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# Crowdsourcing Samples for Research on Violent Extremism: A Research Note

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## ABSTRACT

As research on violent extremism continues to progress beyond some of the field's earlier challenges, new ways of gathering primary source data are becoming increasingly popular. One such data collection methodology implemented widely across parallel fields is crowdsourcing: the process of gathering information, or input, from large numbers of people, either for payment or not, online. In this research note, we present a brief introduction to crowdsourcing, highlight a popular platform for gathering samples online, Prolific, and present four studies conducted by the research team to demonstrate the unique benefits and challenges of crowdsourcing samples online for research on violent extremism.

## KEYWORDS

Crowdsourcing; terrorism;  
violent extremism; Prolific;  
Qualtrics

A relatively recent trend in research is crowdsourcing samples online. Crowdsourcing is the process of gathering information, or input, from large numbers of people, either for payment or not, online. Disciplines such as psychology regularly employ crowdsourcing to generate samples for research.<sup>1</sup> In this research note, we highlight crowdsourcing as a data collection methodology for research on violent extremism, specifically. First, we present a brief overview of crowdsourcing as a data collection tool. Second, we discuss our experiences with crowdsourcing samples for research on violent extremism to highlight how these platforms have specific applications to terrorism studies. Lastly, we highlight some “lessons learned” for researchers who may consider crowdsourcing samples for their own research on violent extremism.

## A brief overview

### *Crowdsourcing*

Crowdsourcing samples for research has grown in popularity given its convenience, flexibility, and the ease at which researchers can obtain large volumes of data, quickly. For example, one of our first experiences of crowdsourcing saw over 2,000 responses to over one hundred survey items arrive in a matter of hours. This is in stark contrast to the more traditional alternatives, such as pencil-and-paper surveys which require more time and resources, are more costly, logistically more demanding, and require manual data entry which may be prone to error.<sup>2</sup> In terms of research on violent extremism, considering a field that has historically succumbed to challenges accessing primary source data, the generation of such large volumes of data, at such speed, may be of particular interest.

Crowdsourcing samples for research is widespread among parallel fields such as psychology and offers an alternative to researchers who historically relied on a relatively small, but intensively studied population—first-year undergraduate students. A parallel problem is often highlighted amongst terrorism studies; that is, overreliance on secondary source data. These issues are

discussed at length elsewhere.<sup>3</sup> The purpose of the present research note is to present one way to generate large volumes of primary source data to researchers unfamiliar with such data gathering methodologies. These samples can be utilised in different types of research designs including surveys, experiments, tasks, longitudinal research, and in generating qualitative data. Crowdsourcing can also afford researchers with greater access to larger, more diverse samples than have traditionally been made available.<sup>4</sup> This may be particularly appealing to violent extremism researchers who wish to study phenomena in demographically diverse or international samples which they have not typically been afforded access to.

A popular way to crowdsource samples is to use online *platforms*, such as Amazon's Mechanical Turk (MTurk) to recruit participants in exchange for payment.<sup>5</sup> In parallel, online *panels* such as Qualtrics Panel, have also developed as a way for researchers to access different types of samples. Participant recruitment platforms such as MTurk, essentially maintain a pool of approved participants. Researchers make links to their study available to the participant pool and collect responses until the study quota is met—in other words, these are “self-service” platforms. Panels such as Dynata and Qualtrics Panel deal with the sampling and administration of studies on your behalf (many offer a “do-it-yourself” option for researchers who prefer to self-administer their studies).<sup>6</sup> Table 1 briefly compares some of the most popular recruitment participant and online panels. Data are based upon the information available on the platforms' respective websites at the time of writing. Table 1 highlights the main differences between leading crowdsourcing platforms are their scope and size. Prolific has one of the smallest participant pools however is the only platform designed specifically for academic research. Further, and perhaps of more concern to researchers, is data quality.

A recent study compared data quality (attention, comprehension, honesty, reliability) across MTurk, Prolific, CloudResearch, Qualtrics, and Dynata (SurveyMonkey Audience was not included as it does not offer a do-it-yourself function).<sup>7</sup> Custom filters allow researchers to apply certain sampling characteristics to the panel, for instance one can select by age, sex, income etc, as well as data quality indicators such as participant completion scores. Peer and colleagues compared data quality in two studies, one using data quality filters and one without. Without data quality filters, only Prolific demonstrated high data quality. In Study 2, with data quality filters, CloudResearch and Prolific produced high data quality. MTurk demonstrated low data quality and both Qualtrics Panel and Dynata produced data quality better than MTurk's but worse than Prolific's.

