RESEARCH ARTICLE

Beyond Antecedents: The Application of Reciprocal Determinism to Understanding Radicalisation Process(es)

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Abstract: This article proposes a novel theoretical framework for (re)conceptualising the process(es) of radicalisation. Whilst the concept of radicalisation, as a social and psychological process, has been ubiquitous within recent popular, political, and policy discourse, it remains relatively immature and intangible. Indeed, it has received inadequate theoretical or conceptual consideration. In an attempt to rectify this, the current paper proposes a novel, dynamic, conceptual framework anchored in the reciprocal determinism approach articulated by Bandura.[i] This novel framework recognises and articulates the inherently multicausal dynamics of what is known as radicalisation. In proposing this framework, this article seeks to: a) move the field beyond the static identification of the antecedents approach that has guided much of the research examining radicalisation, and in doing so, b) provide a more comprehensive, empirically evidenced, and dynamic, theoretical grounding that has the potential to offer greater explanatory value for researchers, practitioners, and policy makers. greater explanatory value for researchers, practitioners, and policy makers.

Keywords: radicalisation, terrorism, reciprocal determinism, cognition, social identity

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i Albert Bandura, 'The Self System in Reciprocal Determinism', *American Psychologist* 33, no. 4 (1978): 344–58.

Introduction

On 11 March 2015, Islamic State (IS) announced that then 18-year-old Australian Jake Bilardi (under his nom de guerre, Abu Abdullah al-Australi) had undertaken a suicide bombing in Ramadi, Iraq.[1] The actions undertaken by Bilardi were the culmination of a cognitive shift in his beliefs, most often referred to as radicalisation, with Bilardi going from identifying as "an Atheist school student in affluent Melbourne to a soldier of the Khilafah preparing to sacrifice my life for Islam."[2] According to the psychological concept of reciprocal determinism, Bilardi's cognitive shift (radicalisation) impacted, and was impacted by, his social contexts and the behaviours he engaged in within these contexts. In the below illustration of Bilardi's radicalisation process, we highlight the importance of considering the interactions between Bilardi's cognitions, his social contexts, and the behaviours he carried out in these contexts prior to his suicide bombing.

Bilardi was described by his father as a "shy and lonely", "violent" child who "did not fit in" with peers.[3] In his own writings, Bilardi noted that his older brother first exposed him to political contexts that helped shape his worldview.[4] Further, shortly after his mother died from cancer in 2012, he reportedly converted to Islam[5] and began engaging with "brothers and sheiks,"[6] some of whom were linked to the Hume Islamic Youth Centre in Melbourne, a site linked to multiple terrorist plots and foreign fighters.[7] These experiences helped facilitate a shift in Bilardi's social identity (from an identity based on being a lonely son, brother, and atheist, to one that was based on being a sociable, politically aware, Muslim convert). This shift in identity afforded changes in Bilardi's interpretations of himself and the world, filtering his interpretation of—and leading him to seek out more radical—social contexts. For example, by 2013, Bilardi's postings on Yahoo Questions had escalated from benign questions about sport and computers to defending the Taliban and Islamic State.[8] Despite having established a radical social identity both online and in person, which reinforced his cognitive engagement with his extremist ideology, Bilardi struggled to obtain the necessary logistical guidance he needed to make his way to Iraq and Syria. In 2014, with the assistance of Misrad Kandic, now convicted of providing material support to a foreign terrorist organisation,[9] Bilardi travelled from his home in Melbourne to Istanbul, then on to Syria, and ultimately to Iraq,[10] translating his cognitive engagement into material action.

In the pursuit of understanding what radicalisation *is*, the field of terrorism research is replete with case examples like Bilardi's. However, despite the significant and enduring presence of radicalisation as part of the counter-terrorism and preventing and countering violent extremism discourse, it remains both a relatively immature and unrefined concept. While it has become ubiquitous within research and policy circles, both to describe the trajectory towards terrorist violence and as something that necessitates countering, it has been grossly under-conceptualised, and the empirical basis upon which it has been researched has historically lacked theoretical foundations. Given that radicalisation as a concept provides the basis for substantial authorities and powers to be ascribed to the State, and that those authorities and powers frequently entail coercive action and the deprivation or curtailing of liberties, it is incumbent on the research community to strengthen the empirical and theoretical understanding of the concept. This article presents an argument for the adoption of a novel framework for understanding radicalisation. Further research is currently being conducted to empirically assess the validity of the framework. The following sections first outline the requirements for this framework, before moving to examine the literature underpinning the elements of the framework. Additionally, this article introduces the proposed conceptual framework and articulates its constituent elements.

The Need for Theoretical Framing

As psychologists have long acknowledged,[11] when seeking to understand and explain human behaviour, we tend to favour developing unidirectional or bidirectional causal models that emphasise relationships between either individual or social variables (antecedents) and resultant behaviours. This is no different in the examination of radicalisation and terrorist behaviour.[12] However, in reality, the relationships between antecedents and behaviours are all interdependent.[13] This interdependency is most commonly referred to as reciprocal determinism.[14] Importantly, reciprocal determinism focuses on explaining the relationships between the underlying contexts, processes, and behaviours from which antecedents emerge, and not the antecedents themselves. Within the assumptions of reciprocal determinism, cognitive processes affect and are affected by how we navigate social environments by determining what will be observed and how it will be understood, ultimately facilitating how we psychologically and physically position ourselves, and thus behave, in any given specific context. These causal processes are not unidirectional. Behaviours are self-regulated due to changes in social environments and the parameters upon which our cognitions operate. Reciprocal determinism also emphasises that the relative influence exerted by each of the three elements (cognitive processes, social contexts, behaviours) will vary for different individuals and under different circumstances. Figure 1 highlights the continuous interplay proposed in reciprocal determinism.

