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Refusing to Pay Taxes:

Loneliness, Conspiracy Theorising and Non-Normative Political Action

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Abstract

Conspiracy theorising can motivate non-normative intentions (e.g., tax evasion and violence). However, less is known about the contributors of these conspiracy-inspired intentions or if they translate into behaviours. Two studies (N = 1,155) found a positive correlation between loneliness and conspiracy theorising, which in turn related to non-normative intentions. Study 3 (n = 234) provided further evidence of these relationships through serial mediations: participants who remembered a lonely experience (*vs.* control) reported feeling lonelier, which was positively linked to conspiracy beliefs, and subsequently associated with non-normative intentions and a new behavioural measure (actual tax evasion). While our findings consistently link loneliness to conspiracy theorising and non-normative actions, future research utilising longitudinal designs would bolster confidence in our theoretical framework.

Keywords:

Loneliness, Conspiracy Beliefs, Non-Normative Political Action, Taxes, Behaviour

Conspiracy theories are "explanations for important events that involve secret plots by powerful and malevolent groups" (Douglas et al., 2017, p. 538) and are notably widespread in society (e.g., YouGov, 2020). This popularity may stem from the promise of satisfying psychological needs for security and control (Douglas et al., 2019). However, belief in conspiracy theories does not satisfy these needs. Instead, the consequences of conspiracy beliefs can be negative and wide-ranging – from disbelieving climate change to exacerbating intergroup relations (Jolley et al., 2022). Conspiracy theorising can also motivate problematic non-normative political action – behaviours that violate social norms, including violence against others, illegal protests, and property damage (Imhoff et al., 2021). Indeed, many terrorists reference conspiracy theories in their manifestos (e.g., Christchurch shooting in 2019; Emberland, 2020). Empirical findings also provide supporting evidence. Uscinski and Parent (2014) found that individuals reporting heightened conspiracy beliefs were more supportive of political violence and favoured lax gun ownership laws. Furthermore, Jolley and Paterson (2020) found that 5G-COVID-19 conspiracy beliefs were positively associated with a willingness for non-normative intentions, including physical assaults and arson attacks. With such extensive and devastating effects (see also Rottweiler & Gill, 2020; Vegetti & Littvay, 2022), it is imperative to further explore and understand the link between conspiracy theorising and non-normative political intentions and behaviours.

Loneliness, Conspiracy Beliefs and Non-Normative Political Action

A likely risk factor for conspiracy-inspired non-normative political action is the subjective state of loneliness (i.e., lack of feeling connected with others, Hawkley & Cacioppo, 2010). According to police officials, politicians, and media commentators, loneliness could turn people to extremism (e.g., Marans, 2023; Sky News, 2020). Quantitative data supports these assertions: high levels of subjective loneliness have been associated with increased aggression and justification of violence (e.g., Vukčević Marković et

al., 2021), as well as higher levels of political and social extremism (Wood, 2020). Furthermore, it is argued that lonely individuals may be susceptible to joining extremist groups because such groups seemingly promise to restore a sense of belonging and purpose – however, such groups ask for the use of violence from their members to achieve their goals (Doosje et al., 2016; Vukčević Marković et al., 2021). Hogg (2014) also suggests that when individuals feel uncertain, they engage in behaviours to make themselves feel more secure in themselves and the world. These behaviours may include violence or illegal behaviour, especially if encouraged by a social group that someone closely identifies with. Thus, as a route to restore a sense of purpose and reduce distress (van Prooijen & Krouwel, 2019), lonely individuals may become more extreme in their beliefs.

Pertinently, Hettich et al. (2022) also uncovered that loneliness and conspiracy beliefs are positively correlated. However, a multiple regression revealed that loneliness was not a significant predictor of conspiracy beliefs once psychological states such as anxiety were statistically controlled. Yet, such simple analyses may obscure the more complex interrelationships between the variables. Research has shown that loneliness is linked with distress (e.g., González-Sanguino, 2020), and, as discussed, both are linked to conspiracy beliefs. Consequently, when accounting for this shared variance in a multiple regression, the unique effect of loneliness on conspiracy beliefs will be statistically nullified by including psychological variables that could also result from loneliness (i.e., anxiety). Thus, although previous research could not statistically detect the *unique* predictive relationship between loneliness and conspiracy beliefs, there still exists the possibility that loneliness, belief in conspiracy theories and non-normative political action could be interconnected. Until now, however, this possibility has not been explored in the same empirical investigation.

Therefore, building on this previous research, it is probable that conspiracy beliefs mediate between loneliness and non-normative political action because the needs that loneliness frustrates are the same that breed conspiracy beliefs. That is, subjective loneliness can threaten basic needs, such as the search for meaning (e.g., Stillman, et al., 2009), which subsequently may lead to anti-social behaviour (including joining terrorist organisations, Vukčević Marković et al., 2021). Such a threat to the need for meaning and control makes conspiracy theories particularly appealing. That is, feelings of (subjective) loneliness may provoke meaning-making processes which, as a result, increases conspiracy beliefs and plausibly, in turn, motivates non-normative action. Thus, a strong theoretical basis exists for why loneliness, conspiracy beliefs and non-normative actions are interconnected, inspiring our current investigation.

However, exploring the psychological processes that might provoke loneliness and inspire conspiracy-motivated non-normative action is also important. There are numerous contributions, such as loneliness being associated with socially undesirable traits and behaviours (e.g., Vanhalst, et al., 2013) and poorer social skills (DiTommaso et al., 2003). Another obvious candidate is the experience of ostracism. Ostracism is when an individual is rejected, ignored or socially excluded, which subsequently impacts an individual's mental and physical well-being (Williams & Nida, 2011), including increasing feelings of loneliness (Stavrova et al., 2022). Ostracism has also been linked with conspiracy beliefs (e.g., Poon et al., 2020) and non-normative behaviours (e.g., Hales & Williams, 2018), further highlighting this factor as an ideal one to consider as part of the psychological process. Thus, it is within scope to propose that ostracism makes people lonelier, making conspiracy beliefs and non-normative action appealing.