The authors describe one reason for these discrepancies may be the nature of the participant pool. Among the MTurk sample, a particularly precarious group were identified—those who spend large amounts of time on the platform, who use the site as their main source of income. This group produced poor quality data on MTurk, a finding which was not observed across the other platforms and panels. This suggests the nature of the MTurk participant pool may differ in measurable ways to the participant pool of more recent alternatives, which appears to impact upon data quality.

A further consideration is cost. Panels are typically more expensive than recruitment platforms as they carry out much of the administration on behalf of the researcher. Hence deciding which platform to utilise is often a careful consideration of time, resources, and data quality.

**Table 1.** Comparisons across different crowdsourcing platforms

	Name	Scope	Participant pool	Do-it-yourself	Participant filters
Participant recruitment	MTurk	Human Intelligence Tasks (data entry, transcribing, market research etc.)	250,000+	Yes	Yes
	Prolific	Academic research	130,000+	Yes	Yes
	CloudResearch (TurkPrime)	Research (government, nonprofit, market research)	50+ million	Yes	Yes
Panels	Qualtrics panel	Market research	Millions	Yes	Yes
	Dynata	Market research	67+ million	Yes	Yes
	SurveyMonkey Audience	Market research	50+ million	No	Yes

Whilst crowdsourcing provides an alternative to the more traditional data collection methodologies, these platforms are equally not without drawbacks. First, they may be subject to a selection bias. More specifically, potential respondents are limited to those with internet access, and those who register as users. This excludes a proportion of the population and samples may therefore be limited in their representativeness. Anecdotally, we have received these comments from reviewers and editors when attempting to publish research on violent extremism utilising data generated by crowdsourcing—this is despite the popularity of crowdsourcing as a data collection methodology in parallel fields.

Recently, one crowdsourcing platform, Prolific, developed a representative sample capability, which allows researchers to recruit participants based on the latest census information available in the U.S. or U.K. Whilst these samples are still limited to those with internet access and may not include those experiencing digital poverty for instance, it is now possible to generate samples representative by age, gender, and ethnicity. We have found this feature particularly useful to demonstrate a sample's representativeness and to address the concerns of those less familiar with this type of data collection methodology when publishing research on violent extremism.

Second, respondents are primarily Western.<sup>8</sup> This may be of particular concern for researchers studying violent extremism amongst non-WEIRD (from western, educated, industrialized, rich and democratic countries) populations. However, data filters, such as filtering by country of residence, religion, or ethnicity, may in fact provide one way for researchers who do not typically engage with non-WEIRD samples, to do so. Unfortunately, the sample size is likely to be significantly smaller than samples achieved without such filters.

Third, sample naivety is important to consider. Many users participate in hundreds of research studies—more than you would expect a first-year undergraduate student to participate in. Therefore, some participants may have already been exposed to some study materials. This is of particular concern for platforms with smaller participant pools, such as Prolific and MTurk.

Lastly, data quality and reliability. Online panel users can complete research tasks anywhere and at any time (e.g., on mobile phones). Therefore, ensuring participants stay engaged and attend to your study is key. We strongly recommend the use of multiple attention checks in research with crowdsourced samples (we elaborate this point later). Whilst it is important to bear these limitations in mind, crowdsourcing continues to offer researchers with new opportunities to conduct research. As violent extremism research continues to proliferate, crowdsourcing may be a useful data collection tool for those not already implementing it in their research.

Next, we discuss relevant examples of our own research on violent extremism which used crowdsourcing. Our research group predominantly makes use of Prolific, as we favour data quality and prefer to self-administer our research studies. As described above, many alternatives are available, and it is for individuals to decide which platform suits their research needs and available resources.