Figure 1: *Continuous interplay of Cognitive, Environmental, and Behavioural Processes as described in Reciprocal Determinism*
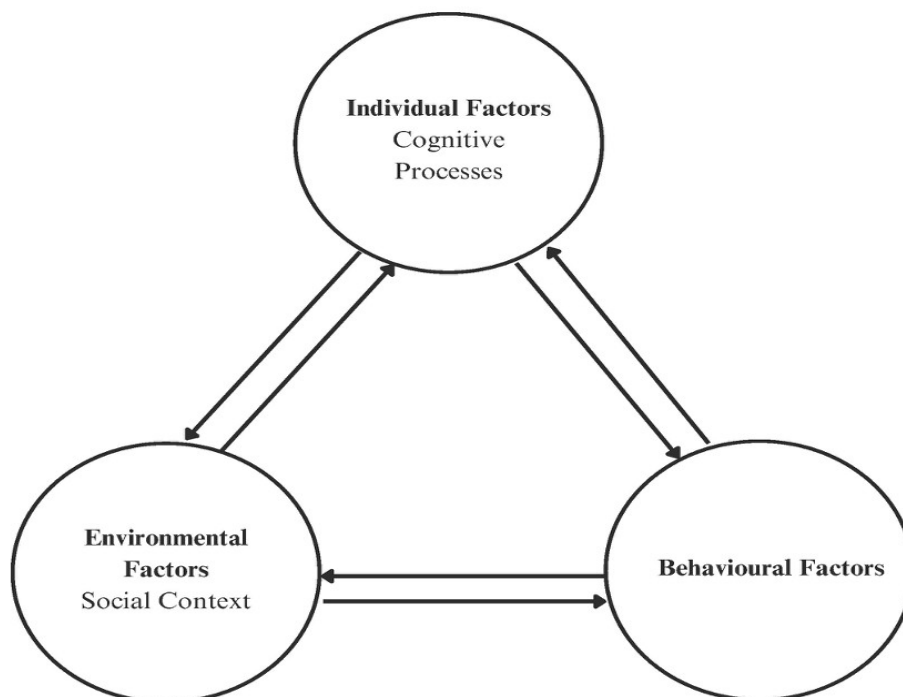
Whilst the concept of reciprocal determinism has been readily accepted in psychological research and has been applied to explain a wide variety of behavioural outcomes,[15] including crime,[16] it has yet to be used in the study of radicalisation and terrorist behaviour.[17] This is, unfortunately, not surprising. Relative to comparable fields investigating human behaviour, the academic inquiry of radicalisation and terrorism remains in its infancy. It has undoubtedly improved its empirical rigour following the terrorist attacks in New York and Washington, D.C. on September 11th, 2001.[18] There is now a consensus that no single antecedent can explain radicalisation or terrorism.[19] However, to date, most empirical research investigating radicalisation and

terrorism has focused on the repetition of static descriptive analyses, with a trend toward offering descriptive prevalence estimates of the presence of a wide range of antecedents.[20] For example, in their systematic review and meta-analysis of 127 studies published between 2007 and 2021, Wolfowicz and colleagues identified over 100 behavioural antecedents related to radicalisation.[21] The antecedents that have been identified across the field now form the basis for a wide array of risk factors that are included in current and emerging risk assessment and management protocols used to counter radicalisation and terrorism.

Despite these empirical advancements and application to practice, most existing analyses in static form only scratch the surface in our attempts to understand the relevance of the identified antecedents as drivers of radicalisation and terrorism. In the rare instances where research has used dynamic analytical procedures to tackle this problem, it has exposed and reinforced the complexity of interactions between antecedents that co-occur in individuals who undertake terrorism,[22] and exposes a continuing problem elucidated by Wolfowicz and colleagues,[23] who highlighted that despite a wealth of empirical research, two fundamental questions remain: why do only some individuals radicalise when most of those exposed to similar conditions do not, and why do only some radicalised individuals turn to violence, whilst the majority do not?

These questions cannot be answered without a coherent and empirically verified theoretical grounding.[24] Without such a grounding, it will never be possible to determine why and how specific antecedents are related. Across the field, there is a distinct lack of theoretically or empirically focused investigations seeking to understand the reciprocal interactions between the contexts, processes, and behaviours that underpin the identified antecedents. This means that existing research outcomes—and by extension, the practice of risk assessment—are descriptive and explanatory only of the specific cases and contexts where the antecedents were identified. Without a coherent and empirically verified theoretical explanation of the reciprocal interactions between the elements underpinning the known antecedents, existing findings are only able to offer a limited explanation of any causal relationships between antecedents, *which* antecedents are important in the process of radicalisation, or the *specific circumstances* in which they are important.

Taking this as a starting point, this discussion explores the potential for the application of reciprocal determinism to bolster the theoretical grounding of our understanding of the process(es) of radicalisation. The most empirically comprehensive research that examines radicalisation continuously highlights that it is the interaction between antecedents that offers insight into radicalisation.[25] The framework of reciprocal determinism can offer a structure which moves our understanding beyond the description of the presence of antecedents and towards the acknowledgement of the importance of interactions *between* the contexts, processes, and factors that underpin the antecedents.

