Conspiracy suspicions as a proxy for beliefs in conspiracy theories: Implications for theory and measurement

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Abstract

Research on the psychology of conspiracy theories has shown recent steps toward a standardization of measures. The present article seeks to continue that trend by presenting the Flexible Inventory of Conspiracy Suspicions (FICS), a questionnaire template that can be adapted to measure suspicions of a conspiracy around nearly any topic of public interest. Compared to conspiracy belief measures that ask about specific theories on a given topic, the FICS is worded in such a way as to provide relatively stable validity across time and cultural context. Using a hybrid approach incorporating classical test theory and Rasch scaling, three questionnaire studies on Mechanical Turk demonstrate the validity of the FICS in measuring conspiracy suspicions regarding 9/11, vaccine safety, and U.S. elections, with good psychometric properties in most situations. However, the utility of the FICS is limited in the case of climate change due to the existence of two opposing conspiracy theories that share essentially no common assumptions ("climate change is a hoax" versus "there is a conspiracy to make people believe that climate change is a hoax"). The results indicate that the FICS is a reliable and valid measure of conspiracy suspicions within certain parameters, and suggest a three-level model that differentiates general conspiracist ideation, relatively vague conspiracy suspicions, and relatively specific conspiracy beliefs.

In the past ten years, conspiracy theories have become the subject of a good deal of psychological research. Conspiracy theories, whether true or false, can be productively defined as proposed plots by multiple powerful agents to act covertly in the pursuit of a sinister goal (Wood, Douglas, & Sutton, 2012). Psychologists have investigated the antecedents (e.g. Abalakina-Paap, Stephan, Craig, & Gregory, 1999), consequences (e,g, Jolley & Douglas, 2014a), and structure (e.g. Wood et al., 2012) of beliefs that malevolent conspiracies lie behind certain world events. The gradual accumulation of evidence has led to some debate surrounding measurement: how can we best measure beliefs in conspiracy theories? Some recent innovations in the field aside (e.g. Raab, Ortlieb, Auer, Guthmann, & Carbon, 2013), the most common approach to measuring conspiracy mentality or conspiracist ideation – an overall tendency to believe or disbelieve conspiracy theories (e.g. Abalakina-Paap et al., 1999; Douglas & Sutton, 2011; Swami et al., 2011) – uses questionnaires that ask participants to rate their agreement with a list of statements. These statements are either specific conspiracy theories, such as "The U.N. is trying to take control of the United States" (Abalakina-Paap, Stephan, Craig, & Gregory, 1999, p. 641), or statements of more generally conspiracy-minded worldviews, such as "I think there are secret organizations that greatly influence political decisions" (Bruder, Haffke, Neave, Nouripanah, & Imhoff, 2013). The more general style of questionnaire, exemplified by the Generic Conspiracist Beliefs scale (GCB; Brotherton, French, & Pickering, 2013) and the Conspiracy Mentality Questionnaire (CMQ; Bruder et al., 2013), has certain advantages over questionnaires which ask about specific theories. Primarily, generic scales like the GCB and CMQ are less bound by cultural and temporal context than specifically-worded questionnaires are. For example, the Beliefs in Conspiracy Theories Inventory (BCTI; Swami, Chamorro-Premuzic, & Furnham, 2010) asks about topics like Area 51 and the Oklahoma City bombing, knowledge of which is likely to vary considerably over time and across different cultures.

It is important to explore the prevalence, structure, and style of beliefs in conspiracy theories, as there is reason to believe that conspiracy belief is a meaningfully distinct construct from seemingly related concepts such as paranormal belief, delusional thinking, schizotypy, and tolerance for ambiguity. It is true that paranormal beliefs correlate with beliefs in conspiracy theories and may share some similar cognitive roots, such as trait schizotypy (Darwin, Neave, & Holmes, 2011; Drinkwater, Dagnall, & Parker, 2012; Wolfradt, Oubaid, Straube, Bischoff, & Mischo, 1999). However, the effect sizes tend to be quite discrepant – paranormal beliefs show zero-order correlations of about .60 with schizotypy (Genovese, 2005; Hergovich, Schott, & Arendasy, 2008), while regression models incorporating the various subcomponents of schizotypy together explain less than 15% of the variance in conspiracy beliefs (Barron, Morgan, Towell, Altemeyer, & Swami, 2014). The magnitude of the correlation between conspiracy beliefs and delusional ideation is unclear, but the effect does not appear to be large; studies show it ranging from .27 (Dagnall et al., 2015) to .48 (Brotheron et al., 2013).

Ambiguity is an important concept in the formation of both paranormal beliefs and conspiracy beliefs. Conspiracy theories thrive by leaving the exact details of perpetrators, motives, and methods relatively ambiguous (Clarke, 2007; Dean, 2002), and paranormal belief is a method of resolving ambiguity (Rense & Houran, 1998). A high tolerance for ambiguity is associated with more paranormal experiences, and therefore more belief. On the other hand, a low tolerance for ambiguity leads to a greater fear of the paranormal and fearful attribution of ambiguous stimuli to paranormal causes, also resulting in higher paranormal belief. While the relationship may be curvilinear, the overall correlation between ambiguity tolerance and general paranormal belief tends to be negative (Houran & Williams, 1998; Rense & Houran, 1998, 1999). Likewise, magical thinking is more pronounced among those with low ambiguity tolerance (Keinan, 1994). However, there is no current evidence

suggesting that the relationship between conspiracy theory belief and tolerance of ambiguity follows this pattern; Abalakina-Paap et al. (1999) found no correlation between beliefs in conspiracy theories and ambiguity tolerance, and the need for cognitive closure, a related variable, also has no consistent relationship with conspiracy belief (Leman & Cinnirella, 2013). While neither of these investigations looked for a curvilinear relationship or built complex process models in the same manner as the literature on paranormal belief, the lack of a zero-order correlation in both cases suggests that tolerance of ambiguity and allied constructs may have differing influences on paranormal and conspiracy beliefs. Paranormal beliefs can begin as sense-making attributions that help to reduce the fear generated by ambiguous experiences (Houran & Williams, 1998), but conspiracy beliefs seem to exist in a state of ongoing ambiguity in which many different possible explanations are simultaneously held and considered (Wood et al., 2012; Wood & Douglas, 2013, 2015). Moreover, while paranormal beliefs are thought to arise initially in the absence of a conventional explanation (Lange & Houran, 1998), conspiracy theories usually explicitly oppose existing conventional explanations, positing that they are deliberate lies (Wood et al., 2012). Finally, conspiracy theories are laden with ideological, interpersonal, and intergroup dynamics in a way that paranormal beliefs generally are not (e.g. Grzesiak-Feldman, 2015; Uscinski & Parent, 2014). Research on conspiracy mentality, then, seems to suggest that it is a meaningfully distinct construct from other forms of unusual belief.