## Research on violent extremism using crowdsourcing

Previous research on violent extremism using crowdsourcing has relied on several different platforms. For instance, Adam-Troian and colleagues used social network groups to examine the links between anomia and intentions to engage in political violence in four countries (Brazil, Turkey, Belgium, and France).<sup>9</sup> Amazon's MTurk has been used in three studies demonstrating the role of obsessive and harmonious passion in support for political violence.<sup>10</sup> MTurk was also utilised in a study which showed that perceived intergroup threat relates to outgroup hostility by means of cross-sectional surveys.<sup>11</sup> Lightspeed (another online panel) has been employed to study the relationship between the Dark Triad personality traits (narcissism, psychopathy, and Machiavellianism), U.S. partisanship, and political violence intentions.<sup>12</sup> The [Appendix](#) further summarises research on violent extremism employing crowdsourcing. All in all, these empirical studies demonstrate that the use of crowdsourcing in violent extremism research is proliferating and providing a range of insights into different aspects of violent extremism. In the next section, we describe our own experiences with Prolific.

## Our experiences

We present four previously published studies on violent extremism and grievance-fuelled violence. All studies made use of Prolific, however, our experiences should be generalisable to crowdsourcing with any platform.

### *The Base Rate Survey*

In 2020, the Base Rate Survey was developed to measure general population prevalence rates of hundreds of correlates of violent extremism.<sup>13</sup> The full survey is hosted on the Open Science Framework (OSF), here. Research on sensitive topics, such as violent extremism, is often plagued by self-report biases, such as over- or under-reporting.<sup>14</sup> Given the sensitive nature of many of the Base Rate Survey items (i.e., “have you ever committed violence?”) we undertook a test of survey methods to evaluate how best to ask these sorts of questions. We compared a direct questioning design with an indirect questioning design. A direct questioning design simply asks participants to self-report answers to a range of questions, including sensitive questions, directly. In an indirect questioning design, there is some sort of manipulation which aims to increase participants’ *perception* of their own anonymity, therefore supposedly increasing the truthfulness of their responses to sensitive questions,

Whilst often found to increase reports of sensitive items, the efficacy of these techniques at soliciting more truthful responses *online*, particularly with crowdsourced samples, has not been examined extensively. In short, we found the indirect questioning manipulation did not work. There are several interesting reasons to consider why, which we elaborate upon here.<sup>15</sup> One such reason is the nature of samples crowdsourced online.

Prolific’s subject pool are experienced survey respondents whose perceptions of their own anonymity may be different to more traditional, “offline” participants. In particular, the online nature of the task may increase a user’s perception of their anonymity. Moreover, many users participate frequently in a wide range of studies which often require disclosing sensitive information. For instance, a recent study measuring the prevalence of sexual interest in children was conducted via Prolific.<sup>16</sup> Hence, crowdsourced participants may be more used to dealing, with and more willing to disclose, sensitive information.

In fact, upon registering for the service, crowdsourcing platforms often ask users pre-screening questions about their criminal history and mental health, for example. If users are deterred by the level of disclosure required, they may not complete registration. In terms of research on violent extremism, we often ask participants to disclose sensitive information. Our experiences with the Base Rate Survey suggest that samples crowdsourced online may provide more truthful responses to sensitive questions when directly asked, although we recommend further research to replicate our preliminary findings.

### *Large-scale (violent) language studies*

In 2019, we conducted two studies focussed on violent language use, with a total of 800 and 2,318 participants, respectively. In the first study, participants were instructed to write a “stream-of-consciousness essay,” for which they wrote freely about their current thoughts and feelings.<sup>17</sup> They were instructed not to pay attention to spelling or grammar, and to write continuously for at least three minutes (and at least one hundred words). We share two observations.

First, the writing task demonstrated you can obtain relatively high-quality free text responses through crowdsourcing. This may be of particular interest to researchers of violent extremism who specialise in natural language processing or more broadly, qualitative research. Although participants were instructed to write at least one hundred words, the average number of words written was 120 (SD = 31.46, range: 35–395 words). The minimum number of time participants should spend was three minutes, whereas the average was 4.24 minutes (SD = 2.23, range 3.01–28.12). From the 800

**Table 2.** Excerpts from stream-of-consciousness writing task

Excerpts from stream-of-consciousness writing
"I just wish I had the money behind me to be able to relax and do something I enjoy more than this."
"being unwell isnt have a good impact on my mood. feeling lonely and like i need a friend"
"I have recently lost my job and I don't know where to turn. I'm now on prolific doing as many assignments as I can to try and earn a little bit of money."
"I feel content and I am reasonably happy at this present moment in time. It may be a challenging few months for me and I am looking forward to the time ahead."

participants, none of the free text responses needed to be excluded for being empty or not including proper (English) writing.