How to Weaken the Loneliness-Conspiracy Belief Link

By understanding the precursors to conspiracy-motivated non-normative political action, interventions can be developed. Here we focus on loneliness and examine two psychological factors likely to weaken the link between loneliness, conspiracy beliefs and non-normative political behaviours. The first is community identification which refers to the feeling of belonging to a group of people with whom you share an emotional connection (McMillan & Chavis, 1986). Higher levels of community identity have been associated with better mental health outcomes regarding the quality of life, anxiety, stress (Steffens et al., 2021) and, importantly, reduced feelings of loneliness (e.g., McNamara et al., 2021). Community identity also helps with need fulfilment. When individuals feel more identification with their community, they feel less vulnerable and more able to cope with uncertainty (McNamara et al., 2021). This finding suggests that even when faced with threats to fundamental needs, such as loneliness, individuals with a stronger group identity may regain these needs through their community. It is, therefore, plausible that community identity may buffer the link between loneliness and conspiracy beliefs forming, safeguarding against conspiracy-motivated non-normative actions.

The second is self-compassion which has three interconnected components: self-kindness, common humanity, and mindfulness, whereby an individual turns compassion inward (Neff, 2003). Early work has shown that self-compassion can improve psychological well-being (e.g., improving life satisfaction, decreasing anxiety, Zessin, et al., 2015) and provides psychological resilience for coping with difficulties (e.g., Gilbert, 2005). Importantly, researchers have also demonstrated that self-compassion is negatively correlated with feelings of loneliness (e.g., Lyon, 2015). As with community identity, self-compassion,

due to its protective factor, may help weaken the link between loneliness and conspiracy beliefs. We sought to explore such a possibility.

Present Research

In three studies, we investigated the relationship between loneliness, general conspiracy theorising and non-normative political action. Specifically, based on our theoretical framework, we examined whether feelings of loneliness correlated with a general tendency for conspiracist thinking, which might be associated with non-normative political intentions (Studies 1 and 2) and a behavioural outcome (Study 3). We also examined whether ostracism contributed to feelings of loneliness, which were then associated with conspiracy theorising and non-normative political intentions (Studies 1 and 2). Further, in Study 2, we explored whether community identity and self-compassion could dampen the links between loneliness and conspiracy-inspired non-normative intentions. In Study 3, we experimentally manipulated feelings of loneliness. We expected induced loneliness to increase belief in conspiracy theories - both real-world conspiracy beliefs and a general pre-disposition - which would then be associated with non-normative political behaviours measured via intention and behavioural outcomes. All materials and data can be found on OSF: https://osf.io/95hst/.

Study 1

Method

Participants and Design

Five hundred and seventy-eight UK participants (287 male, 286 female and five who preferred not to say; M_{age} = 40.09, *SD* = 13.73) were recruited in July 2022 from *Prolific*. The only inclusion criteria were that the participants were UK residents. The initial power

analysis specified a moderation analysis, a small effect (.02) at 80% power, with an anticipated 5% dropout rate, resulting in a recommended minimum sample of 550 participants. However, an error in the Qualtrics Survey Flow function resulted in the moderator variables (community identity and self-compassion) not being included in data collection and, thus, are not part of this study. The predictor variables were loneliness and ostracism, general conspiracy theorising as the mediator, and non-normative political intentions as the criterion variable.

Materials and Procedure

Participants first provided informed consent. Loneliness (Hughes et al., 2004) was then measured with three items (e.g., "*how often do you feel that you lack companionship*", α = .85, 1 = *hardly ever or never*, 2 = *some of the time*, 3 = *often*). Participants then completed a measure of ostracism (Rudert et al., 2020) by answering the following: "*How often did you experience the following occurrences during the last two months?*". There were four items (e.g., "*others ignored me*", α = .90, 1 = *never*, 7 = *always*). These measures were counterbalanced[1].

Next, general conspiracy theorising (Bruder et al., 2013) was measured with five items (e.g., "*I think that events which superficially seem to lack a connection are often the result of secret activities*", α = .87;1 = *strongly disagree*, 7 = *strongly agree*). Non-normative political intentions (Imhoff et al., 2021) were then measured with ten items (e.g., "*I would commit a violent attack on a person in power"; "I would refuse to pay taxes, fees or rents to*

[1] An Exploratory Factor Analysis (EFA) revealed that loneliness and ostracism were two separate factors (see Supplementary Materials, Table S1).

weaken the system", α = .89; 1 = *under no circumstance*, 5 = *certainly*). Participants then completed demographic questions before being debriefed.

Results and Discussion

Non-parametric analyses were performed on the data as some variables exhibited significant skew. Spearman's rank correlations and descriptive statistics can be found in Table 1. Loneliness, ostracism, conspiracy theorising and non-normative political intentions were all significantly positively correlated with one another.

Table 1.

Study 1 descriptive statistics and Spearman's Rank correlations (N = 578).

