than people with schizophrenia. Further, both social anxiety and cognitive reasoning biases were related to enhanced self-referential and persecutory ideation, suggesting that both are contributing mechanisms to paranoid in addition to fear. Since there are only a few studies that compare manipulated levels of paranoid ideation to individuals diagnosed with schizophrenia, this study makes a significant contribution to the understanding of the etiology of paranoid ideation. The contributions that fear, social anxiety and cognitive reasoning biases may make to development in paranoid thoughts are further discussed below.

The Contributing Role of Fearful Emotion Induction

The present study provides experimental evidence that levels of both persecutory ideation and self-referential thinking can be manipulated in undergraduate populations. While, previous efforts to manipulate paranoid ideation have yielded varied results

(Freeman, Garety, Bebbington, Slater, et al., 2005; Green et al., 2011). We believe the past null results were likely due to the fact that paranoia was treated as unidimensional construct and emotion was not included as a factor in their manipulation, where loud noises or a one-way mirror alone was used to manipulate paranoia (Keefe & Warman, 2011; Moritz et al., 2010). In the current study, not only were robust emotion manipulation methods used, but multiple facets of the fear-inducing narrative may have also contributed to heightened paranoid ideation, such as the inclusion of strange people and places, strange behaviors that can be interpreted ambiguously, and social and physical threats. Thus, the current findings suggest that fear most likely plays a causal role in the momentary experience of persecutory thoughts.

The Contributing Role of Social Anxiety

Social anxiety group differences. In comparison to the schizophrenia sample, undergraduates with heightened levels of social anxiety (Mini-SPIN score > 6; Connor et al., 2001) reported similar levels of baseline self-referential ideation and lower baseline levels of persecutory ideation. This finding supports Freeman's (2008) threat-anticipation model in which the experience of ideas of reference are shared by both social anxiety and schizophrenia (e.g., fear of negative evaluation by others), but persecutory ideation is limited to schizophrenia. Thus, these data suggest that heightened levels of persecutory ideation distinguish people with psychosis from socially anxious samples.

Effects of fear induction on social anxiety. In-line with cognitive models of social anxiety, which purport that negative emotions along with ideas of reference and self-consciousness perpetuate social anxiety, participants in the high SA group likely interpreted the fearful story and the one-way mirror as more threatening compared with the low SA group (Beard & Amir, 2009; Clark & Wells, 1995). In particular, the one-way mirror likely enhanced

ideas of reference and levels of self-consciousness (e.g., someone is evaluating my performance) (citation). Moreover, theoretical models of paranoia propose that current negative emotion, interpersonal sensitivities, and anxiety share common pathways that are instrumental factors in the development of persecutory ideation (e.g., Freeman et al., 2002). For individuals high in social anxiety, it is possible that the acute fear and increased self-consciousness elicited by the induction led to similar levels of persecutory thoughts and higher levels of self-referential ideation compared with the schizophrenia sample. Taken together, when faced with a fearful social situation individuals who report greater social anxieties experience similar amounts of momentary persecutory ideation compared with people with schizophrenia.

The Contributing Role of Cognitive Biases

Baseline cognitive biases group differences. Cognitive models of paranoid ideation suggest that cognitive biases influence the development of persecutory thoughts (e.g., Freeman, Pugh, et al., 2008). In the current study, high CB groups in both the fearful and neutral conditions reported similar levels of baseline self-referential ideation compared with the schizophrenia group. However, all groups were distinguished by persecutory thoughts—the low CB reporting the least, the high CB group, and people with schizophrenia reporting the highest levels. Thus, a higher level of cognitive biases in general (i.e., JTC, dichotomous thinking, emotional reasoning, etc.) in this undergraduate sample may contribute to persecutory ideation (Fine, Gardner, Craigie, & Gold, 2007; Warman & Martin, 2006).

Effects of fear induction on cognitive biases. As expected, cognitive biases likely contribute to self-referential and persecutory thoughts, as undergraduates' who completed the fearful induction and reported high levels of cognitive biases also reported levels of persecutory ideation equivalent to SCZ. It is possible that cognitive biases were influenced by the ambiguity

of the experiment environment. The presence of the one-way mirror may have invoked the possibility that someone is watching you, and heightened pre-existing levels of cognitive biases, along with the fearful induction, likely contributed to increased levels of self-referential thoughts comparable to the schizophrenia group. These data suggest that, self-referential ideation is influenced more by the environment, rather than biased reasoning (e.g., Bentall, Kinderman, & Kaney, 1994; Freeman, Gittins, et al., 2008). Thus, both acute fear and environmental ambiguity likely play a causal role in the momentary experience of persecutory thoughts, which may be further enhanced by heightened levels of pre-existing cognitive biases (Freeman et al., 2002).

The involvement of cognitive biases in the development of paranoid ideation and delusional content is especially relevant to therapeutic interventions. Cognitive behavioral therapy challenges biased thoughts and how people evaluate and use evidence to make decisions or form beliefs, and emotional reappraisal strategies are typically helpful in reducing paranoid thoughts in response to neutral stimuli (Westermann, Kesting, & Lincoln, 2012). New treatment methods for psychotic disorders such as cognitive behavioral therapy for psychosis have emphasized challenging biased cognitive reasoning and reality testing for delusional content, and the current findings provide experimental evidence for these types of treatment (e.g., Beck & Rector, 2000; Freeman & Garety, 1999; Startup, Freeman, & Garety, 2007; Turkington, Kingdon, & Turner, 2002).