Second, the content of text responses revealed some characteristics of crowdsourcing participants. When manually inspecting responses, it stood out that several participants reported negative feelings and financial worries. Table 2 shows excerpts from a few example responses. A full-time month of work on Prolific would raise approximately £750 (based on a thirty-five-hour work week, and minimum pay of £5 per hour), far below the U.K. minimum wage. Therefore, it is perhaps not unsurprising that participants report financial problems. This is important to consider when deciding if and how to use crowdsourcing for research. For instance, researchers may wish to include measures of mood, mental state, or (financial) worry as a control variable, or at least raise the topic as a potential limitation.

It is also important to consider good participant information and debriefing sheets. Some tasks may uncover or even illicit distress in participants. This may be particularly relevant to research on violent extremism. As crowdsourcing platforms preserve the anonymity of participants, we suggest it especially important to ensure relevant support and resources are clearly signposted to participants.

In the second language-focused study, participants were asked to rate words (e.g., knife, gun, AK-47) for the extent to which they fit within a category (e.g., "weaponry"). The words and their ratings were used to construct the Grievance Dictionary, a tool that can be used to measure concepts in text (e.g., hate, weaponry, paranoia) that are related to grievance-fuelled violence.<sup>18</sup> Each of the 2,318 participants were presented with a random sample of one hundred words to rate from a total of 20,502 words. To develop the dictionary, it was important to assure that the ratings were distributed equally across all words. Due to the specialised nature of this task, we linked to a custom web app that was built to be able to assign the appropriate sample of words to each participant.

In this study, the number of items ( $n = 20,502$ ) was particularly large, and required random assignment to each incoming participant. Moreover, due to the nature of crowdsourcing, several participants may start the study at the same time, and each needs to be assigned a different subsample of words. This requires a complex infrastructure that in some cases can only be achieved by a custom-made platform, which in turn requires time, web development skills, and server space to host and store data. The launch of the study was a process of trial and error, in which several participants did not gain access to the task due to an overloaded server. Therefore, we opted for conducting the study in batches, where the task was opened to a limited number of people ( $n = 20$ ) until the required number of participants was achieved ( $n = 2,318$ ). Although this allowed for enhanced control (and the ability to respond to messages from participants if problems arose), this procedure also required a significant amount of time.

### **The GRIEVANCE survey**

The primary purpose of the GRIEVANCE survey was to collect data on risk and protective factors for violent extremism. The survey asked a representative sample of the UK general population to self-report a wide-range of psychological risk factors including personality traits, and group-based social

psychological processes.<sup>19</sup> A key concern prior to data collection was the operationalisation of many psychometric scales, which could lead to response fatigue resulting in poor data quality. A pilot test ( $n = 40$ ) was run to reduce response burden and to assess the possibility of measurement error, which can arise due to complex phrasing or language, lack of clarity in questions or response categories, as well as leading or biased questions.<sup>20</sup> Participants were specifically asked whether the wording or meaning of any of the items was unclear or needed refinement, and whether they had any other comments relating to response burden.

We included several attention checks within the larger item-batteries to ensure participants were paying attention (e.g., “Please select ‘strongly agree’ to indicate that you are paying attention”). Some evidence suggests that excluding participants solely based on a single attention check failure may result in bias.<sup>21</sup> Hence, we manually and systematically reviewed respondents based on predetermined criteria, e.g., only participants who failed more than two attention checks or who finished exceptionally fast (more than two standard deviations quicker than the average completion time) were removed from the dataset.

This process was guided by ExpertReview; a set of built-in features within the Qualtrics platform where we hosted the GRIEVANCE survey. ExpertReview allows researchers to check the overall quality of the data before proceeding with the data analysis (most of these features need to be enabled manually before data collection). The review function provides suggestions about how best to clean data to ensure the highest quality data. Functions of ExpertReview include “bot detection,” detection of “speeders,” and participants who take the survey more than once. Researchers need to collect at least 100 responses to be able to access this feature.