Variables (scoring)	*M*	*SD*	1	2	3	4	5	6
1. Loneliness (1-3)	1.76	0.62	-	.67***	.18***	.19***	-.17***	-.16***
2. Ostracism (1-7)	2.63	1.36		-	.17***	.18***	-.21***	-.11*
3. Conspiracy theorising (1-7)	4.66	1.27			-	.08*	-.16***	.07
4. Non-normative political intentions (1-5)	1.48	0.58				-	-.13	-.28***
5. Age	40.09	13.73					-	.26***
6. Political orientation (1-7)	3.36	1.42						-

***$p < .001$, *$p < .05$.

Loneliness, Conspiracy Theorising and Non-normative Political Intentions

Next, a mediation was run to explore the links between loneliness (predictor), conspiracy theorising (mediator) and non-normative political intentions (outcome). Since PROCESS is robust to non-parametric data and outliers (Demming et al., 2017), we used PROCESS Model 4 with 5,000 bootstrapped samples and 95% bias-corrected confidence intervals (Hayes, 2013). Age, gender and political orientation were controlled for in the analyses. As shown in Figure 1, the mediation was significant (indirect effect *ab* = .02, *ULCI* .0057, *ULCI* .0404). Feelings of loneliness were associated with conspiracy theorising, which was then related to non-normative political intentions.

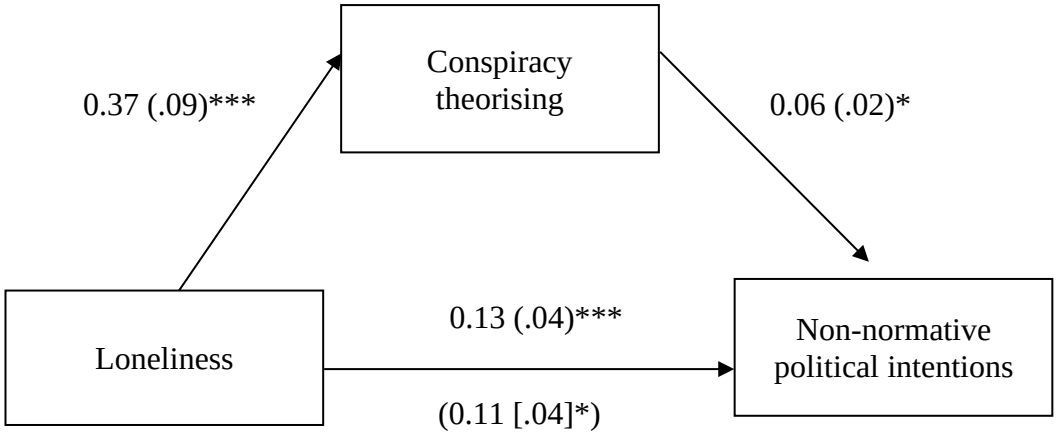

Figure 1. Mediation model of the relationship between loneliness and non-normative political intentions through conspiracy theorising, controlling for age, gender and political orientation (n = 573).

Notes. ***p<.001. *p<.05.

A serial mediation was run using PROCESS Model 6 to explore the associations further. Feelings of ostracism were the predictor, loneliness was mediator 1, belief in conspiracy theorising was mediator 2, and non-normative political intentions was the outcome variable, again controlling for demographics. As shown in Figure 2, the serial mediation was significant (indirect effect *ab* = .004, *LLCI* .0003, *ULCI* .0102). Ostracism was associated with loneliness, which serially predicted conspiracy theorising and was related to non-normative political intentions.

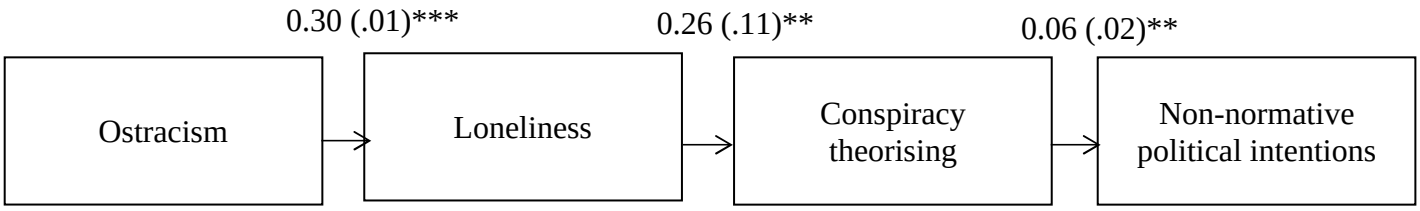

Figure 2. A serial mediation test of ostracism on non-normative political intentions through loneliness and conspiracy theorising in Study 1, controlling for age, gender and political orientation (n = 573).

Notes. $^{**}p<.05$, $^{***}p<.001$.

Study 1 provides initial evidence that feelings of loneliness are linked with conspiracy-motivated non-normative political intentions. Supporting previous research, we also show that ostracism experiences may contribute to loneliness. In Study 2, we sought to replicate and extend these findings by exploring moderating factors that may break the link between loneliness and conspiracy beliefs.

Study 2

In Study 2, the relationship between loneliness, conspiracy theorising and non-normative political intentions was again examined, along with exploring whether ostracism initially contributes to feelings of loneliness. Furthermore, we examined two psychological factors that could weaken the link between loneliness and conspiracy beliefs emerging: community identity and self-compassion.

We hypothesised that loneliness is correlated with general conspiracy theorising, which would be associated with non-normative political intentions. As in Study 1, we hypothesised that ostracism predicts loneliness, which would then be associated with conspiracy theorising and non-normative political intention (serial mediation). In addition, we

predicted that community identity and self-compassion would moderate the link between loneliness and conspiracy theorising. Specifically, higher levels of community identity and self-compassion would reduce the connection between loneliness and conspiracy theorising, thus diminishing conspiracy-inspired non-normative political intentions. Our predictions were pre-registered (https://aspredicted.org/6q4ip.pdf) with one deviation[2].