Radicalisation as a Concept

The concept of radicalisation, whilst frequently cited across scholarly, public, and policy domains, remains relatively underdeveloped. Scholars have consistently highlighted that the term emerged into public consciousness following the 9/11 attacks.[26] For example, Neumann noted that, following the attacks, it "became very difficult to talk about the 'root causes' of terrorism…so experts and officials started referring to the idea of 'radicalisation' whenever they wanted to talk about 'what goes on before the bomb goes off.'"[27]

It is relatively uncontroversial to state that the term radicalisation has become associated, most acutely, with the PREVENT programme in the United Kingdom, and has been applied, at least during the War on Terror, disproportionately to Islamic communities in Western jurisdictions.[28]

This conceptualisation has resulted in skewed data collection that places emphasis on religious motivations. As a result, work in this area is encumbered with a secondary problem of implying, or explicitly reinforcing, the flawed premise that Islam, or Muslims, are at greater risk of radicalisation than the general population.[29]

Therefore, this discussion, while continuing to utilise the term *radicalisation,* considers it a process of *belief adoption* in the agnostic sense. A core assumption that informs this research is that any assessment of a specific ideology or belief framework as 'extreme' or 'radical' is necessarily subjective and context dependent,[30] and that the process by which an individual adopts beliefs and undertakes behaviours anchored in or informed by those beliefs, remains consistent, regardless of any assessment of the 'extremity' or presentation of those beliefs. The proposed framework in this research reflects the consistent nature of belief adoption,[31] independent of ideological specificity, character of particular belief frameworks, or nuances in behaviours observed across different ideological presentations.

It should be noted that the critique of radicalisation and its conceptualisation, which is inherent in this article, should not be read as an explicit criticism of the foundational work that has brought radicalisation scholarship to its current position. Indeed, the foundational work of scholars such as Silke,[32] Horgan,[33] Victoroff,[34] Kruglanski,[35] Post,[36] McCauley and Moskalenko,[37] have, amongst numerous others, all contributed immensely to the refinement and development of the specialist body of knowledge that has concentrated on understanding radicalisation. The work undertaken herein builds on and seeks to extend that previous scholarship.

Despite the above-noted seminal research, the growth in the adoption of the term radicalisation has outpaced the empirical advancements in our understanding of what radicalisation *is*. There is a common acceptance throughout the literature, and a large number of radicalisation models, that radicalisation is a process rather than an outcome.[38] In 2023, Corner and Taylor identified 99 unique radicalisation models that have been developed across the field.[39] These models were designed to capture the relationships between antecedents related to the process of radicalisation, and whilst all models treat the adoption of attitudes and behaviours characteristic of terrorist ideologies as a process, this is where the commonalities end. Corner and Taylor identified 786 unique antecedents included across the 99 models. Over time, model design has increased in complexity, in part due to the continual identification of antecedents, and currently, the most coherent models draw from the theoretically robust discipline of criminology and embrace, rather than ignore, the complexity of what radicalisation is.[40]

Despite this shift, the models have received criticism from a range of scholars, who highlight the continued lack of theoretical and empirical validation.[41] Further, and relatedly, the lack of validation likely spans from the models' purpose; models have been designed to offer descriptive narratives of the process of radicalisation. These narratives are grounded in the examination of unidirectional (and in some instances, bidirectional) relationships between antecedents.

However, as argued in reciprocal determinism, the examination of relationships between antecedents can only offer limited insight into any process with a behavioural outcome. This includes radicalisation. Empirical research focusing on the process(es) of radicalisation has demonstrated the complexity of interactions between the previously identified and presumed stable antecedents, highlighting their ontological instability.[42] It is the application of reciprocal determinism, and thus the focus on continuous reciprocal interactions between the contexts, processes, and behaviours that antecedents emerge from, that distinguishes the current research from much of the previous. By examining the ubiquitous and fundamental processes that underpin antecedents, analysis can further our understanding of radicalisation by moving

beyond static descriptions of *what is* to a dynamic causal explanation of *why it is so*. It is through understanding this *why* that research outputs can be refined and, ultimately, that practitioners will be empowered to identify and manage the *who*, *when*, and *where* of radicalisation.

A (Dynamic) Conceptual Framework

Therefore, following the arguments presented within reciprocal determinism, this article assumes that individual cognitive processes will impact and be impacted by the social contexts in which people find themselves. Further, the behaviours that individuals conduct due to these cognitive processes and social contexts will also impact an individual's cognitions and their social contexts. These continuous reciprocal interactions have important implications for understanding the relationships between the currently identified social, cognitive, and behavioural antecedents related to radicalisation. In order to collate this assumption, we present a conceptual framework (Figure 2).

In contrast to the existing frameworks and models, which tend to concentrate on the presence of antecedents across the process of radicalisation, the dynamic framework proposed here seeks to offer an advanced understanding of what radicalisation is. Ultimately, this framework proposes that radicalisation is the result of normal, knowable, continuous interactions between individuals' behaviours, and their social contexts and cognitive processes. The framework looks beyond examining relationships between individual antecedents of radicalisation, and towards understanding the development of a radical social identity following the interaction between the cognitive processes and the radical social contexts in which an individual experiences, interprets, and understands reality.

Whilst the framework proposed here does highlight elements previously identified in the literature as antecedents, for example, individual cognitive processes, these are included as they are tangible, empirically verified components of the processes and contexts within the framework. It is also important to note that the outcome of radicalisation is contingent on the interactions between processes and should in no way be construed as suggesting that the presence of specific antecedents named in the model, for example, low self-efficacy, in and of itself, are in any way an indicator of an individual holding radical views or being likely to adopt radical views. This research also does not propose that an additional series of antecedents would provide any further explanation of radicalisation, but instead seeks to provide a dynamic understanding of the mechanisms by which an individual adopts *radical* beliefs.