### ***A registered direct replication study***

We conducted a registered direct replication of Zmigrod and colleagues’ research that demonstrated that individuals who express lower levels of cognitive flexibility—the ability to change one’s ways of thinking in response to external demands and rules—are more willing to fight and ultimately die for a national ingroup (i.e., support for violent extremism).<sup>22</sup> The original study had implemented two tasks to assess cognitive flexibility—the Remote Associates Tests (RAT)<sup>23</sup> and the Wisconsin Card Sorting Test (WCST).<sup>24</sup> For the RAT, participants must identify a word that serves as a connection for three stimulus words (e.g., the word connecting “worm,” “shelf,” and “end” would be “book”) in twenty seconds. The RAT can be easily implemented in a survey, as long as it is possible to limit the time during which answers can be provided (Qualtrics allows for this). The WCST, however, is a more complex task and must be conducted on dedicated platforms. Specifically, participants are presented with four cards of different coloured geometric forms. A fifth card must then be matched to one of the stimulus cards—based on similarity in colour, shape, or number of forms. Matching rules are not disclosed. However, participants receive feedback on their choices. Matching rules also change after a certain number of trials applied the same rule. In our replication, we opted to run the WCST on the platform PsyToolKit, which hosts several preprogrammed cognitive tasks, license-free.<sup>25</sup>

When using external tasks like the WCST for data collection, two challenges may arise. First, data from the external tool must be matched with data that is collected through the site that participants access directly from the crowdsourcing platform, for instance an online survey. On Prolific, every participant has a unique ID. Users are typically accustomed to reporting this ID as an identifier in studies. However, participants may misremember the ID or make mistakes when entering the information. Indeed, for some participants WCST scores could not be matched with the remaining survey data. Additionally, we attained incomplete responses because not all participants returned to the survey after completing the WCST.

To verify that participants had indeed completed the WCST, we decided to return a completion code, which was to be entered in the survey to continue to the next question block. However, using the term “completion code” was problematic, as participants are used to receiving such a code at the very end of a study. Specifically, their payment is based on return of the correct completion code. Despite



lengthy explanations some participants failed to take note of the difference and never completed the full survey yet requested compensation after entering the code that they received after the WCST. In some cases, the problem could be averted because participants contacted the researcher through Prolific's messaging function. However, it was crucial that the researcher answered immediately as otherwise participants would stop participation.

Lastly, during this study, we observed that the demographic information that is pre-recorded is not always correct. We had chosen to recruit only British citizens who were at least eighteen years old. As we also asked this demographic information in the survey, we noticed that the self-reported citizenship status of some participants differed from their records. We contacted the relevant participants to explore the issue and could retain most participants. However, we recommend asking for all relevant demographic data in a task or survey even if the crowdsourcing platform offers these in their records.

## Things to consider

Our experiences raise two final considerations for researchers conducting crowdsourcing studies online. As the use of crowdsourcing tools becomes more common in academic research, several ethical questions also need to be considered. Participants often rely on crowdsourcing as a major source of income, even if full time work on platforms do not provide a living wage.<sup>26</sup> In studies conducted by our team, we also frequently encountered complaints or pleas for payment from participants whose submission was rejected (e.g., due to failed attention checks). Some examples of the many messages our team received include the below, received during a period of national lockdown in the U.K.:

Hi - I think your [*sic*] being unfair, I normally don't fail any security checks, however with the current situation, the children are at home, I may have got distracted due to the children. I don't think I should be penalised for this, I always try my best with every survey.

Such messages offer a glimpse into how important payment can be to crowdsourcing participants. As a result, an imbalance of power between the researcher and participant lies at the core of crowdsourcing tasks. One solution is to offer participants a living hourly wage for their participation. Researchers may also consider factoring the compensation of (some) invalid participation into their research budgets.

On the other hand, researchers conducting a crowdsourcing task can also face significant stress because of criticism or even abuse from participants, as experienced by our team. Therefore, it is important to realise that crowdsourcing research is also associated with large amounts of time spent on communicating with participants. It may be advisable for researchers running a crowdsourcing study to enlist support in dealing with this communication, for example to manage the high volume of messages (in studies with large participant pools) or to discuss matters of criticism or abuse.