Method

Participants and Design

Five hundred and seventy-eight UK participants were recruited in July 2022 from *Prolific;* however, one participant withdrew their data. Of the useable 577 participants, 282 were men, 286 were women, and nine did not wish to say (*Mage* = 39.31, *SD* = 13.88). The inclusion criteria were that they were living in the UK and had not taken part in Study 1, and the minimum recommended sample was calculated as in Study 1. The predictor variables were loneliness and ostracism, general conspiracy theorising as the mediator, and non-normative political intentions as the criterion variable. Community identity and self-compassion were moderator variables.

Materials and Procedure

Participants gave informed consent before completing a measure of community identity (Doosje et al., 1995) with four items (e.g., "*I identify with other members of my local community*", α = .95; 1 = *strongly disagree*, 7 = *strongly agree*). Participants were told that "local community can be defined as your neighbourhood, village, city area, or any other way

[2] The pre-registration originally proposed that loneliness and ostracism would both act as predictors of non-normative political intentions, respectively. However, it is more theoretically appropriate (and interesting) to examine whether ostracism predicts loneliness in a serial mediation (PROCESS Model 6), based on evidence by Stavrova, et al. (2022) uncovering that ostracism predicts loneliness over time.

you may define it". Next, participants completed a measure of self-compassion (Raes et al., 2011) with twelve items (e.g., "*When I'm going through a very hard time, I give myself the caring and tenderness I need"*, α = .88; 1 = *almost never*, 7 = *almost always*). The presentation of these measures was counterbalanced.

Participants then completed a measure of loneliness (α = .85), ostracism (α = .92), conspiracy theorising (α = .84) and non-normative political intentions (α = .87), as in Study 1. The presentation of the loneliness and ostracism measures was counterbalanced[3]. Participants then completed demographic questions before being debriefed.

Results and Discussion

As in Study 1, non-parametric analyses were performed because some variables showed significant skew. Spearman's rank correlations and descriptive statistics can be found in Table 2. Loneliness, ostracism, conspiracy theorising and non-normative political intentions were once again all significantly positively correlated with one another. Meanwhile, the proposed moderators (community identity and self-compassion) were positively associated with one another and with the predictors, mediator, and criterion (though the association between community identity and conspiracy beliefs was non-significant).

[3] As in Study 1, an EFA revealed that loneliness and ostracism were separate factors (see Supplementary Information, Table S2).

Table 2.

Study 2 descriptive statistics and Spearman's Rank correlations (n = 577).

Variables (scoring)	*M*	*SD*	1	2	3	4	5	6	7	8
1. Loneliness (1-3)	1.79	0.64	-	.62***	.10*	.09*	-.30***	-.47***	-.24***	-.14***
2. Ostracism (1-7)	2.64	1.42		-	.23***	.15***	-.25***	-.38***	-.30***	-.12*
3. Conspiracy theorising (1-7)	4.62	1.21			-	.08*	-.04	-.15***	-.11***	.02
4. Non-normative political intentions (1-5)	1.48	0.57				-	-.13***	-.12***	.20***	-.27***
5. Community identity (1-7)	4.08	1.53					-	.30***	.16***	.07
6. Self-compassion (1-7)	4.02	1.01						-	.28***	.14***
7. Age	39.31	13.88							-	.24***
8. Political orientation (1-7)	3.29	1.40								-

***p <.001. *p < .05.

Loneliness, Conspiracy Theorising and Non-normative Political Intentions

A mediation analysis was run using PROCESS Model 4 to explore the relationship between loneliness (predictor), conspiracy theorising (mediator) and non-normative political intentions (criterion), using the same controls as in Study 1. Figure 3 shows that the mediation was significant (indirect effect *ab* = .01, *LLCI* .0003, *ULCI* .0217). Feelings of loneliness were associated with conspiracy theorising, which, in turn, were related to non-normative political intentions.

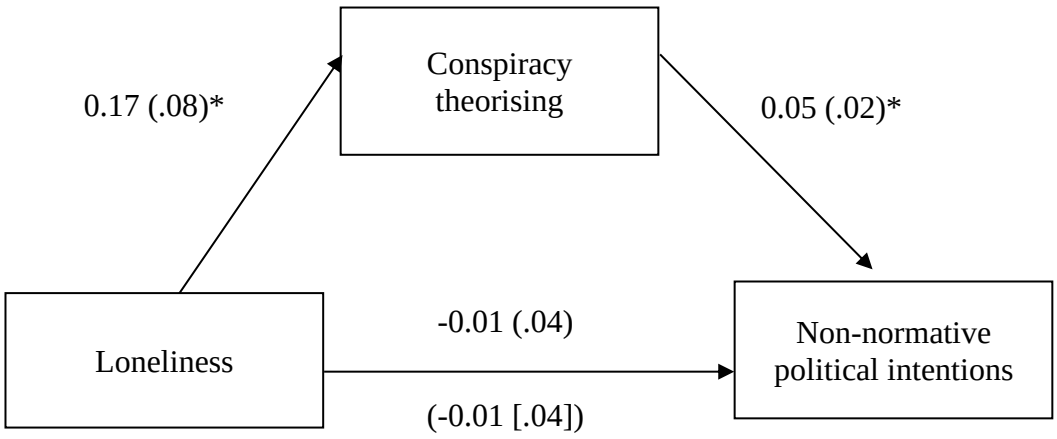

Figure 3. Mediation model of the relationship between loneliness and non-normative political intentions through conspiracy theorising, controlling for age, gender and political orientation (*n* = 568).

Notes. *p <.05.

Again, to explore the associations further, an (exploratory[2]) serial mediation was run using PROCESS Model 6, where feelings of ostracism acted as the predictor, loneliness and general conspiracy theorising were serial mediators, and non-normative political intentions were the criterion. The serial mediation model was not significant (indirect effect *ab* = .002, *LLCI* -.0047, *ULCI* .006). This finding does not replicate the serial mediation reported in Study 1.