Figure 2: *Conceptual Framework*
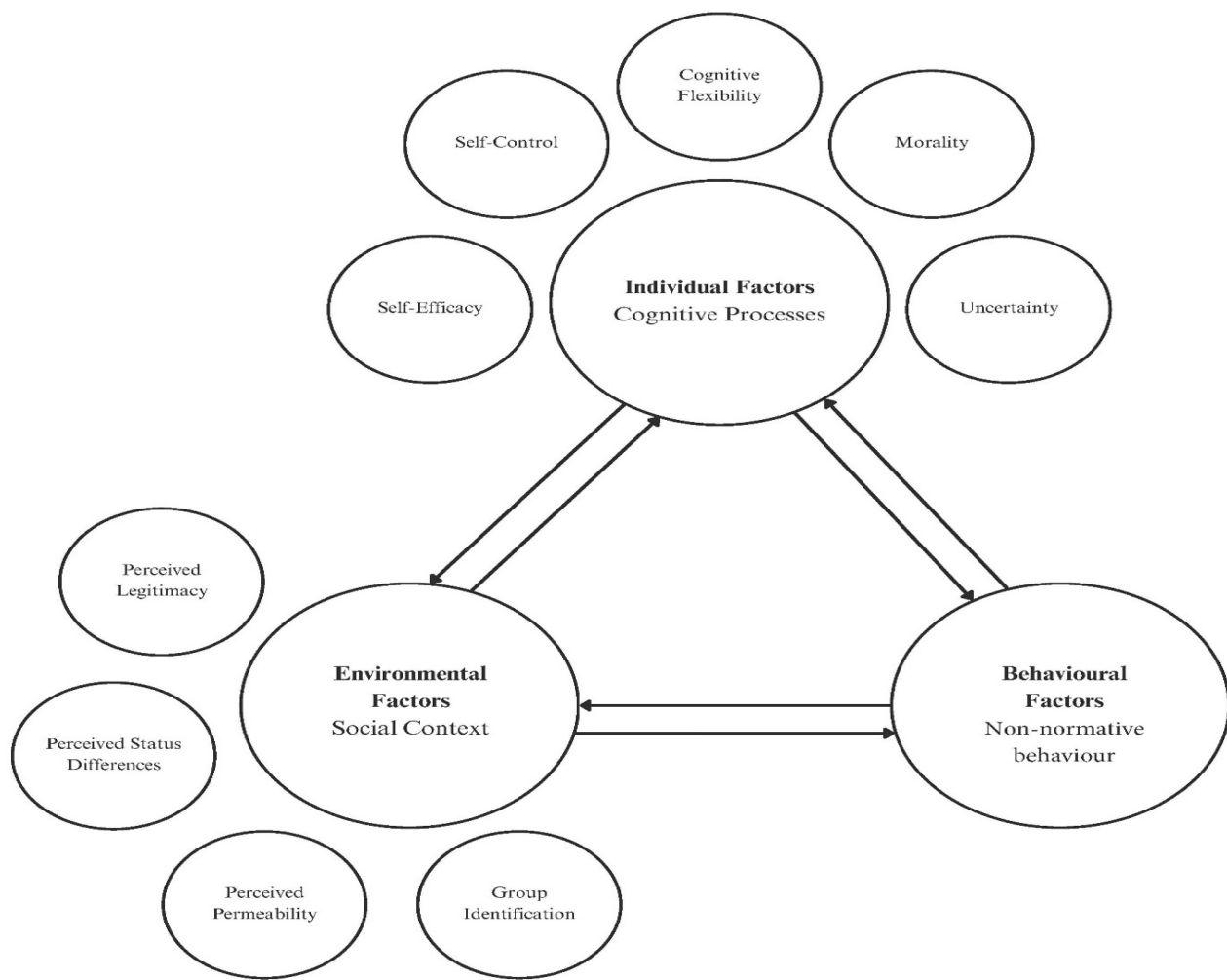
Informed by the concept of reciprocal determinism, the following sections will focus on examining the existing literature regarding the role of the social context, cognitive processes, and (non-normative) behaviours in the process(es) of radicalisation. The following sections will articulate broad definitional parameters for the concepts being deployed and the meaning they carry in the context of the proposed research.

The Social Context

Since the inception of the field of terrorism studies, one of the most consistent research directions in the exploration of radicalisation and terrorist behaviour has been the focus on the role of radical social groups. First posited by Süllwold[43] and later championed as *the* cause of radicalisation for over three decades,[44] the influence of radical social contexts continues to permeate the literature on radicalisation. However, much like other research directions, to date, we know very little about *why* social contexts are critical in the process of radicalisation. In 2020, a substantial systematic review of the antecedents of radicalisation toward violent extremism was conducted.[45] The research teams identified over 1500 empirically verified antecedents of radicalisation across 306 empirical studies. The most commonly identified antecedent was engagement with a radical social group, identified in 131 investigations. Theoretical interrogation of this antecedent highlighted that it was primarily underpinned by the degree to which people *identified* with specific social groups.[46]

Furthering these findings, this current research builds on this empirical reality of the influence of radical social contexts and embeds it within a well-established social-psychological theoretical approach: the social identity approach (SIA). The SIA comprises two interlinked theories: social identity theory (SIT) and self-categorisation theory (SCT).[47] SIT provides a detailed analysis of intergroup behaviours in particular, with conceptual emphasis on intergroup social comparisons, intergroup status hierarchies, and the legitimacy of these hierarchies.[48] SCT expands on SIT, and articulates the series of social-psychological processes by which people come to see themselves – and act – not only as unique individuals, but as members of social groups.[49] Therefore, while SIT highlights that people *are* members of groups, SCT provides insight into the psychological basis by which group membership is instantiated within any given person.

Fundamentally, the SIA proposes that all individuals perceive themselves as either belonging (in-group) or not belonging (out-group) to a range of social categories or contexts they are embedded within.[50] These social contexts may be based on independent inclusionary criteria, like gender, ethnicity, and nationality, or they may be based on the acceptance of sets of attitudes and/or beliefs (e.g., 'we pro-lifers,' 'we environmentalists,' 'we true believers').[51] This sense of belonging is critical in the development of identification with groups.[52] When individuals' identities become that of their in-group(s), their new identities have cognitive, evaluative, and affective consequences for individuals' self-concepts,[53] which impact their ongoing selection of social contexts and the behaviours they perform within and outside of these contexts.[54]

The SIA offers an analysis of social membership that, although not readily applied in research examining radicalisation,[55] has been applied successfully to analyses of an extensive range of contexts, including prejudice and stereotyping,[56] leadership and influence,[57] procedural and restorative justice,[58] organisational behaviour,[59] and education.[60] From the perspective of the SIA, radical group membership is understood to relate to the self-defined, subjective, identity-related, social group memberships that individuals *believe* they are part of. Therefore, according to the SIA, individuals *believe* and *act* as if they are members of the radical group, even if it is not objectively clear that they maintain physical access to the group. This is an important conceptual and practical advance for research examining radicalisation, which to date has focused on examining tangible physical relationships between individuals.