Of course, researchers are not only interested in general conspiracy mentality. Just as specific paranormal beliefs (psychic abilities, poltergeists, etc.) are often the target of investigations, conspiracy theories about specific topics are sometimes of particular interest. For instance, recent studies have looked specifically at climate change (Jolley & Douglas, 2014a), the death of Princess Diana (Douglas & Sutton, 2008), the 9/11 attacks (Swami et al., 2010), or HIV/AIDS (Bogart & Thorburn, 2005). Douglas and Sutton (2008) measured

beliefs in conspiracy theories about the death of Princess Diana using items like "Diana faked her own death so she and Dodi could retreat into isolation" or "Diana had to die to prevent an Arab Muslim from marrying into the British royal family." Likewise, the 9/11 conspiracy scale used by Swami et al. (2010) asked about a variety of different 9/11 conspiracy theories, including the idea that the Twin Towers were destroyed by controlled demolition charges and that the Pentagon was hit by a missile rather than a passenger aircraft. In general, then, conspiracy beliefs about a particular subject (like 9/11, Diana, HIV, etc.) are measured by asking about a variety of specific theories on that subject.

Yet this method of measuring conspiracy beliefs about particular topics is problematic. It suffers from the same issues that plague specifically-worded scales of general conspiracy thinking. As Brotherton et al. (2013) and Bruder et al. (2013) have argued, the content of conspiracy theories can shift dramatically across time and cultural contexts: an American conspiracy theorist from 1975 might have very different beliefs compared to an Egyptian conspiracy theorist from 2015. This is trivially true for conspiracy thinking in general, but it is also true for theories about specific topics. Just as specifically-worded measures of general conspiracy thinking may see dramatic changes in validity over time and space, I argue that the same is true of specifically-worded measures of conspiracy theories about particular topics.

Consider a hypothetical measure of 9/11 conspiracy theories developed in 2005. The researchers constructing this scale would most likely include the conspiracy theories that were being widely discussed at the time, including specific statements concerning how the attacks were carried out and covered up. Two likely items would be the idea that the aircraft that hit the Twin Towers had concealed missiles on board (prominently featured in the Internet documentary *Loose Change*; Rowe, Bermas, Brown, & Avery, 2005) and the theory that most or all of the Jewish people working in the Twin Towers were warned to stay home

on the day of the attacks (U.S. Department of State, 2005). However, the claim that missiles hit the Twin Towers has all but disappeared from the arguments made by the 9/11 Truth Movement in recent years; it was even removed from subsequent editions of *Loose Change*. The "no Jews died on 9/11" theory has also more or less vanished from Western conspiracy discourse about 9/11. Outside of the West, however, it still enjoys some currency, along with various other theories that implicate Jews and Israel in the attacks (WorldPublicOpinion.org, 2008). Conversely, specific claims that have become more popular in recent years, such as the idea that thermite was used to carry out a controlled demolition of the Twin Towers (Watson & Jones, 2005), might not have gained enough popularity at the time to come to the researchers' attention. Given the above, it is quite probable that our hypothetical 9/11 conspiracy scale would see a substantial decline in validity and internal consistency in the years after its initial publication.

One possible way to avoid this issue stems from the finding that beliefs in conspiracy theories are often fairly vague. Endorsement of specific conspiracy theories is driven by uncertainty, suspicions about ulterior motives and coverups, and a general reluctance to accept received or official explanations (Wood et al., 2012; Van Prooijen & Jostmann, 2013). While some people advocate conspiracy theories by arguing for specific theories, the majority adopt a strategy of sowing doubt and raising suspicion about official or mainstream accounts, with the implication that some sort of conspiracy, however vague, is afoot. This pattern is thought to indicate that the beliefs themselves are justified more on the grounds of disbelief than of positive belief (Wood & Douglas, 2013, 2015). Based on this insight, I argue that a better way to measure conspiracy beliefs about a particular topic is to ask about general conspiracy **suspicions** rather than specific conspiracy **theories**. While specific theories might vary in terms of their popularity, a general suspicion of conspiracy retains a relatively consistent meaning. For example, a group of anti-vaccination activists might have quite

different specific beliefs about vaccine safety. Perhaps one person thinks they cause autism, one thinks they are tainted with HIV, one thinks they contain tracking microchips, one thinks they are a plot to sterilize the population, and so on (Jolley & Douglas, 2014b). While these people believe various different conspiracy theories about vaccines, they share a common suspicion. They all believe that the real truth is explosive and shocking, and that a campaign of disinformation has successfully tricked many people into believing a carefully constructed lie instead. The belief that this is true of some topic is conspiracy suspicion; the belief in a particular lie, a particular coverup, and a particular hidden truth is a conspiracy theory.

There is good reason to believe that specific conspiracy theories may be manifestations of an underlying suspicion. In the wider social psychological literature, suspicion is generally prompted by information about an actor having a potential ulterior motive for engaging in some behaviour (Hilton, Fein, & Miller, 1993). Once suspicious, people are less susceptible to the fundamental attribution error, engage in more effortful thinking about the reasons for others' behaviour, and remain in a state of suspended judgement about others' motives until more information is acquired (Fein, 1996; Kramer, 1998; Sinaceur, 2009). Suspicion, then, is a state of ambiguity that prompts sophisticated attributional thinking. This is reflected in how people think about conspiracy theories under conditions of uncertainty. Uncertainty about whether an event was the result of a sinister conspiracy prompts increased attention to the morality of authorities in order to make a judgement about whether a conspiracy theory is plausible or not (Van Prooijen & Jostmann, 2013). Moreover, suspicious perceivers will spontaneously generate counterarguments against new information, even when the information is unrelated to the original source of suspicion (Schul, Mayo, & Burnstein, 2004). Immediate counterargumentation against specific information or definite hypotheses has been highlighted as a potential explanation for

the essential vagueness of many conspiracy beliefs (Clarke, 2007; Dean, 2002; Wood et al., 2012).