Weakening the Loneliness-Conspiracy Belief Link

Next, we ran two separate moderated mediation analyses using PROCESS Model 7 to explore whether community identity and self-compassion, respectively, moderated the link between loneliness and conspiracy theorising (i.e., pathway *a*), which, in turn, diminishes the relationship with non-normative political behaviours. As shown in Table 2, the moderators were moderately correlated with loneliness, which could be seen to be problematic (e.g., Cohen, et al., 2003). However, others have argued that such multicollinearity issues are a red herring in the search for moderation (see McClelland, et al., 2017). As such, we cautiously ran the predicted moderation analysis. However, neither factor was shown to be a significant moderator (community identity x loneliness term: b = -.08, p = .123; self-compassion x loneliness term: b = .01, p = .897).

Results from Study 2 primarily replicated Study 1, whereby loneliness and non-normative political intentions were linked through conspiracy theorising. The serial mediation, including ostracism, however, did not replicate. Furthermore, two potential moderators - community identity and self-compassion – did not weaken the link between loneliness and conspiracy beliefs. We discuss these unexpected findings in the General Discussion. Nonetheless, focusing on the replicated findings across Studies 1 and 2, Study 3 sought to experimentally probe the link between loneliness, conspiracy theorising and non-normative political intentions while including a novel outcome that measured an actual non-normative political behaviour.

Study 3

The links between loneliness, conspiracy theorising and non-normative political intentions were again investigated while also addressing the limitations of Studies 1 and 2.

First, both studies used correlational designs, thereby limiting claims of causality. Thus, in Study 3, an experimental design was employed. Specifically, participants were asked to remember when they felt their loneliest (*vs.* control) and complete measures of loneliness, conspiracy theorising and non-normative political intentions. Second, in Studies 1 and 2, only an intention measure was included as a proxy for non-normative political behaviours. In Study 3, a novel behavioural measure was included. Inspired by one of the non-normative political items in Studies 1 and 2, asking participants whether they would withhold paying taxes, we asked participants if they would like to refuse to pay VAT (Value Added Tax) on their participant payment in Prolific, even though it was made clear that they legally had to pay such a tax. Finally, we also included a measure of (real-world) conspiracy beliefs, which, importantly, captures beliefs in *specific* events, as opposed to a general tendency to engage in conspiracy thinking used in Studies 1 and 2 (see Imhoff et al., 2022). This study was pre-registered (https://aspredicted.org/xd4th.pdf, although deviations have been noted in the text. We predicted that the loneliness manipulation (*vs.* control) would increase conspiracy theorising (and beliefs, respectively), which, in turn, would result in non-normative political actions - specifically, increased intentions to engage in a non-normative political way and actual *behaviours* - refusing to pay VAT.

Method

Participants and Design

Two hundred and eighty-six UK participants were recruited in August 2022 from *Prolific* (71 identifying as a man, 210 as a woman, two as non-binary, and three who would rather not say, M_{age} = 37.09, SD = 12.20). The inclusion criteria were that they were UK based and had not completed either Study 1 or 2. Anticipating potential exclusions on prior pre-registered criteria (approx. 10%), we targeted 286 participants, allowing us to increase

the chances of detecting a small-to-medium effect size with 80% power and ensuring we meet recommendations for comparing two groups (N = 200, Brysbaert, 2019).

At the end of the study, participants completed a pre-registered manipulation check, where they were asked if they had been requested to think about a time when they felt lonely, with the answers being *'Yes'*, *'No'* and *'Unsure'*. Those who failed the manipulation check (n = 51) were excluded from the analysis. One participant failed the check in the lonely condition, and 50 failed the check in the 'control' where they believed they had read a piece of text asking them to think about a lonely period in their life (but they had not). A further participant was excluded from the lonely condition because they reported in the text box as part of the manipulation that they have never felt lonely; being judged to have completed the manipulation correctly was a further pre-registered exclusion criterion. The remaining sample was 234 (53 identifying as a man, 177 as a woman, two non-binary, and two who would rather not say, $Mage$ = 37.15, SD = 12.38); 131 were in the lonely condition, and 103 were in the control group.

Materials and Procedure

In the Information Sheet, participants were told they might be asked to remember a scenario and answer some questions. Once clicking the survey link, Qualtrics randomly allocated them to the experimental or control condition, where they provided informed consent. Participants in the experimental manipulation were asked to think about a period in their life when they felt their loneliest. They were asked to spend a moment thinking about this and to describe as many aspects of the memory as possible in their own words. Afterwards, they were asked to remember this lonely time when completing the following questions. Participants in the control did not complete the memory exercise and merely continued with the survey.

Participants then indicated their tendency to engage in conspiracy theorising (α = .87) and non-normative political intentions (α = .86)[4], as in Studies 1 and 2. A measure of real-world conspiracy beliefs was also completed with 6-items (e.g., "*The British Government is deliberately hiding the truth about the harmful effects of vaccines from the public*", adapted from Jolley et al., 2019, α = .87, 1 = *strongly disagree*, 7 = *strongly agree*). Following this, participants completed the non-normative political behaviour outcome measure. Specifically, they were told that "*by taking part in this study, you will get paid 80 pence, and the government will receive 5 pence. These 5 pence are VAT (Value Added Tax) and must be legally paid to the government on all products and services, including your Prolific reward*". Participants were then asked, "*however, would you like to refuse to pay this VAT? If you refuse, you can get paid 85 pence, and the government would be paid zero."*, with the options being 1 ("*No, I will pay the VAT on my payment (and receive 80 pence)*") or 2 *("Yes, I refuse to pay this VAT on my payment (and receive 85 pence)"* thus a higher score represents refusing to pay VAT. The presentation of the non-normative political intentions and behavioural measures was counterbalanced.