Lastly, we acknowledge that the costs of crowdsourcing data may be too high for some researchers. An alternative platform for crowdsourcing data is Reddit, specifically the subreddit [/r/SampleSize](#). Members of this subreddit have joined to voluntarily complete online studies. A recent study also showed that [/r/SampleSize](#) participants were more attentive when completing a survey than MTurk participants; overall, data quality was high.<sup>27</sup>

## Conclusion

We aimed to present crowdsourcing as a potential data collection methodology to facilitate research on violent extremism. With the rise of empirical study, more researchers in this field may consider crowdsourcing to gather primary data for different research designs, such as surveys, experiments, longitudinal, and different type of qualitative research. Crowdsourcing could have particular applications to violent extremism research by facilitating more truthful responses to sensitive questions,



providing access to large and potentially understudied samples, and generating primary data in a field often criticised for over-reliance on secondary sources.

Overall, our own experiences have been positive and provided us large volumes of data, very quickly, affording unique insights. Nevertheless, launching a crowdsourcing study can be labour-intensive and requires researchers to consider many of the challenges we discuss here. Nevertheless, we hope to see the use of online crowdsourcing further accelerate the empirical revolution in terrorism studies. We conclude by summarising our collective experience as ten lessons learned:

- (1) Use attention checks but beware of introducing biases by rejecting participants on failure of a single attention check.
- (2) Be on hand to respond to participants' queries and messages, i.e., don't leave a study running overnight in case there are issues you need to address in real-time.
- (3) Consider offering a living wage for participation, rather than the minimum amount and be aware of financial or other issues which may affect your sample.
- (4) Be aware that researchers sometimes receive abuse and ensure a plan is in place to equip the team to deal with these instances.
- (5) Set money aside to conduct a pilot test, especially when running a complex study with links to external sites (i.e., PsyToolkit).
- (6) Request participants self-report any demographics you are interested in analysing, rather than relying on information recorded by the platform.
- (7) Consider using built-in functionalities, such as those in Qualtrics, or simple free text questions, such as "What is the weather like today?" to detect bots.
- (8) For large and complex studies, consider releasing places for your study in batches, to reduce the likelihood of overloading the servers and incomplete responses.
- (9) Check the current demographics of the participant pool and consider if applying filters will help you achieve a more representative sample. For instance, the current Prolific pool has a young, female majority due to a viral TikTok video which increased its popularity amongst this demographic.
- (10) Carefully respond when to reject a participants' response. Consider setting aside funds to make payments to participants who spent time completing your study, even if you do not use their data.

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**Paul Gill** is a Professor of Security and Crime Science at UCL. His research focuses on terrorist behaviour. He has conducted research funded by the Office for Naval Research, the Department of Homeland Security, the European Union, the National Institute of Justice, Public Safety Canada, CREST and MINERVA. These projects focused upon various aspects of terrorist behavior including the IED development, creativity, terrorist network structures, violent extremist risk assessment and lone-actor terrorism. He currently leads a European Research Council Starter grant for a project entitled GRIEVANCE.

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## Appendix A

Table A.1. Research on violent extremism using crowdsourcing. Please note this was correct as of 2021

Author	Title	n	Sample source	Design	Aims	Findings
Adam-Troian et al (2020a)	"Return of the Repressed": Exposure to Police Violence Increases Protest and Self-Sacrifice Intentions for the Yellow Vests"	523	Social network groups	Cross-sectional survey	Examine the effects of exposure to police violence on protest and self-sacrifice intentions for the Yellow Vests	Exposure to police violence had a direct effect on protest and self-sacrifice intentions among Yellow Vests, which were mediated by perceived loss of significance and identification with the group
Adam-Troian et al (2020b)	Positive Associations between Anomia and Intentions to Engage in Political Violence: Cross-Cultural Evidence from Four Countries	1, 240	Students from classrooms*, social network pages, public institutions*	Cross-sectional survey	Test the links between anomia and intentions to engage in political violence	Small-to-medium positive correlations between anomia and intentions to engage in political violence
Bélanger et al (2019)	Radicalization Leading to Violence: A Test of the 3N Model	Study 1 – 470 Study 2 – 422* Study 3 – 357	Advertisements posted on classified advertisements, social media, student samples*, and MTurk (Amazon's crowdsourcing platform)	Cross-sectional surveys & experiments	Study 1—develop and validate two scales: the Social Alienation Scale and the Political Violence Scale Study 2a & b—test the psychological trajectory proposed by the 3N model of radicalisation in different contexts* Study 3—Replicate study 2 using an experimental design	Developed and validated two scales employed in part to demonstrate the relationship between and generate causal evidence for the links between social alienation, support for political violence, and radical social network

*(Continued)*



Table A1. (Continued).