On this basis, it may be useful to create a template for measuring relatively vague suspicions that there is some sort of conspiracy behind a particular topic. Measuring suspicions, rather than beliefs in particular theories, would address the problems with specifically-worded scales outlined above. While specifically-worded scales may show substantial variation in effectiveness depending on the time and cultural context, a scale of conspiracy suspicions would measure the general perceptions of conspiracy that are constant across whatever specific theories a person might believe. Moreover, while constructing a specifically-worded scale requires the researcher to have relatively deep knowledge of the various conspiracy theories surrounding a subject, a suspicion scale would ideally require very little knowledge beyond the simple existence of conspiracy theories about a topic. The challenge in creating such a scale would be to ensure that it corresponds closely enough to measures of specific conspiracy theories about the same subject - in other words, that general suspicions are sufficiently closely linked with specific theories that one can be measured in place of the other.

The remainder of this article will present an initial attempt at constructing a scale of conspiracy suspicion: the Flexible Inventory of Conspiracy Suspicions, or FICS. The FICS takes a "fill-in-the-blank" approach; each item contains a blank space that can be filled in with the topic of interest. The scale is therefore versatile enough that it could be adapted to measure suspicions of a conspiracy behind any particular event, topic, social group, or piece of knowledge. Study 1 generated a 17-item scale from an initial pool of 50 candidate items and examined the scale's convergent validity with an existing measure of beliefs in 9/11 conspiracy theories. Study 2 examined both convergent and discriminant validity in relation to scales of 9/11 and vaccine conspiracy theory beliefs. Finally, Study 3 demonstrated

criterion validity by demonstrating a lack of negative association between beliefs in election conspiracy theories and democratic participation, and established the limits of the scale in a situation where a particular topic (climate change) elicited ideologically incompatible conspiracy theories. Using data from Studies 2 and 3, the article concludes with a Rasch scaling analysis that purifies the 17-item FICS to a 5-item short-form version with optimal validity and internal consistency.

STUDY 1

Scale format

The FICS consists of a series of statements followed by Likert scale responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Each statement alleges that something is being kept from the public regarding a specific topic. For instance, one item reads, *"There is something very suspicious about the things the public has been told about _____."* The items are phrased generically enough that the blank spaces could be filled in with any topic or event ranging from "the moon landings" to "ISIS" to "Satanic ritual abuse." The scale is designed in such a way that every blank space in a single version of the scale ought to contain the same text, so that each item asks about the same thing. The scale was preceded by a short instructional text reading *"Please rate your agreement with the following statements."*

Item generation

An initial pool of 50 items was generated by the author. Half of them were coded straightforwardly, such that agreement indicated a high level of conspiracy suspicion; the other 25 were reverse-coded.

Participants

A total of 500 participants (288 men, 212 women) were recruited for Study 1 via Amazon Mechanical Turk (MTurk), under the general rule of thumb that an exploratory

factor analysis ought to have at least ten participants per item (Nunnally, 1978; though see MacCallum, Widaman, Preacher, & Hong, 2001, for a contrasting view). Participants ranged from 18 to 69 years of age, with a mean age of 35.07 years (SD = 10.97). All participants were U.S. residents and had an MTurk accuracy rating of at least 90%. Each participant was paid $1.50 for taking part in the study.

Materials

The initial item pool of the FICS was used, with each blank filled in with "9/11." An example (reverse-coded) item was therefore *"The truth about 9/11 is pretty well-established, and it's only a controversial subject because of a few crackpots stirring up doubt."*

In addition to the FICS, participants were asked to complete the 9/11 conspiracy theory belief scale used by Swami et al. (2010). This consisted of 15 statements followed by a Likert response scale ranging from 1 (*completely false*) to 9 (*completely true*). Each statement was a specific conspiracy theory regarding 9/11; for instance, "*The Pentagon was not hit by a passenger aircraft but something smaller, possibly a missile.*" This scale displayed very high internal consistency in the present study (Cronbach's $\alpha = .98$).

Procedure

The study was advertised via MTurk under the heading "Give your opinion on historical events (5-10 min)." After signing up via MTurk, participants were directed to an external survey website (Qualtrics), which presented them with an informed consent form. Those who agreed to continue provided their age, gender, and nationality, and then completed the FICS, followed by the Swami scale. Finally, they were shown a debriefing screen containing a code that they could enter on the MTurk site to complete the task. All participants were credited within 24 hours of completing the task.

Results

An exploratory factor analysis on the FICS data was conducted using maximum likelihood extraction and oblimin rotation (delta = 0). An inspection of the resulting scree plot confirmed a two-factor solution, with all items loading at least moderately strongly on the first factor, and all reverse-coded items loading on the second rotated factor. This parallels the finding of Brotherton et al. (2013) that reverse-coded conspiracy belief items tend to load on a separate factor; as such, reverse-coded items were dropped and the analysis run again with the 25 remaining items. The same analysis of this reduced scale confirmed a single-factor solution. Eight of the remaining items displayed relatively weak factor loadings (6, 14, 24, 30, 42, 43, 46, and 50); as such, the final scale consisted of all items with loadings of .70 or above on this factor. This resulted in the following 17-item scale:

1. The real truth about 9/11 is being kept from the public.

2. There is something very suspicious about the things the public has been told about 9/11.

3. People need to wake up and start asking questions about 9/11.

4. Those in power are going to a great deal of trouble to keep 9/11 from being thoroughly investigated.

5. If most people knew the real truth about 9/11, there would be riots in the streets.

6. It's very suspicious that so few people in the media question whether we're being told the truth about 9/11.

7. When it comes to 9/11, most people are asleep and need to wake up.

8. Those in power are very nervous that the public will realize the truth about 9/11.

9. Legitimate questions about 9/11 are being suppressed by the government, the media, and academia.

10. The facts about 9/11 simply don't match what we've been told by "experts"   and the mainstream media.

11. We need a new, unbiased investigation to uncover the real truth about 9/11.

12. Anyone who's been paying attention knows that we're being lied to about 9/11, but most people are simply brainwashed.