Participants then completed the manipulation check, where they were asked, "*In this study, were you asked to think about a time when you felt lonely*" with the answers '*Yes'*, '*No'* and '*Not Sure'*. Following this, participants were asked to complete the loneliness measure as in Study 1 (α = .87). To reduce the potential negative impact of the experiment, participants in the experimental condition (lonely) were then asked to think about a period in their life when they felt the least lonely. They were asked to think about this for a moment and describe as many aspects as possible in their own words. All participants were then fully debriefed, where we explained that we would pay the VAT to the government irrespective of

[4] As detailed in the pre-registration (https://aspredicted.org/xd4th.pdf), participants completed a 1-item measure of general political violence. As the results are consistent with the other measure, these analyses are reported in the Supplementary Materials (Figures S1 and S2) to streamline the paper.

their response to the VAT question, but they would be paid the VAT as an additional payment directly to them.

Results and Discussion

As in the previous studies, some variables had significant skew, so non-parametric tests were performed on the data. Spearman's rank correlations and descriptive statistics for the full sample can be found in Table 3. Loneliness (measured) was positively correlated with conspiracy theorising and conspiracy beliefs, but unexpectedly, with no other variables. Conspiracy theorising and beliefs were both positively correlated with non-normative political intentions and VAT refusal (a behavioural measure) and each other.

(Induced) Loneliness, Conspiracy Beliefs and Non-normative Behaviours. Next, a Mann-Whitney U test found that participants who completed the lonely manipulation reported increased feelings of loneliness (M = 1.82, SD = 0.62) than those in the control condition (M = 1.63, SD = 0.57), U= 5585.000, p = .020, r = .02. However, we found no differences between the experimental conditions for either conspiracy theorising (U = 6499.000, p = .630, r = .00), conspiracy beliefs (U = 6423.000, p = .527, r = .00), or non-normative political intentions (U = 6478.500, p = .597 r = .00). The chi-squared test examining the relationship between experimental condition (lonely *vs.* control) and VAT payment (refused *vs.* paid) was also non-significant, χ^2 = 0.893, p = .345. In the lonely condition, 48 participants refused to pay, and in the control, 44 participants did.

Table 3.

Study 3 descriptive statistics and Spearman's Rank correlations collapsed across experimental conditions (n= 234).

Variables (scoring)	*M*	*SD*	1	2	3	4	5	6	7	8
1. Experimental condition (1 = *control*, 2 = *loneliness*)	-	-	-	.15*	-.03	.04	-.04	-.06	.05	.05
2. Loneliness (1-3)	1.74	0.60		-	.14*	.15*	.10	.05	-.05	-.02
3. Conspiracy theorising (1-7)	4.39	1.38			-	.71***	.14*	.31***	-.32***	.08
4. Real-world conspiracy beliefs (1-7)	2.28	1.28				-	.17*	.30***	-.31***	.17*
5. Non-normative political intention (1-5)	1.46	0.51					-	.30***	-.15*	-.30***
6. VAT behaviour (1 = *paid*, 2 = *refused*)	-	-						-	-.11	-.12
7. Age	37.15	12.38							-	.11
8. Political orientation (1-7)	3.10	1.33								-

***$p < .001$. *$p < .05$.

Exploratory Analyses. In our pre-registration (https://aspredicted.org/xd4th.pdf), we hypothesised that the experimental manipulation would influence conspiracy beliefs (mediator) and non-normative political behaviours (criterion); however, the manipulation only increased feelings of loneliness. As loneliness was correlated with conspiracy beliefs (see Table 3) and was our variable of interest to manipulate, we tweaked our analyses to run PROCESS Model 6 (as opposed to Model 4). That is, we explored whether the experimental manipulation (predictor) increased reported loneliness (i.e., measured loneliness, mediator 1) which, in turn, would be correlated with conspiracy theorising in a serial mediation (mediator 2), which would then be associated with non-normative political outcomes (intentions and behaviours). The same analysis was then run with conspiracy beliefs. Age, gender and political orientation were controlled for in each analysis.

Figure 4 shows that each serial mediation was significant with conspiracy theorising (*intention* indirect effect *ab*: .01, *LLCI* .0003, *ULCI* .0147; *behaviour* indirect effect *ab*: .04, *LLCI* .0031, *ULCI* .1029). The results show that participants who remembered a time when they felt lonely (*vs.* control) indicated feeling lonelier (i.e., measured loneliness), which, in a serial mediation model, was correlated with conspiracy theorising that were then associated with non-normative political intentions and being more likely to refuse to pay VAT (a behavioural measure). Further, the same pattern of results was uncovered for (specific) conspiracy beliefs (*intention* indirect effect *ab*: .07, *LLCI* .004, *ULCI* .0191; *behaviour* indirect effect *ab*: .03, *LLCI* .0022, *ULCI* .0909). These findings are notable as it is one of the first links between conspiracy beliefs and a behavioural outcome to be demonstrated. We also provide more evidence of the connection between (measured) loneliness, conspiracy theorising and non-normative political behaviours.