Author	Title	n	Sample source	Design	Aims	Findings
Bélanger et al (2020)	Supporting Political Violence: The Role of Ideological Passion and Social Network	Study 1 – 331 Study 2 – 381 Study 3 – 366	Snowball sampling, student samples*, and MTurk		Study 1—Examine the link between obsessive (OP) and harmonious passion (HP) with different (radical) social network affiliations Study 2—test the associations from Study 1 via an experimental design to generate causal evidence Study 3—examining the potential mediating role of network density*	OP and HP are associated with radical and moderate network affiliations which are in turn associated with support for political violence. OP causes increased willingness to affiliate with radical activists, which is associated with support for political violence. Indirect effect of OP on support for political violence via radical social networks is moderated by network density
Clemmow et al (2020)	The Base Rate Study: Developing Base Rates for Risk Factors and Indicators for Engagement in Violent Extremism	2018	Prolific	Cross-sectional survey	Develop general population base rates of risk factors and indicators for engagement in violent extremism. Compare base rates to prevalence of indicators in an offender (lone-actor terrorist) sample	Lone-actor terrorists demonstrated propensity indicators related to a cognitive susceptibility, and a crime- and/or violence-supportive morality more often; the general sample demonstrated protective factors more often, (i) lone-actor terrorists demonstrated situational indicators related to a crime- and/or violence-supportive morality more often, whereas the general sample experienced situational stressors more often, (iii) lone-actor terrorists demonstrated indicators related to exposure to extremism more often.

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Table A1. (Continued).

Author	Title	n	Sample source	Design	Aims	Findings
Fodeman et al (2020)	Picking Up and Defending the Faith: Activism and Radicalism Among Muslim Converts in the United States	356	Qualtrics	Cross-sectional survey	Examining activist and radical intentions among Muslim converts on the US	Muslim converts demonstrate higher activist and radical intentions than non-converts. Activism mediates the relationship between conversion and radical intentions
Goetzsche-Astrup (2019)	Personality Moderates the Relationship between Uncertainty and Political Violence: Evidence from Two Large US Samples	Study 1 – 2317 Study 2 – 2489	Lightspeed Research (online survey panel), ANES time series study*	Cross-sectional surveys	Examining the relationship between uncertainty, political violence, and fundamental personality traits	Low openness to experience (big-5 personality trait) moderates the relationship between uncertainty and political violence
Goetzsche-Astrup (2020)	Pathways to Violence: Do Uncertainty and Dark World Perceptions Increase Intentions to Engage in Political Violence?	Study 1 – 401 Study 2 – 1300	Student sample,* Lightspeed Research (online survey panel)	Cross-sectional surveys & experiments	Study 1—pilot test model (see study 2) Study 2—examine the causal pathways between uncertainty, dark world perceptions, and political violence	Uncertainty and dark world perceptions are positively associated with political violence intentions. Support for the uncertainty pathway to political violence intentions, lesser support for the dark world pathway to political violence intentions
Goetzsche-Astrup (2021)	Dark Triad, Partisanship, and Violent Intentions in the United States	Study 1 – 1500 Study 2 – 3000	Lightspeed Research (online survey panel)	Cross-sectional surveys	Study 1 & 2—examining the relationship between dark triad personality traits, partisanship, and political violence intentions	Evidence to suggest dark triad personality traits are related to strong partisanship and political violence intentions

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Table A1. (Continued).