13. Reporters, scientists, and government officials are involved in a conspiracy to cover up important information about 9/11.

14. We may never know the full truth about 9/11, but it's clear that the mainstream story is a complete lie.

15. If the truth about 9/11 came out, it would hurt the interests of some extremely powerful people.

16. The mainstream media could never have an honest discussion about 9/11 - there are too many powerful interests at work.

17. An impartial, independent investigation of 9/11 would show once and for all that we've been lied to on a massive scale.

The reduced 17-item scale showed very high reliability, Cronbach's $\alpha = .98$. The mean score was 2.50, somewhat below the midpoint of the scale (3.00), and there was some evidence of positive skew. Despite the generic tone of the scale items, the 17-item FICS displayed a very strong correlation with the Swami 9/11 scale, $r = .88$.

Discussion

As predicted, the results of Study 1 indicate a close fit between beliefs in 9/11 conspiracy theories and what I have termed here "conspiracy suspicions" about 9/11: the two measures shared over three-quarters of their variance with one another. This establishes the initial validity of the FICS as a measure of conspiracy suspicions, and provides a good basis for further investigation of general suspicions as a consistent marker of beliefs in specific conspiracy theories.

One result noted above, the initial two-factor solution generated by the negatively worded items, echoes a similar finding by Brotherton et al. (2013). Here, as in that paper, the reverse-coded items loaded uniquely on a second factor and ultimately fell below the internal-consistency threshold used to eliminate underperforming items. While this is probably a purely psychometric issue rather than a reflection of two genuine underlying factors (cf. Greenberger, Chen, Dmitrieva, & Farruggia, 2003), it may be important in the future to take into account the observed asymmetry in pro- versus anti-conspiracy discourse: pro-conspiracy rhetoric generally takes the form of negative arguments that debunk mainstream or official accounts, while anti-conspiracy rhetoric tends to focus on positive arguments that support mainstream or official accounts (Wood & Douglas, 2013, 2015). Although the FICS, being a general scale, cannot ask about specific official or unofficial explanations, positive or negative wording of particular items might be relevant for future efforts in construction of more specific conspiracy belief scales.

Although all 17 of the selected items performed well and the scale displayed high internal consistency, a shorter scale would be beneficial under certain circumstances (for instance, when there are several topics of interest). As such, a short-form version of the FICS is an eventual goal of this research project. However, simply selecting the items that performed best on 9/11 scales would be premature, and may overvalue a single case of what is meant to be a generally applicable scale. It is not clear to what extent the 17 selected items are generally good measures of conspiracy suspicion versus simply good items as pertains to 9/11 in particular. As such, further studies were needed to broaden confidence in the validity of the FICS as an adaptable scale and to validate the construct of conspiracy suspicion in different contexts.

STUDY 2

In Study 1, the 9/11 version of the FICS correlated very strongly with a previously validated measure of beliefs in 9/11 conspiracy theories. However, it is possible that the FICS, rather than measuring beliefs in conspiracy theories about a particular topic, instead measures general conspiracist ideation in the manner of the GCB (Brotherton et al., 2013) or CMQ (Bruder et al., 2013). It is also possible that the FICS is well-suited to measuring beliefs in 9/11 conspiracy theories, but not to anything else. To examine this possibility, the second study set out to accomplish three distinct aims. First, it aimed to replicate the result of Study 1, demonstrating a strong correlation between the Swami 9/11 scale and the reduced 9/11 version of the FICS (hereafter called FICS-911). Second, it aimed to evaluate the validity of a vaccine safety version of the FICS (hereafter FICS-VS) by correlating it with the vaccine danger conspiracy theory scale used by Jolley and Douglas [19]. Finally, it aimed to demonstrate that the two FICS results would be no more strongly correlated with one another than the Swami 9/11 scale and the Jolley vaccine scale would. This would indicate some amount of discriminant validity.

Discriminant validity is a complicated concept when measuring beliefs in different conspiracy theories, as conspiracy beliefs tend to be relatively strongly intercorrelated even when they concern totally unrelated topics (Goertzel, 1994; Wood et al., 2012). However, if two separate versions of the FICS are no more strongly related to one another than two traditional measures of conspiracy beliefs about the same variables are, that would constitute reasonable evidence that the FICS accesses the distinct suspicions underlying each class of conspiracy theory.

Method

Participants

200 participants (91 women, 109 men; ages 18-71, mean age = 32.68, SD = 9.74) were recruited via MTurk. Sample size was selected on the basis of a power analysis: for

80% power to detect an effect as small as $r = .20$, 193 participants would be required. All participants were U.S. residents, had an MTurk accuracy rating of at least 90%, and had not participated in Study 1. They were paid $1 each for participating.

FICS variants

Two variants of the 17-item version of the FICS were used in Study 2. The FICS-911 used the same text as the measure in Study 1; the FICS-VS filled in the blanks with "vaccine safety." An example item of the latter was therefore "An impartial, independent investigation of vaccine safety would show once and for all that we've been lied to on a massive scale."

Swami 9/11 scale

As in Study 1, Study 2 used the 9/11 conspiracy belief scale created by Swami et al. (2011).

Jolley vaccine scale

The scale of vaccine safety conspiracy theories from Study 1 of Jolley and Douglas (2014b) was adapted for the present study. Participants were asked to rate their agreement on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) with 8 statements concerning various vaccine conspiracy theories. Example items included "The government is trying to cover up the link between vaccines and autism" and "Tiny devices are implanted in vaccines for use in mind control experiments." There was one reverse-coded item.

Procedure

The study was advertised via MTurk under the heading "Survey of opinions on historical events (~5 min)." After signing up via MTurk, participants were directed to an external survey website (Qualtrics), which presented them with an informed consent form. Those who agreed to continue provided their age, gender, and nationality, and then completed the FICS-911, FICS-V, Swami 9/11 scale, and Jolley vaccine scale in counterbalanced order. Finally, they were shown a debriefing screen containing a code that they could enter on the

MTurk site to complete the task. All participants were credited within 24 hours of completing the task.