Research examining the impact of social contexts on identity has collectively identified four key tenets of the SIA: group identification, perception of status differences between groups, perception of legitimacy of intergroup status differences, and perception of permeability between groups. Bettencourt and colleagues explain the relationship between these tenets; individual identification and collective intergroup attitudes are a function of the need for positive social identity (and thus self-concept). These attitudes operate within the specific socio-structural context – whether the social hierarchy is perceived as both stable and legitimate and whether group boundaries between low- and high-status groups are perceived as permeable.[61] These tenets will now each be explored in turn.

Group identification

Group identification refers to the extent to which our identities relate to the social groups we are members of, and the extent to which we adopt, internalise and place value on our group memberships. This can be both self and externally defined.[62] As noted above, our identification with groups has important consequences for our own self-concept. In our efforts to enhance our self-concept, we are driven to positively evaluate the groups we identify with (in-groups) by comparison to other groups that we do not identify with (out-groups).[63] Our identification with our in-groups also has consequences for the behaviours performed by the group. According to

the SIA, perceived or anticipated changes in the intergroup social context (threats to existing social hierarchy) will impact the importance of group identification, and existing group identities become more relevant to the identity of the individuals within and can manifest in higher willingness to support or resist social changes.[64] This can present as low-status groups challenging higher-status groups and higher-status groups resisting changes that would destabilise their status.[65]

There is extensive evidence demonstrating that high group identification leads to a higher likelihood of responding to a threat to the identity and status of the in-group,[66] and that collective actions of disadvantaged and low-status groups are primarily driven by those with high group identification.[67] However, research has also identified that this expectation is defied in those conducting radical action: in radical groups, the endorsement of radical action is more likely among those who have lower group identification than high,[68] and those more likely to endorse radical action perceive other (non-endorsing) members of the in-group as lacking solidarity and commitment to the cause.[69] These seemingly aberrant findings have been theorised as related to the distinction between moderate and radical collective action. Jiménez-Moya and colleagues noted that as those who identify highly with the in-group are more motivated to protect the positive evaluations of the group (to enhance their own self-concept), they may be less motivated to endorse radical action, as such behaviours transgress socially accepted values and norms and potentially negatively impact their group's status.[70]

Perceived stability of status differences

As demonstrated above, the perception of status differences (and their stability) between groups is intrinsically linked to group identification. Group status refers to the current position of the in-group in the social hierarchy compared to other out-groups (low to high), and status stability refers to the likelihood that the identified status differences can change (e.g., low-status groups can advance to a high-status and vice versa).[71] The stability of inter-group status differences is measured through the perception that alternatives to the current status structure are considered not feasible or possible.[72] According to Brandt and colleagues, in our quest to improve our social identity and own self-concept, we are highly motivated to see ourselves, our in-groups with which we identify, and the wider social systems in which we and our groups operate, in a positive light.[73] This is completed through inter-group comparisons, with members of high-status groups more easily achieving positive social identities as compared to low-status groups, who are less able to view the social system – in which they exist further down the social hierarchy – in a positive light.[74]

Perceived legitimacy of status differences

To enhance perceptions of the in-group (and self-concepts), individuals are motivated to accept the legitimacy of the status differences between groups.[75] According to many SIA scholars, the legitimacy of perceived intergroup status differences is independent of the stability of the status structure.[76] However, the initial intentions of Tajfel and Tuner were to highlight that these two tenets are closely interrelated, with more unstable status hierarchies having a higher likelihood as being perceived as illegitimate,[77] Indeed, Caricati and Sollami argued that in a societal hierarchy where the status differences between groups are perceived as illegitimate, low-status groups are more likely to question the superior position of the high-status groups. This can also result in less discrimination towards low-status groups from high-status groups as they experience a threat to their social identity. Further, when the societal hierarchy is perceived as legitimate, low-status groups are more likely to accept their position and high-status groups are more likely to discriminate against low-status groups in an effort to stabilise their social identity.[78] Meta-analyses have identified support for this hypothesis, demonstrating that unstable status hierarchies that are perceived as illegitimate are most at risk for the rejection of the status hierarchy by low-status groups.[79]

Perceived permeability between groups

The perception of the permeability of boundaries between groups plays a key role in determining a group's response to the perceived status differences.[80] Tajfel and Turner highlighted that permeability of group boundaries is measured by the extent to which individual group members are able to shift their group membership.[81] According to the SIA, a status hierarchy that has permeable boundaries affords individuals in low-status groups the opportunity to adopt individual upward mobility strategies to increase their own status (and thus self-concept). This is particularly true when the status differences between groups are perceived as legitimate.[82] However, when boundaries between groups are perceived as impermeable, those within low-status groups instead seek to adopt collective strategies to enhance their identity (and thus the self-concepts of group members) and the group's place in the status hierarchy.[83] Such collective actions are also more likely when the existing status structure is perceived as unstable.[84]

Mummendey and colleagues noted that it is the perceived impermeability of boundaries that has the greatest impact on the existing status hierarchy.[85] If the perceived status differences are deemed stable and legitimate, engagement in collective action is less likely, as it is driven by the perception that intergroup structures can be changed (even if the status differences are seen as illegitimate). In the context of radical groups, Louis and Taylor argued that low-status radical groups are more likely to compete with the high-status government groups if there is a perception of unjustified inequality of status.[86]

Cognitive Processes

As noted, reciprocal determinism highlights that cognitive processes both shape and are shaped by external social environments and behavioural responses. These processes determine how individuals interpret experiences and anticipate outcomes, thereby guiding actions as well as being subsequently reshaped by the outcomes of those actions. By unpacking specific cognitive mechanisms identified as related to radicalisation, this section proffers evidence of how cognition continuously interacts with social identity and behaviour in the context of radicalisation.