Limitations

We had limitations in this study based on our sample characteristics. First, the individuals with schizophrenia and undergraduate samples were not matched on age, as SCZ data were collected from previous studies (participant mean age was 41.2) while the average age of UM subject pool participants is 19. This is problematic because the groups' differences could be

due to age. However, our goal in including clinically stable schizophrenics was to have a reference point to compare to our manipulated variables and this was not possible to do and match with age. Further, what was remarkable was not how they differed, rather how we could make them respond similarly, despite differences in their age and clinical status. In addition, this study relied on self-report data and the data from the schizophrenia group was collected under fairly different circumstances and at a different time compared to the undergraduate samples. Behavioral or clinician rated measures of paranoid ideation, social anxiety and cognitive biases would decrease the possibility that findings could be accounted for by method-related factors. While subjecting participants diagnosed with schizophrenia to a situation that would increase their symptoms, in future studies a neutral analogous testing environment to that experienced by the non-clinical group should be utilized. Despite these limitations, the current results contribute to the literature by providing evidence in a large sample of participants, acute fear can lead to clinical levels of ideas of reference and persecutory thoughts and that these findings are modified by levels of social anxiety and cognitive bias.

Appendix 1

HYPOTHETICAL SITUATION

1. You wake up and head to the bathroom to brush your teeth. You spend some time getting ready and you place the dirty clothes in the laundry hamper before heading downstairs. You pull out a bowl from the cupboard and make yourself a bowl of cereal. As you're finishing up your breakfast the phone rings. The dry cleaner is telling you that your things are ready to be picked up. After putting your bowl and spoon in the dishwasher you grab your keys, cell phone, wallet, and head out to the dry cleaner.

2. The bus stop is only a couple of blocks away and it will not take you long to get there. As you walk away from your porch you remember that you also need to get a package of printer paper from the hardware store in order to hang things. You can do that afterward. When you reach the bus stop you take a look at the schedule to see when the next one will be coming by. It looks like it'll take about 8 minutes. That won't be long.

3. You were just starting to lose track of time when the number 43 bus pulls up. As you deposit your money into the machine on the bus you notice that the driver seems very focused on the road. Looking down the bus, there aren't many people—plenty of open seats. You make your way down to an open one where the seats are elevated. It is close to the rear door making it a quick exit once you reach your destination.

4. Seven stops later you get to Second Street, where the dry cleaner is. There is a little store to down the street that might carry printer paper. Since you don't want to carry around your dry cleaning you head there immediately. As you enter, a quiet bell rings and a clerk asks if you need help finding anything. You tell them you are looking for printer paper and are quickly pointed to their location, rung up, and politely thanked. You head back to the dry cleaners', hand them your claim receipt, and your belongings passed over the counter to you. Being careful not to wrinkle them, you walk back to the bus stop and prepare to head home.

5. It seems like the bus pulls up slightly quicker than the one by your house. You head on board, take a seat, and gaze out the window, being careful not to wrinkle your freshly dry cleaned clothes. Once you get home you unlock the door and place your dry cleaning in the closet.

Appendix 2

HYPOTHETICAL SITUATION

1. It is Friday afternoon over the summer and you have plans to go to a friend's house and watch movies. The day is beautiful, warm with a cool breeze, so you head off on the 20 minute walk to their house. Lots of people are out enjoying the day, pushing strollers and jogging, and lots of children playing at the park between your houses. As you are walking you keep felling like people keep looking at you, but you can't tell because they are wearing sunglass. You check in the mirror to see if something is on your face, but nothing is there. Before you know it you're at your friend's house.

2. You knock on the door and your friend greets you. You sit down on the backyard patio for a short while, chatting and catching up on what you have done over the week. After a bit, you two decide to head inside and start to watch television.

3. Your friends invited another person over from her math class. The person keeps looking at you awkwardly and you can't tell if it's because they're awkward or they don't like you. You notice them whisper to one of your friends a few times and you can't tell if they are looking at you. Time passes quickly and suddenly it's already after midnight. You think that perhaps it's a little too late to be walking home alone so you call for a cab. The dispatcher informs you that you'll have to wait at least 45 minutes. Your think about waiting, but you can tell your friend is tired and it takes less time to walk home. As you begin walking down the street you notice that the streets are not well lit. You feel a little isolated and uncomfortable, but you tell yourself that there is nothing to be worried about.

4. It's very quiet outside but you feel people's presence as you walk by all the houses with lit windows. You reach the park between your houses when you notice two silhouettes in dark sweaters on a bench smoking cigarettes. You initially feel startled but tell yourself that it's nothing to be concerned about and continue walking. As you walk past you notice that they stand up. At the end of the block you notice that the people behind you seem to be getting closer, with the footsteps steadily approaching from behind. You cross the street to walk on the opposite side of the road. You hear soft whispers as one of the men crosses as well.

5. You try not to think about it and begin walking more quickly. You round the corner and look behind you. You don't see anyone around, but you can't shake the feeling that someone is behind you.

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