Results and Discussion

The scales all proved highly reliable: for the FICS-911, $\alpha = .99$; for the Swami 9/11 scale, $\alpha = .98$; for the FICS-VS, $\alpha = .99$; for the Jolley vaccine scale, $\alpha = .91$. Factor analyses of both the FICS-911 and FICS-VS using maximum likelihood estimation confirmed one-factor solutions, with no other eigenvalues exceeding 1.

As expected, all scales were significantly intercorrelated (see Table 1); this is in agreement with previous research on the strong interrelationships between conspiracy beliefs. Crucially, the correlation between the FICS-VS and the Jolley vaccine scale was very strong, $r = .88$, as was the correlation between the FICS-911 and the Swami 9/11 scale, $r = .90$. These correlations are further evidence of the convergent validity of the FICS: both versions share about 80% of their variance with corresponding specifically-worded measures. Moreover, the vaccine correlation indicates that the FICS items are applicable beyond the domain of 9/11 conspiracy theories.

While the FICS-911 and the FICS-VS were strongly correlated with one another ($r = .58$), this relationship was no stronger than the correlation between the Swami 9/11 scale and the Jolley vaccine scale ($r = .64$). Despite the rather minimal differences in phrasing between them, the two FICS versions are about as distinct from one another as the entirely unrelated Swami and Jolley scales are. This is good evidence of discriminant validity: the FICS is not a measure of general conspiracist ideation, or at least not more so than existing scales of individual conspiracy theory beliefs are. Rather, different versions of the FICS appear to tap into distinct clusters of conspiracy suspicions.

STUDY 3

Studies 1 and 2 have demonstrated that two different versions of the FICS produce valid and reliable results for conspiracy suspicions about two separate topics. Study 3 set out to examine the criterion validity of the FICS while applying it to conspiracy suspicions about two new topics: climate change and election fraud.

Past research has demonstrated that exposure to pro-conspiracy-theory information results in lowered intentions to engage in civic behaviours such as voting or volunteering, and that reading an article alleging that climate change is a hoax lowers intentions to engage in environmental behaviours such as recycling or energy conservation (Jolley & Douglas, 2014a). These changes in planned behaviour follow more or less naturally from the content of the beliefs. Voting and political participation are likely to be a waste of time if the world is run by conspiracies and democracy is an illusion. Likewise, if anthropogenic climate change is a hoax, there is little point in working to reduce greenhouse gas emissions.

Interestingly, despite this experimental work, no study has yet demonstrated a simple zero-order correlation between beliefs in climate or election conspiracy theories and intentions to engage in the related behaviours. While exposure to conspiracy theories has been shown to induce belief in them (Douglas & Sutton, 2008; Swami et al., 2011), it is not yet clear whether people who generally believe that elections are fraudulent are any less likely to participate in them, or whether people who generally believe that climate change is a hoax are any less likely to conserve energy. There is good reason to believe that beliefs and behaviours should be linked in this case. Beyond the established effect of exposure to conspiracy theories on related behaviours, other studies have shown a strong association between anti-vaccine conspiracy beliefs and decreased vaccination intentions (Jolley & Douglas, 2014b). As such, Study 3 examined whether civic participation and pro-environmental behavioural intentions could be predicted by either election and climate

versions of the FICS or specifically-worded measures of thematically related conspiracy beliefs.

Method

Participants

200 participants (102 men, 98 women; ages 18-81, M = 35.65, SD = 10.52) were recruited via MTurk. Sample size was selected on the basis of a power analysis: for 80% power to detect an effect as small as $r = .20$, 193 participants would be required. All participants were U.S. residents, had an MTurk accuracy rating of at least 90%, and had not participated in Studies 1 or 2. They were paid $1.00 each for participating.

FICS variants

Two variants of the 17-item version of the FICS were used in Study 3. The election fraud version of the FICS (hereafter FICS-E) filled in the blanks with "the integrity of our elections." An example item was therefore *"People need to wake up and start asking questions about the integrity of our elections."* The climate change FICS variant (hereafter FICS-CC) filled in the blanks with "so-called 'climate change.'" An example item was therefore *"It's very suspicious that so few people in the media question whether we're being told the truth about so-called 'climate change.'"* This phrasing was chosen because if only "climate change" had been used, some of the FICS statements could be taken as a call to environmental action rather than as questioning the existence of the phenomenon (e.g. *"People need to wake up and start asking questions about climate change"*).

Climate conspiracy measures

At the time of Study 3, there was no existing scale-length instrument to measure beliefs in climate change conspiracy theories. As such, Study 3 extracted three climate-related items from the general conspiracy mentality scale used by Douglas and Sutton (2011; e.g. *"The idea that the world is headed for catastrophic climate change is a fraud"*) and the

single item used to evaluate climate change beliefs by Lewandowsky et al. (2013): *"The claim that the climate is changing due to emissions from fossil fuels is a hoax perpetrated by corrupt scientists who wish to spend more taxpayer money on climate research."* Participants rated their agreement with these statements on a 1-5 point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The Douglas and Sutton items showed good internal consistency (Cronbach's alpha =.928) and all loaded on a single factor.

Election conspiracy measure

As with climate change, there was no existing scale length-instrument at the time Study 3 was conducted to measure beliefs in conspiracy theories regarding stolen elections. As such, Study 3 measured this using an original 5-item scale that asked about both fraudulent vote-counting (e.g. *"Our elections are not decided by voters - they are decided by whoever counts the votes"*) and large-scale voter fraud (e.g. *"Election results in this country are heavily skewed by people voting more than once, impersonating others, and engaging in other forms of fraudulent voting"*). It showed good internal consistency (Cronbach's α = .935) and no indication of a multi-factor structure.