The existing literature related to cognitive processes and radicalisation has tended towards treating cognition independently of behaviours and social contexts or social identity. Many of the earlier approaches to understanding radicalisation identified the importance of 'cognitive openings,'[87] although this research was more often informed by a Social Movement Theory perspective, rather than cognitive psychology explicitly. Newer scholarship has more explicitly dealt with cognitive psychological perspectives and radicalisation specifically, but has primarily continued the approach of treating it as a distinct aspect of the radicalisation process. McCauley and Moskalenko's influential two pyramids model, drawing in part on earlier work by Borum,[88] goes as far as to distinguish between "radicalization of opinion separately from radicalization of action." Furthermore, as Wolfowicz et al have highlighted, much of the existing literature has "...emphasized the need to differentiate the cognitive from the behavioral outcomes of radicalization."[89]

This article draws on the conceptualisations articulated by Bandura and notes that, irrespective of any assessment of behaviour, social identity, or cognition, the relationships between our individual and social antecedents and our behaviours are all interdependent.[90] This necessitates further refinement of our understanding of radicalisation to try to understand the relationships between cognitive processes, social identity, and behaviour, rather than treating behaviour and cognitive processes as distinct or separate processes. This does not contradict the consistent findings that only a small number of those who radicalise engage in violent action, but rather seeks to identify any correlation between the cognitive processes and social identity characteristics of those who do.

The literature on cognitive processes and ideology, and extremism and radicalisation specifically, has been strengthened by the recent scholarship of Zmigrod, whose work has refined the understanding of both the relationship between cognition and ideology[91] and extremism[92] generally, as well as working on specific aspects of cognition and its predictive capacity regarding extremism.[93] This work, at the frontier of political psychology and neuroscience, reinforces the importance of cognition to any appreciation of radicalisation.

The elements of cognition that are articulated below, and are incorporated into the dynamic model proposed herein, have all been demonstrated to have a substantial role in the radicalisation process, across the literature in the field. As with the social identity elements above, existing literature has empirically demonstrated the role of the cognitive processes in radicalisation, and as such, warrants consideration as part of the model proposed. Each of the elements is discussed in turn below.

Cognitive (in)flexibility

Cognitive flexibility is generally defined as the ability to switch between mental processes in order to generate appropriate behavioural responses to environments.[94] It is critical in moderating our thoughts and actions to unexpected environmental changes in an adaptive manner,[95] resulting in creative problem solving, greater resilience, and higher quality of life.[96] In presenting cognitive flexibility, individuals are both able to adequately shift their attention to capture environmental and situational changes and, based on their understanding of available options, interpret the meaning of these changes for their behaviour.[97] Studies have consistently demonstrated that higher levels of cognitive flexibility are inversely related to a range of negative outcomes associated with criminal behaviour.[98]

Cognitive flexibility has been dutifully investigated in examinations of non-normative and radical behaviour. Earlier studies observed an inverse linear relationship between conservatism and racism and cognitive flexibility. As cognitive inflexibility increased, studies demonstrated increased evidence of conservatism and racism. These studies also highlighted that cognitive inflexibility is related to intolerance to ambiguity, a preference for group-based hierarchies, and a tendency to view out-groups as a threat to social order.[99] More recent research has validated these findings, identifying similar (inverse) relationships between cognitive flexibility and a range of ideological preferences, including right-wing attitudes,[100] nationalism,[101] and authoritarianism.[102] Moving beyond beliefs, authors have also noted that cognitive inflexibility is more readily identified in those who express support for political violence.[103] The results from these studies and meta-analyses support the notion that cognitive flexibility plays a role in non-normative behaviour. The rigidity in mental processing not only reduces adaptability to diverse environments but also reinforces binary distinctions, such as in-group versus out-group, which in turn may amplify susceptibility to radicalising social contexts.[104]

Self-control

Self-control is a foundational cognitive process that governs behavioural regulation. According to Inzlicht and colleagues, self-control "refers to the mental processes that allow people to override thoughts and emotions." Control over these processes allows individuals to adapt their behaviour across situations.[105] It is commonly accepted that self-control is demonstrated when individuals are able to adjust their behaviour and sacrifice an immediate reward in anticipation of a future, larger reward.[106] Low self-control has long been identified as a key risk factor for general delinquency and crime, with Gottfredson and Hirschi elaborating that those who have lower levels (or lack) of self-control are characterised by impulsivity, insensitivity, and risk-taking behaviours.[107]

Given the well-established link between self-control and deviance and crime, it is not surprising that the investigation of non-normative behaviours associated with radicalisation has included investigations of self-control, and several studies highlight this link. For instance, in a sample of 684 young adults in the United Kingdom, low self-control and criminogenic exposure were significantly related to a potential for conducting both political and violent extremism. In a sample of 4,855 Finnish adolescents, Näsi and colleagues identified low self-control as a predictor of hate-motivated assaults.[108] Rottweiler and colleagues highlighted that poor self-control was related to exposure to radical social contexts (those with lower self-control scores were more likely to report having friends or peers with extremist attitudes) and related non-normative behaviours (greater readiness to perform violent acts on behalf of an extremist group), irrespective of espoused ideology.