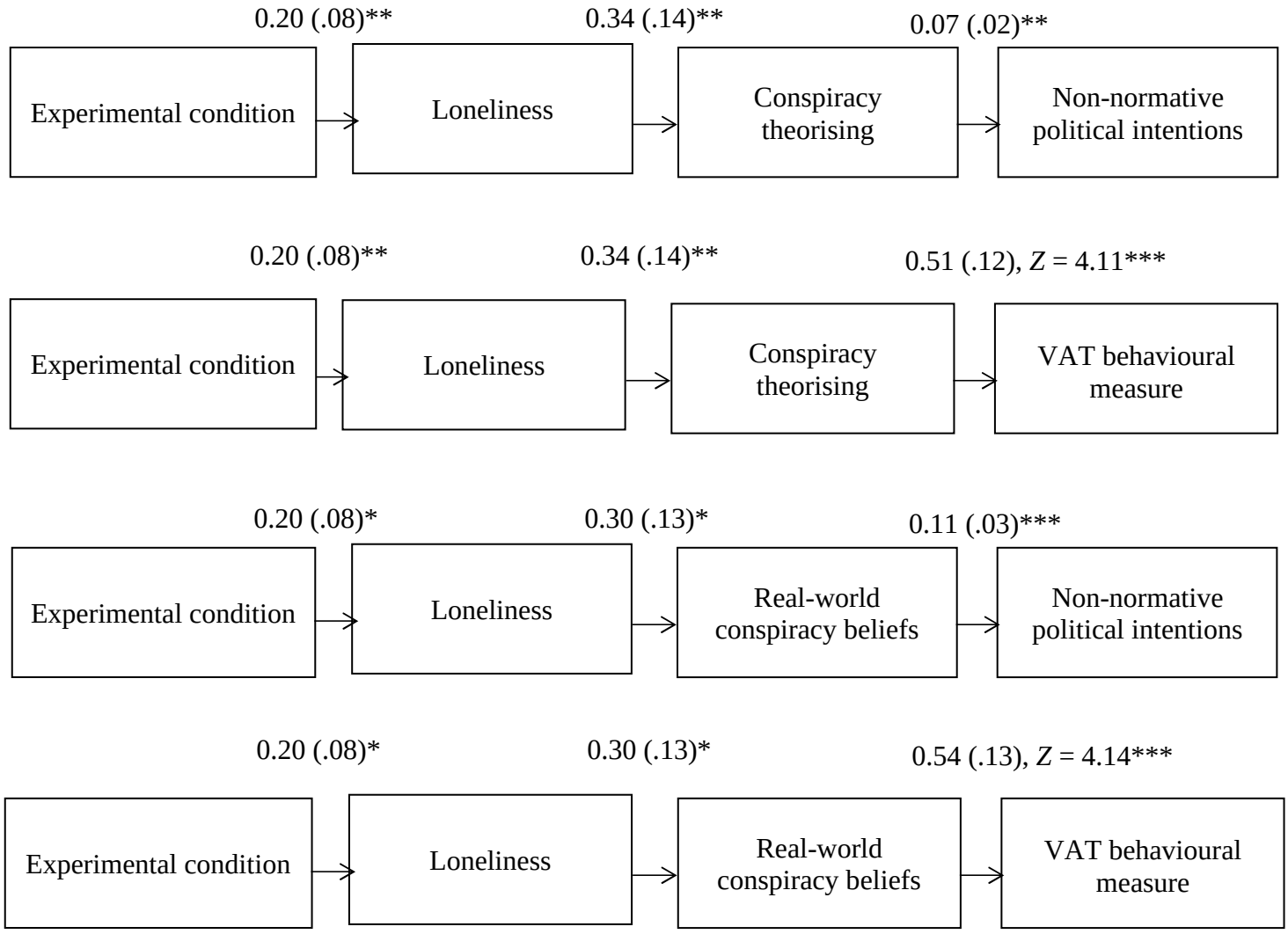

Figure 4. A serial mediation test of experimental condition (1 = *control*, 2 = *lonely*) on non-normative political intentions and behaviors (VAT measure, 1 = *pay*, 2 = *refuse*), respectively, through loneliness and conspiracy theorising and real-world conspiracy beliefs, respectively, in Study 3, controlling for age, gender and political orientation (n = 230).

Notes. **p<.05, ***p<.001.

General Discussion

Our research has examined the links between loneliness, conspiracy theorising and non-normative political action. In Studies 1 and 2, loneliness was shown to be positively correlated with general conspiracy theorising, which, in turn, was associated with non-

normative political intentions. Study 1 also provided correlational evidence that ostracism may contribute to loneliness, which was then associated with conspiracy-motived non-normative action, but this serial effect did not replicate in Study 2. Furthermore, we found that neither community identity nor self-compassion weakened the link between loneliness and conspiracy beliefs (Study 2). Study 3 sought to provide experimental evidence for our key hypothesis. However, the loneliness manipulation had no effect on conspiracy theorising or non-normative political action. Yet, we did find that (measured) feelings of loneliness were associated with conspiracy theorising and non-normative political action in a serial mediation. The same pattern was also replicated for (real-world) conspiracy beliefs. This effect was found for intentions and, making a novel contribution to the literature, a behavioural measure (i.e., refusing to pay tax).

Across three studies, our work consistently shows that loneliness, general conspiracy theorising and non-normative political action are linked. Although Study 3 results were not exactly as expected, we successfully elicited feelings of loneliness (our variable of interest), which was then associated with conspiracy theorising, conspiracy beliefs, and behaviours, respectively. However, it is not possible to speak to causality since the links between loneliness and the other variables are cross-sectional; we can only be confident that the manipulation increased loneliness. Thus, whilst the proposed theoretical framework is supported across each study, we have relied on cross-sectional (serial) mediation analyses. As discussed by Fiedler et al. (2011), such analyses mean we are unable to identify the unique impact of the mediator (i.e., conspiracy theories) or confidently compare alternative/reverse causal models (e.g., conspiracy beliefs -> loneliness)[5]. Therefore, future research could

[5] Of interest, we did run exploratory reverse mediation models (conspiracy theorising -> loneliness -> non-normative) for our key predictions in Studies 1 and 2 (see Supplementary Materials Figures S3 and S4). Whilst the indirect effect in this model was significant in Study 1, the coefficients and indirect effect were much smaller than in our proposed theoretical model. The alternative model indirect effect in Study 2 was non-significant. Together, this further supports our framework, but as discussed, these results are cross-sectional.

explore these links using a more robust experimental design that is more immersive and thus powerful (e.g., through using Virtual Reality), alongside exploring how the empirical relationships unfold over time using a longitudinal study. Such studies would enable our findings to be replicated in a way that can speak more confidently to causality and provide robust evidence of our theoretical framework.