Behavioural intentions

Civic participation intentions were measured with a 7-item scale originally used by Jolley and Douglas (2014b). The items on this scale queried participants on their intentions to vote, volunteer, or engage in political campaigning or donating (e.g. *"Do you intend to wear a campaign button, put a sticker on your car, or place a sign in front of your house in the next election?"*). Intentions to engage in pro-environmental behaviours were also measured using a 7-item scale from Jolley and Douglas (2014b); these items asked about behaviours such as recycling, planting trees, curbing energy consumption, and encouraging others to do the same (e.g. *"Do you intend in the next 12 months to explore purchasing energy from an alternative source (wind, solar, geothermal, biomass)?"*). All behavioural intention

statements were rated on a 1-9 point Likert scale (1 = *definitely no*, 9 = *definitely yes*), and both showed good internal consistency (for pro-environmental behaviours, Cronbach's alpha = 831; for civic engagement, Cronbach's alpha = .848).

Procedure

The study was advertised via MTurk under the heading "Beliefs & behaviour study (~5 min)." After signing up via MTurk, participants were directed to an external survey website (Qualtrics), which presented them with an informed consent form. Those who agreed to continue provided their age, gender, and nationality, and then completed the FICS-E, FICS-CC, and behavioural intention scales in counterbalanced order, followed by the non-FICS conspiracy belief measures. Finally, they were shown a debriefing screen containing a code that they could enter on the MTurk site to complete the task. All participants were credited within 24 hours of completing the task.

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Results and Discussion

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The FICS-CC and FICS-E showed a strong positive correlation at $r = .55$ ($p < .001$), similar to the correlation between the FICS-VS and the FICS-911 in Study 2 ($r = .61$). However, neither FICS measure correlated with its associated behavioural intention measure. Conspiracy suspicions about elections, as measured by the FICS-E, did not correlate significantly with intended civic engagement ($r = .02$, *ns*); likewise, conspiracy suspicions about climate change did not correlate significantly with intentions to engage in environmental behaviours ($r = .07$, *ns*).

In the former case, an analysis of the specific election conspiracy theories scale lends support to this counterintuitive finding. The specific election conspiracy items showed a strong positive correlation with the FICS-E, $r = .78$, and also did not significantly correlate with civic engagement, $r = -.03$.

In contrast, the lack of a significant correlation with environmental intentions appears to be due to a unique characteristic of the FICS-CC. The flexible measure correlated less strongly with the Douglas & Sutton (2011) climate change conspiracy items ($r = .49$) and with the Lewandowsky et al. (2013) item ($\rho = .51$). Unlike the FICS-CC, both the Douglas and Lewandowsky measures of climate change conspiracy theory belief showed statistically significant, though weak, negative correlations with pro-environmental behavioural intentions ($r = -.27$ and $\rho = -.18$, respectively).

Although the FICS-E produced an unexpected result that was confirmed by a specific measure of election conspiracy theories, the FICS-CC failed to perform as well as specific measures of climate change conspiracy theories did. This is likely due to the existence of two opposing categories of conspiracy theories regarding climate change. While the Douglas & Sutton and Lewandowsky items specifically asked about the theory that climate change is a hoax, the FICS items were vague enough that they might also have elicited high responses from people who believe in a conspiracy to cover up the legitimacy and seriousness of climate change. A standard multiple regression analysis (due to the exploratory nature of the investigation) predicting intended pro-environmental behaviour from both the Douglas & Sutton measures and the FICS-CC supports this interpretation. Consistent with the correlation analysis above, score on the Douglas & Sutton climate items is a negative predictor of environmental behaviour, $\beta = -.40$, $t(197) = -5.28$, $p < .001$, $sr^2 = .123$. The FICS-CC also reaches significance in this regression, but as a *positive* predictor of pro-environmental behaviours, $\beta = .27$, $t(197) = 3.54$, $p < .001$, $sr^2 = .059$. In other words, after partialling out variance specifically associated with "climate change is a hoax" conspiracy theories, conspiracy suspicions about climate change are consistent with the theory that there is a conspiracy to cover up the negative effects of global warming.

This result merits further explanation, since past research has shown that some contradictory conspiracy theories show positive intercorrelations (Wood et al., 2012). This is thought to be due to the fact that although contradictory, those theories are based on a variety of shared assumptions. Someone who finds the death of Princess Diana suspicious might simultaneously entertain multiple possible theories about what exactly happened to her, and any piece of evidence that casts doubt on the official account of her death could potentially be spun as evidence for any number of alternative explanations. On the other hand, the rival conspiracy theories about climate change share almost no common assumptions beyond the existence of some kind of conspiracy. The theory that climate change is a hoax and the theory that it is happening but is being deliberately underplayed are incompatible on a very basic level; most likely, they reflect competing and incompatible ideologies. Trust in climate science, particularly in the United States, shows a substantial partisan divide, and the belief that climate change is a hoax is associated with free-market ideology (Lewandowsky, Gignac, & Oberauer, 2013). While conspiracy theories about the fossil fuel industry subverting the public's understanding of climate science are not as well studied, they tend to have an anti-corporate bent that puts them at odds with free-market economic libertarianism. Moreover, this kind of conspiracy theory defines itself in opposition to claims that anthropogenic climate change is a hoax, itself a conspiracy theory, rather than in common opposition to a mainstream narrative (e.g. Dunlap & Jacques, 2013).

This set of findings highlights a limitation of the FICS. The attempt in Study 3 to confine FICS responses to one particular class of climate change conspiracy theory with careful phrasing did not prevent suspicions related to the other type from contaminating the responses. When a topic is the subject of diametrically opposing conspiracy theories that are share almost no common assumptions, the FICS is probably less suited to the task than a measure that explicitly separates the different theories from one another.

Rasch scaling and short-form scale

At 17 items, the FICS is quite long as a measure of suspicions about a single topic. It would be useful to have a more compact version of the scale to use as a briefer measurement. To this end, a Rasch scaling analysis was performed using the Rating Scale Model (RSM) of the eRm package for R (Mair & Hatzinger, 2007). Rasch scaling, an extension of Item Response Theory, examines the performance of individual scale items in relation to the rest of the scale and examines how well each item suits the responses of different participants with varying group membership and levels of the construct, but to different participants as well (Wright, 1977; for a detailed description of the mathematical underpinnings of Rasch scaling as applied to scale development, see McCutcheon, Lange, & Houran, 2002).