In a further study, Rottweiler and Gill noted self-control as a key mediator in the relationship between conspiratorial beliefs and violent extremist intentions: those who hold conspiracy beliefs and demonstrate lower self-control are more likely to espouse intentions to commit violent extremism compared to those who demonstrate higher self-control. Corner and colleagues also identified a number of behavioural outcomes related to self-control, such as thrill seeking, impulsivity, inflexibility, and problems controlling anger. These behavioural antecedents were each identified across a sample of 125 lone-actor terrorists (with prevalence rates ranging from 28 percent to 38 percent). However, in a demonstration of the problems with identifying tangible antecedents representing cognitive processes, these items were unable to be analysed to determine their relevance in radicalisation.[109] Moreover, while individuals may hold radical or conspiratorial beliefs, only those with reduced self-control are likely to translate these cognitions into real-world violent behaviours. In this sense, self-control may moderate the relationship between radical ideology and non-normative behaviour.[110]

Self-efficacy

Self-efficacy refers to an individual's subjective belief in their capacity to perform the behaviours needed to achieve a specific outcome.[111] Self-efficacy is reflected in an individual's confidence in their ability to exert control over their own social contexts, internal motivations, and behaviours.[112] As noted by Schwarzer and Luszczynska, when individuals have high self-efficacy, they are more likely to believe they can master specific behaviours and feel more confident in overcoming challenges to mastering such behaviours. When individuals have low self-efficacy, they are less likely to act instrumentally to master the specific behaviours.[113]

Drawing on the work of Bandura,[114] Schlegel posited that in the context of non-normative behaviour, an individual's exposure to radical narratives and propaganda may increase their sense of self-efficacy and thereby their belief in being able to carry out violent acts.[115] As compared to the other cognitive processes discussed here, however, self-efficacy has received relatively little attention in empirical research examining radicalisation. In their examination of autobiographical data from terrorist offenders, Corner and colleagues identified that offenders classified as resilient demonstrated high self-efficacy, as well as a long-term lack of negative psychological reaction to the experience of stressors before, during, and after engagement in terrorism. This suggests is that those with high self-efficacy are less likely to experience adverse psychological effects of having being involved in terrorist behaviours.[116] Similarly, in their research on self-control, conspiratorial beliefs, and violent extremism discussed earlier, Rottweiler and Gill identified that individuals with high self-efficacy (alongside low self-control and weak law-related morality) have a stronger positive relationship between conspiracy beliefs and intentions to commit violent extremism.[117] These findings suggest that self-efficacy does not operate in isolation but evolves, and is reinforced, through feedback loops with group norms and behavioural engagement. Further, these results highlight the interdependency of

self-control, self-efficacy, and morality, and lend support for the consideration of these processes in a reciprocal concept.

Morality

Haidt defined morality as "...interlocking sets of values, practices, institutions, and evolved psychological mechanisms that work together to suppress or regulate selfishness and make social life possible."[118] Whilst many examinations of morality focus at the individual level,[119] specifically the degree to which morality is important to an individual's personal identity and their behaviours,[120] according to research, morality is closely related to existing social contexts.[121] Ellemers and colleagues highlight the role of morality in the regulation of behaviours within social contexts, noting that morality is central to individual's perceptions of their social identity as related to their in-groups.[122] Moreover, Leach and colleagues highlighted that the level of identification with an in-group is directly related to ascribed in-group morality – the more someone believes their in-group is moral, the more they are inclined to identify with that in-group.[123]

In the context of radicalisation, much of the theoretical direction examining morality has sought to understand the role of moral disengagement in non-normative behaviour. Bandura,[124] among others,[125] theorised the role of moral disengagement in terrorism, referring to it as the processes whereby individuals' "construe their mission and view themselves in carrying it out. They regard themselves as 'freedom fighters' in a war of liberation from oppressive rule, corruption, and humiliation."[126] Bandura highlighted that radicalised individuals undertake advantageous comparisons, euphemistic language, displacement and diffusion of responsibility, disregard or distortion of harmful consequences, attribution of blame, and dehumanisation to facilitate moral disengagement.[127] Confirming these assertions, research has highlighted that ISIS propaganda frequently deploys euphemistic language and frames acts of violence as 'martyrdom operations,'[128] and far-right groups use dehumanising metaphors (e.g., 'invasion' narratives) to justify violence against immigrants.[129] Furthermore, recent scholarship by Zimmerman has highlighted that the "Incel vernacular is endowed with...socio-moral value that Incels use to identify and organise "others,"[130] as has the work of Capelos et al.[131]

In recent empirical endeavours, researchers have focused on determining whether a shift in morality is required to engage in non-normative behaviour. In an examination of 66 former terrorists and 66 non-criminals in Colombia, Baez and colleagues demonstrated that, out of a range of cognitive elements, terrorists were best distinguished from non-criminals on the basis of their moral judgement.[132] Further, Baez and colleagues concluded that the morality of the terrorist sub-sample was reflective of a focus on the outcome(s) of the intended actions rather than the intentions underlying the actions.[133] In their examination of 684 young adults, Perry and colleagues identified that low personal morality, alongside low self-control, was predictive of political extremism. This relationship was also identified for violent extremism; however, it was also moderated by exposure to criminogenic social contexts.[134] Finally, in their examination of the relationship between conspiracy beliefs and violent extremist intentions, Rottweiler and Gill highlighted that, alongside self-control and self-efficacy, law-related morality[135] has an impact on the relationship between conspiracy beliefs and intentions to conduct violent extremism.