Nonetheless, in Study 3, we notably replicated the relationship for both an intention and behavioural non-normative political measure. To our knowledge, this is the first time a non-normative political *behavioural* outcome has been linked with conspiracy theorising. There is growing literature relating conspiracy beliefs with negative responses that can impact the smooth running of societies (Jolley et al., 2022). Our research offers further evidence that conspiracy theorising might indeed lead to detrimental behaviours that damage the functioning of societies. Of course, our behavioural measure concerned paying VAT, so we must not apply the findings *too* widely. Yet, our measure is illegal and, crucially, where participants knew they had a legal obligation to pay. Indeed, our findings bring to life the work of Jolley et al. (2019), who found that conspiracy beliefs predict an increased intention to commit petty crimes. However, it is worth noting that our effect sizes were small, suggesting other factors are at play. Nonetheless, despite having conventionally classified statistically small effect sizes, the current findings are still important when extrapolating to real-world contexts – indeed, Funder and Ozer (2019) consider these labels often arbitrary. After all, it only takes one individual to incite horrific politically motivated violence and subvert social norms for this to be worrisome. Thus, our findings certainly support the suggestion by Jolley et al. (2022) and others that the consequences of conspiracy theories should be taken seriously.

Our research also explored a factor associated with loneliness (that subsequently was associated with conspiracy-inspired non-normative action), specifically ostracism. Unexpectedly, we found inconsistent evidence for this link. In Study 1, results uncovered a significant serial mediation whereby ostracism was linked with loneliness, which then correlated with conspiracy theorising and non-normative political intentions. However, this serial mediation did not replicate in Study 2. It is surprising because the link between ostracism and loneliness has been demonstrated in previous research (e.g., Stavrova et al., 2022); indeed, there was still a modest correlation between both variables in Study 2. Yet, testing the associations in a serial mediation did not replicate. Our results imply that loneliness can be evoked by a range of contributors (which certainly supports previous research, e.g., Vanhalst et al., 2013), whereby the links between the measured concepts might only be relevant in certain scenarios, such as when the ostracism experience emotionally impacts an individual. Future research could explore when ostracism may (and may not) play a role in this serial relationship.

To this point, interventions targeting loneliness could be a fruitful avenue for future research. In Study 2, we tested two variables we thought had promise in targeting the link between loneliness and conspiracy beliefs – community identity and self-compassion – but neither moderated the relationship. However, the variables were explored cross-sectionally and were correlated, which can be problematic – although see McClelland, et al. (2017) for a critical discussion. Nonetheless, a more robust design would be to use an experimental paradigm to explore such factors. For example, future research could induce self-compassion (vs. control, Neff et al., 2021). It is also worth noting that the measure of community identity could be improved. Specifically, we asked participants to think about a local community to them (e.g., their neighbourhood). However, this might have been quite difficult for an individual who does not identify with their community. It may have been better to ask

participants to think about their family (as an example), a tweak that future research could use as part of an experimental paradigm. Therefore, these factors might still have promise as intervention strategies and should not (yet) be discounted.

Some other limitations could be addressed in future research. For example, in Study 3, participants in the experimental condition were forewarned that they would be asked to remember a period when they felt lonely throughout the study. This meant some participants in the experimental condition likely decided not to participate, potentially making the sample more self-selective than usual on Prolific. Furthermore, the experimental paradigm conflated cognitive load and loneliness; thus, considering how a control condition could pull apart such a confound is an important future consideration. Also, whilst we included a behavioural measure in Study 3 (VAT payment), we relied on participants believing they could refuse to pay VAT on their Prolific reward. It is possible that participants were established Prolific users, meaning they have had the experience of researchers always paying the VAT. One way to tap into the credibility of the measure is in future research to ask participants at the end of the experiment to report the study's *aims*. Nonetheless, our work included a novel behavioural measure beyond just measuring intentions.

Finally, whilst we uncovered links between loneliness, conspiracy theorising and non-normative political action, we have been unable to speak to the mechanisms that may explain these links. Previous research found that loneliness is linked with a search for meaning (e.g., Stillman et al., 2009), which is also linked with conspiracy beliefs (Graeupner & Coman, 2017). It, therefore, could act as a mechanism in our reported effect. Another relevant concept to consider is social trust. Previous work has shown that loneliness can foster social distrust (e.g., Langenkamp, 2022) and that distrust is predictive of conspiracy beliefs (e.g., Freeman

et al., 2022). Thus, in future research, including such measures could help pinpoint the psychological process of our findings.

In conclusion, our work has provided consistent evidence of the links between loneliness, conspiracy theorising and non-normative political action. Whilst each factor has been linked independently, our research is the first to explore their connections in the same investigation. We also employed a novel behavioural outcome, showcasing a relationship between loneliness, conspiracy theorising and refusing to pay taxes. Thus, with the backdrop of the coronavirus pandemic that has fuelled extremism and conspiracy beliefs (United Nations, 2021) and has been shown to increase loneliness (Ernst et al., 2022), our work highlights how each is indeed interconnected and may have significant impacts on subversive political intentions and behaviours. Understanding conspiracy-inspired non-normative actions, then, is a timely and important endeavour, and we encourage future research on this topical societal issue.

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