Infit and outfit

In Rasch-type models, infit and outfit statistics denote the degree to which each item matches the overall construct being measured, with the acceptable ranges for each falling from 0.6 to 1.4; extreme infit and outfit statistics indicate either redundancy with other items or low relevance to the construct (Linacre & Wright, 1994). An initial RSM analysis of the 17-item FICS-V, FICS-E, and FICS-911 (excluding the FICS-CC due to the issues noted above) revealed substantial variance in item performance, as determined by the infit and outfit statistics (see Table 2). The seven items with at least one fit score outside of the .6-1.4 range (items 2, 4, 7, 8, 10, 11, and 16) were dropped, leaving a ten-item scale on which the analysis was run again. This indicated poor performance by item 12; after removing that item, further analysis found no additional violations of the .6-1.4 infit/outfit criterion.

Differential item functioning by age and gender[1]

Rasch modelling confers the ability to test for differential item functioning (DIF) – items that elicit different responses across participant subgroups, when accounting for differences in the total score. DIF is generally regarded as problematic in a psychometric

scale. Using Wald tests, DIF was tested for across genders and ages (median split). As might

be expected given the variance in subject matter, the results varied across scales. While

several items showed isolated evidence of DIF, the only items to exhibit consistent DIF were

6 (age and gender in FICS-911, age in FICS-V, gender in FICS-E) and 15 (age and gender in

FICS-E, gender in FICS-V). These two items were eliminated from analysis and the

preceding analyses re-run; the resulting 7-item scale showed no infit/outfit violations, but

items 5 and 14 displayed evidence of DIF for gender (FICS-911 for both) and age (FICS-V

for both, and FICS-E for item 14). A further iteration with these items removed showed no

consistent evidence of age/gender DIF for any item. There was a minor infit/outfit violation

for item 1 (outfit = .59 on FICS-911), but this is not a major challenge to validity as a low

outfit statistic essentially means that the item is redundant with others on the scale for a

subset of participants (Linacre & Wright, 1994). The final short-form version of the FICS

therefore consists of items 1, 3, 9, 13, and 17, the difficulty parameters of which varied

somewhat across topics (see Table 3).

Factor structure

To test for unidimensionality of the short-form scale, a principal components analysis

was performed on the residuals of the RSM. All eigenvalues were less than 1.50, close to the

reference values for similar sample sizes (Brentari & Golia, 2007), providing evidence that

the scale is indeed unidimensional.

Reanalysis with short-form scale

Re-running the correlation and regression analyses with the reduced scale in Studies 2

and 3 yielded, in every case, the same pattern of results as originally obtained with the 17-

item scale. As expected, the 5-item and 17-item scales also correlated very strongly in each

case; for FICS-V, $r = .992$; for FICS-911, $r = .990$; for FICS-CC, $r = .979$; for FICS-E, $r =$

.981.

General Discussion

These three studies demonstrate the primary strengths and limitations of the FICS. Studies 1 and 2 showed that the FICS approximates the validity of existing scales of beliefs in conspiracy theories about 9/11 and vaccine safety, while the election result in Study 3 demonstrated the validity of the FICS as a tool for research into conspiracy theories for which no well-validated scale currently exists. However, the climate change version of the FICS in Study 3 highlights the superiority of specific scales when there are multiple conspiracy theories about the same subject that would make opposing predictions for the subject of interest (in this case, pro-environmental behaviour). Finally, Rasch scaling analyses have yielded a short-form scale with high performance and minimal DIF by age and gender.

As noted earlier, one of the challenges involved in constructing list-style conspiracy belief scales is that they require a high degree of knowledge about the conspiracy theories surrounding the topic. Although constructing a FICS variant does not require such thorough knowledge, Study 3 demonstrates that some basic level of knowledge is necessary. At the very least, a researcher implementing the FICS should first determine whether there are subclasses of conspiracy theory which are contradictory on the level of basic ideological assumptions. The FICS will lump these subclasses together, but depending on the research question, it might make more sense to separate them.

This limitation comes from the fact that the FICS does not measure conspiracy beliefs per se. As implied by the name, the Flexible Inventory of Conspiracy Suspicions measures *suspicions*. Very often, suspicions of conspiracy are what the researcher is interested in. Studies of conspiracy theories on a particular topic frequently use scales in the form of a laundry list of specific theories, with a broad goal of measuring how much someone believes the conspiracy theories about a particular topic (e.g. Swami et al., 2010; Jolley & Douglas,

2013). It is this sort of study, more interested in general suspicions about a topic than about the specific content of the conspiracy theories it engenders, that the FICS is well-suited for.

Other studies are interested in the thoughts and behaviours associated with very specific conspiracy theories; in these cases, it may be better to ask about the theories themselves rather than about the general suspicions that they reflect. Regardless, when general conspiracy thinking about a topic is the variable of interest, the FICS should maintain relative consistency across time and space, with a minimum initial investment of time and resources by the researcher, rendering it a good candidate for an all-purpose measure of conspiracy beliefs about a given topic. Of course, this is not guaranteed; further research is needed to determine the cross-cultural validity of the FICS. Moreover, despite the scale's vagueness, certain items may work better in a particular cultural context than in others (e.g. those that contain references to the media).

Study 3 uncovered an interesting ancillary finding that bears mentioning here: suspicion that elections are controlled by conspiracies is uncorrelated with political participation intentions. This was unexpected, as it stands to reason that believing that the system is rigged would discourage participation. A possible answer comes from the fact that people with higher beliefs in conspiracy theories tend to demonstrate a higher support for democratic principles (Swami et al., 2010, 2011). A higher investment in the principles of democracy might help to mitigate any direct negative effects of conspiracy beliefs on civic engagement. To clarify this relationship, future research would do well to examine the effects of conspiracy worldviews on voting and civic engagement with support for democratic principles or perceived political self-efficacy as potential moderators.