Uncertainty

Uncertainty refers to a cognitive state derived from a lack of information regarding the probability of future events or possible outcomes.[136] Uncertainty, and the stresses associated with it, have been given substantial attention across SIA research, specifically in relation to the role of uncertainty in the formation of self- and group-identity.[137] Hogg argued that uncertainty motivates individuals to identify with social contexts that reduce, control, or protect from the negative feelings that uncertainty induces.[138] Further, it is also argued that feelings of uncertainty may arise when group members feel that their personal beliefs, attitudes, and values conflict with others in the group, motivating individuals to seek out alternative in-groups to alleviate the negative impact of uncertainty.[139] In later work, Hogg applied this theorising to explain both radicalisation[140] and extremism.[141] He demonstrated that social groups that offer a concrete worldview with strong distinctions between in-groups and out-groups, and strong behavioural norms are better placed to reduce uncertainty, and that such characteristics are more readily seen in extremist groups (as opposed to non-extremist political groups).[142] The rise of conspiratorial movements during the COVID-19 pandemic, such as QAnon, demonstrates how societal uncertainty drives individuals toward radical narratives that offer closure and clear social binaries, further demonstrating the relationship between uncertainty and extremism, given the aforementioned relationship between conspiratorial tendencies and extremism.[143] Recent scholarship by Vanderween and Droogan,[144] which drew on analysis of the Islamic State's *Dabiq* by Ingram,[145] further reinforces the relevance of uncertainty to understanding extremism, in particular in the context of propaganda and manifestos, especially as understood through the lens of Ingram's 'crisis, solution, justification' model.[146]

Compared to the extensive theoretical investment, there has been less attention paid to empirical research that interrogates the relationship between radicalisation and uncertainty. Gøtzsche-Astrup examined the relationship between uncertainty and radical intentions and behaviours in 4,806 US-based adults, concluding that individuals demonstrating higher levels of uncertainty are more likely to express an intention to engage in political violence as opposed to activism.[147] In a later experimental study, Gøtzsche-Astrup further identified that, in 2889 adults in the US and Denmark, uncertainty was identified as significantly related to intentions to engage in political violence.[148] The conclusions of Gøtzsche-Astrup allow us to surmise that as individuals seek to reduce uncertainty through alignment with ideologically rigid groups, their resulting behaviours – such as participating in protests or online radical discourse – can further reinforce their commitment to the group.

The above evidence has demonstrated that cognitive processes do not function in isolation. Rather, they evolve in conjunction with an individual's social identity and behavioural patterns through reciprocal interactions. By examining how these internal processes interact continuously with social and behavioural elements, it may be possible to gain a more dynamic understanding of why only some individuals radicalise, and why fewer still go on to commit acts of violence.

Non-Normative Behaviour

The above sections have highlighted the nature of the social and cognitive processes that have been theoretically and empirically associated with multiple forms of non-normative behaviour. As noted, according to reciprocal determinism, behaviours are both driven by and drive our cognitive and social processes. Therefore, in this discussion, it is necessary to acknowledge that non-normative behaviours are not simply an outcome of interactions between radical social contexts and cognition.

The SIA highlights the function of a number of behavioural outcomes to achieve a positive social identity (and thus self-concept) that groups can conduct.[149] Each of these strategies is determined by both the social status structure and the individual and collective cognitive processes. As previously noted, the first strategy is to improve one's (personal) social identity by shifting membership to a high-status group. This strategy is more readily undertaken in contexts with high permeability between groups. A second strategy is to make comparisons with other out-groups (particularly those with a higher social status) on dimensions (e.g., morality, cultural values) to improve the identity of the low-status in-group.[150] This is more likely when perceived permeability is low and perceived legitimacy is high.[151] The final strategy, and of particular interest in this research, is that of competition. Here, low-status groups undertake a collective strategy to mobilise and compete with the high-status group in an attempt to shift their social status upwards and improve their social identity.[152] Such strategies, known as collective action, are undertaken when the existing status structure is perceived as both unstable and illegitimate.[153]

There is a wide range of empirical support for collective action.[154] Indeed, in a meta-analysis, van Zomeren and colleagues highlighted the range of research that supports the theory that collective action is a competitive strategy for upward social mobilisation.[155] The meta-analysis highlighted the causal effects of perceived injustice, perceived efficacy, and social identity on collective action. In further work, research expanded to focus on examining collective action through the inclusion of relative deprivation and resource mobilisation.[156] However, as noted by Tausch and colleagues, the supporting evidence for these conceptual models is grounded in normative behaviours, such as social protest and demonstrations.[157] Across three surveys, Tausch and colleagues highlighted that the interactions between social identity, efficacy, and emotions differed across normative and non-normative behavioural outcomes.[158]

Conclusion

This article proposes a novel framework that seeks to address some of the acknowledged deficiencies in the existing literature on radicalisation. These deficiencies, as detailed above, have resulted in problematic policy settings, and the development of a series of approaches to the prevention of radicalisation that this research, and the proposed framework, seeks to refine and strengthen. The framework has the potential to significantly enhance the existing understanding of radicalisation, and to potentially provide the basis for the development of more reliable assessments of an individual's radicalisation, irrespective of their specific ideological disposition, or their position pre- or post-offending.

Subsequent research, as part of the Office of National Intelligence-funded project that underpins this work, is undertaking a series of general population surveys that seek to test, refine, and validate the framework articulated herein. This research, including longitudinal data collection and a series of multi-factor experimental studies, is seeking to demonstrate the merits and utility of shifting away from a focus on antecedents and towards an examination of the processes that underpin their development. The dynamic framework builds on the increasingly nuanced and sophisticated work on radicalisation that has increasingly sought to address the deficiencies of the field. As noted in this article, there is a growing body of radicalisation research that is reflecting on the core assumptions of the field and aims to strengthen how radicalisation is conceptualised.[159]

This article argues that, in the context of understanding and ultimately working to counter radicalisation, examining the interactions between behaviours, social identity processes and

cognitive processes is particularly valuable precisely because the examination is of interactive *processes*, and not merely the *presence* of antecedents or the unidirectional relationships between them. It is intended that this research will provide the start point for an enriched, nuanced, and empirically informed understanding of radicalisation and provide a basis for further research into the process(es) by which individuals ultimately progress to participation in terrorist violence. Furthermore, it is intended that this framework and subsequent empirical evidence will inform the development of more empirically informed and more reliable assessment tools that enable practitioners to provide more calibrated and effective interventions, while also potentially informing more nuanced and sophisticated policy settings and approaches by government and others engaged in the work of countering radicalisation and terrorism.

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