Author	Title	n	Sample source	Design	Aims	Findings
Kunst et al (2018)	Engaging in Extreme Activism in Support of Others: Political Struggles: The Role of Politically Motivated Fusion with Out-Groups	Study 1 – 201 Study 2 – 215 Study 3 – 234 Study 4 – 83	MTurk, university mailing list, Facebook	Cross-sectional surveys & experiments	Investigate the antecedents of fusing with outgroups and how this relates to extreme activism on behalf of others	Fusion with outgroups mediates the effect of political orientation on extreme solitary action on behalf of outgroups in need. Political orientation and outgroup fusion can explain why some are willing to engage in extreme activism to support some outgroups and not others. Leftists fuse with outgroups perceived as victims of ideologies which clash with leftist political ideologies Study 4 – further evidence to suggest that people fuse with outgroups when the outgroup's treatment contrasts with their own political ideology
Mahfud et al (2021)	Macron Demission!': Loss of Significance Generates Violent Extremism for the Yellow Vests through Feelings of Anomia	Study 1 – 776 Study 2 – 511*	Social network groups, undergraduate students*	Cross-sectional surveys & experiments	Examining the links between loss of significance, anomia, and political violence intentions	Loss of significance predicts anomia, which predicts political violence intentions Experimental (causal) evidence for the mediating effect of loss of significance on political violence intentions
Morgades-Bamba et al (2020)	Exploring the Radicalization Process in Young Women	643	Online community sample recruited via websites for French universities	Cross-sectional survey	Examining relationship between socio-cultural and psychopathological factors and radicalisation among young women	Evidence to link dark tetrad (personality traits) to radicalisation outcomes in young women
Obaidi et al (2018a)	Living Under Threat: Mutual Threat Perception Drives Anti-Muslim and Anti-Western Hostility in the Age of Terrorism	Study 1 – 205 Study 2 – 205 Study 3 – 151 Study 4 – 247 Study 5 – 142	Facebook, MTurk, students and online social media	Cross-sectional surveys	Examining the role of perceived intergroup threat on outgroup hostility	Intergroup threats (symbolic and realistic) relate to outgroup hostility

(Continued)



Table A1. (Continued).

Author	Title	n	Sample source	Design	Aims	Findings
Obaidi et al (2018b)	"They Think we are a Threat to their Culture": Meta-Cultural Threat Fuels Willingness and Endorsement of Extremist Violence Against the Cultural Outgroup	Study 1 – 154 Study 2 – 151 Study 3 – 191	Facebook	Experiments	Examining the effects of outgroup perceptions of a subject's ingroup as a threat on endorsement of violence against the outgroup	Outgroup perception of a person's ingroup posing a threat is related to that person's willing to endorse violence against said outgroup
Obaidi et al (2019)	Group-Based Relative Deprivation Explains Endorsement of Extremism Among Western-Born Muslims	Study 1 – 59 Study 2 – 232 Study 3 – 259 Study 4 – 243 Study 5 – 104 Study 6 – 366	Muslim community centres and mosques, Facebook, convenience and snowball sampling	Cross-sectional surveys	Examining the relationship between group-based relative deprivation in Western-born Muslims (compared to foreign-born Muslims)	Western-born Muslims scored higher on predictors of extremism than foreign born Muslims, which was explained by group-based relative deprivation
Ozer et al (2020)	Group Membership and Radicalization: A Cross-National Investigation of Collective Self-Esteem Underlying Extremism	Study 1 – 223 Study 2 – 147 Study 3 – 225	University mailing lists and Facebook	Cross-sectional surveys	Examining the effects of collective self-esteem on extremism across different nationalities	The effect of insecure life-attachment in extremism is moderated differently by various aspects of collective self-esteem
Schumann et al (2021)	Does Cognitive Inflexibility Predict Violent Extremist Behaviour Intentions? A Registered Direct Replication Report of Zmigrod, Rentfrow, & Robbins, 2019	1378	Prolific	Cross-sectional survey	Direct replication of Zmigrod et al (2019a) examining the role of cognitive inflexibility on violent extremist behaviour intentions	To be completed (registered report)
Schumpe et al (2020)	The Role of Sensation Seeking in Political Violence: An Extension of the Significance Quest Theory	Study 1 – 460* Study 2 – 371* Study 3 – 112 Study 4 – 305 Study 5a – 240 Study 5b – 160 Study 6a – 245 Study 6b – 174 Study 7 – 392	Face-to-face interviews,* volunteers* MTurk, panel service	Cross-sectional surveys, longitudinal design, & experiments	Examine the role of sensation-seeking in support for political violence within the context of Significance Quest Theory	Sensation-seeking mediates between meaning in life, willingness to self-sacrifice, and support for political violence. Sensation-seeking predicts support for violent activist groups, which can be explained by how exciting a group is perceived to be. Providing people high in sensation-seeking with a peaceful activist group mitigates their support for extremism.

\*sample not crowdsourced

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