The ability to measure conspiracy suspicion may inform future efforts at devising process models for conspiracy belief. For instance, Wood et al. (2012) found that a critical component of beliefs in Osama Bin Laden death conspiracy theories was a high-level belief

that something was being covered up – in essence, a conspiracy suspicion that encompasses several lower-level, potentially contradictory beliefs. This suggests that it may be profitable to model conspiracy beliefs as the bottom tier of a three-level conspiracy belief model that gains specificity from the top down (see Figure 1). The top level, conspiracist ideation, encompasses a general worldview that conspiracies are probable and commonplace. This is measured more or less directly by measures of general conspiracy belief like the GCB and CMQ (Brotherton et al., 2013; Bruder et al., 2013), and is likely affected directly by broad individual-difference variables like schizotypy, delusional ideation, personality, and interpersonal trust (e.g. Abalakina-Paap et al., 1999). The second level, conspiracy suspicion (as measured by the FICS), is more specific – rather than a general worldview, a conspiracy suspicion comprises the belief that something is suspicious about a particular topic, but does not include a detailed idea of what that might be. Conspiracy suspicions, in contrast to general conspiracist ideation, are likely fed by ideology, negative evaluations of particular social groups, perceived ulterior motives, and other variables that are specific to particular topics but not so specific that they only support specific theories (Grzesiak-Feldman, 2015; Uscinski & Parent, 2014). Of course, conspiracy suspicions are also more likely in individuals with high conspiracist ideation. The final level, specific conspiracy belief as measured by instruments like the Swami 9/11 scale (Swami et al., 2010), is determined by conspiracy suspicion about a particular topic, evidence that seems to support one particular theory about that event over another, and, depending on the specifics of the theory, other relevant conspiracy suspicions. For instance, someone with strong conspiracy suspicions about both 9/11 and Israel would be likely to believe in specific theories that implicate Israeli intelligence in 9/11. Of course, there is likely some feedback as well, such that changes in suspicion and belief can prompt changes in one's worldview over time. This model incorporates the various influences on conspiracy belief into a coherent framework with clear

predictions. For instance, if this model holds, the influence of personality on belief in a particular conspiracy should occur by way of conspiracist ideation and by conspiracy suspicions, with little or no direct effect.

In summary, the FICS has the potential to drastically curtail the amount of work and subject-specific knowledge needed to measure suspicions of a conspiracy about a particular subject. The studies reviewed above have demonstrated both its utility and its limitations, and may facilitate use of this instrument in future research. Ideally, the FICS, along with its predecessors the GCB and CMQ, will signal an ongoing trend in the conspiracy psychology literature toward a theory-based standardisation of measures and enable future research on multi-level models for the formation of specific conspiracy beliefs from broader worldviews and suspicions.

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Endnote

[1]DIF analyses often include an examination of the differences in responses between high and low scorers. In this case, however, such testing was made impossible by a lack of higher-end responses on all items by low-scoring participants and of lower-end responses by high-scoring participants.

Table 1. Matrix of Pearson correlations between the various scales used in Study 2. FICS scores are derived from the 17-item version of the scale. All correlations are significant at the $p < .001$ level.

Variable	1	2	3
1. FICS-911	–		
2. Swami 9/11 scale	.897	–	
3. Jolley vaccine scale	.572	.641	–
4. FICS-VS	.578	.610	.880

Table 2. Initial infit/outfit values for each FICS item across topics. Problematic fit values (outside the range 0.6-1.4) are bolded.

Item	9/11	Vaccines	Elections
1. The real truth about _____ is being kept from the public.	0.91/0.85	0.63/0.61	0.73/0.70
2. There is something very suspicious about the things the public has been told about ___.	1.04/0.98	0.65/**0.59**	0.96/0.99
3. People need to wake up and start asking questions about ___.	1.08/1.16	1.19/1.16	0.91/0.92
4. Those in power are going to a great deal of trouble to keep ___ from being thoroughly investigated.	0.83/0.78	0.64/**0.58**	0.71/0.74
5. If most people knew the real truth about ___, there would be riots in the streets.	1.20/1.21	1.39/1.26	1.25/1.28
6. It's very suspicious that so few people in the media question whether we're being told the truth about ___.	1.03/1.06	0.69/0.68	1.11/1.08
7. When it comes to ___, most people are asleep and need to wake up.	0.97/0.93	1.29/**1.55**	0.65/0.63
8. Those in power are very nervous that the public will realize the truth about ___.	1.22/1.25	0.70/0.62	1.40/**1.48**

9. Legitimate questions about ___ are being suppressed by the government, the media, and academia.	1.14/1.32	0.79/0.92	0.93/0.87
10. The facts about ___ simply don't match what we've been told by "experts" and the mainstream media.	0.70/0.63	**0.59/0.55**	0.83/0.81
11. We need a new, unbiased investigation to uncover the real truth about ___.	1.07/0.97	**1.63/1.65**	0.91/0.89
12. Anyone who's been paying attention knows that we're being lied to about ___, but most people are simply brainwashed.	0.72/0.63	0.72/0.60	0.77/0.73
13. Reporters, scientists, and government officials are involved in a conspiracy to cover up important information about ___.	0.77/0.80	0.76/0.73	1.32/1.30
14. We may never know the full truth about ___, but it's clear that the mainstream story is a complete lie.	0.79/0.73	0.72/0.69	1.08/1.13
15. If the truth about ___ came out, it would hurt the interests of some extremely powerful people.	0.84/0.96	1.40/1.33	0.84/0.81
16. The mainstream media could never have an honest discussion about ___ - there are too many powerful interests at work.	1.02/1.04	1.34/**1.48**	0.89/0.87

17. An impartial, independent investigation of ___   0.74/0.71   0.80/0.92   0.73/0.73

would show once and for all that we've been lied to

on a massive scale.

Table 3. Item difficulty parameters (eta) across topics for each item in the short-form version
of the FICS. Agreement with each item is rated on a 1-5 Likert scale.

Item	9/11	Vaccines	Elections
1. The real truth about _____ is being kept from the public.	-.120	.217	-.251
3. People need to wake up and start asking questions about _____.	.103	-.920	-1.122
9. Legitimate questions about _____ are being suppressed by the government, the media, and academia.	-.326	.023	.302
13. Reporters, scientists, and government officials are involved in a conspiracy to cover up important information about _____.	.583	.560	1.247
17. An impartial, independent investigation of ___ would show once and for all that we've been lied to on a massive scale.	-.034	.120	-.175

Figure 1. Illustration of the three-level model of conspiracy theory belief. General conspiracist ideation leads to relatively vague conspiracy suspicions about particular topics, which then interact to inform beliefs in specific conspiracy theories. Individual differences, evaluations of particular groups and social actors, and exposure to particular theories exert varying influences at each level of the model.