The potential role of psychological time in the study of violent radicalisation, deradicalisation, and disengagement

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Abstract

Knowing the pathways that lead individuals to become terrorists and to leave terrorism behind is fundamental to combat violent extremism. However, although the processes related to psychological time are likely critical to understand violent extremism, they have mostly been neglected within the field. This narrative review proposes a conceptual framework of the potential role of psychological time in the study of violent radicalisation, deradicalisation, and disengagement that: (1) highlights the importance of locating violent extremism within a temporal landscape that integrates people's views about the past, present, and future; (2) discusses the contribution of key processes associated to the construction of personal and collective narrative identity, personal and collective continuity, temporal distance, thoughts about alternative possibilities, and time perspective; (3) relates these processes to specific insights provided by psychosocial models of violent radicalisation, deradicalisation, and disengagement widely recognised within the field of terrorism; and (4) indicates future research opportunities.

Keywords: Violent Radicalisation; Deradicalisation; Disengagement; Time; Mental Time Travel

Fighting violent extremism is one of the most critical challenges of the present era and one of the UN highest priorities (UN Counter-Terrorism Centre, 2021). To answer to the UN's call, it is tantamount to knowing what motivates individuals to engage in terrorism and to leave terrorism behind.

The interest in studying the phenomena related to violent extremism has skyrocketed in the early 2000s, following the upheaval caused by the attacks in the United States on September 11, 2001, the bombings in Bali on October 12, 2002, Madrid on March 11, 2004, and London on July 7, 2005, among others. Researchers from several disciplines have devoted their time to the study of terrorism and their efforts have crystallised in several models about the psychological mechanisms lying behind radicalisation leading to violence, deradicalisation, and disengagement (Moyano et al., 2022). However, our knowledge of violent extremism is still incomplete, and gaining further insights is essential to effectively fight terrorism.

One of the main barriers for the development of comprehensive theories in this area is the scarcity of fieldwork. Conducting fieldwork is necessary to test the ecological validity of theoretical models developed in the laboratory and to discover novel mechanisms. However, the ethical and practical challenges in accessing samples of individuals at risk of radicalisation, current terrorists, and former terrorists have led to a disturbing lack of studies including primary data (Gómez, Vázquez, Chinchilla et al., 2023). Despite these obstacles, several scientists have managed to access these participant groups and have made significant theoretical and applied contributions. For example, the contributions provided by researchers focused on identity fusion (e.g., Gómez, Atran et al., 2022; Gómez, Bélanger et al., 2021; Gómez & Blanco, 2019, 2023), the *sacred values model* (e.g., Ginges et al., 2007), the *devoted actors model* (e.g., Gómez et al., 2017; Gómez, Vázquez, & Atran, 2023; Hamid et al., 2019; Sheik et al., 2016, Pretus et al., 2019), the *Doosje's stage model of (de-)radicalisation* (e.g., Doosje et al., 2013, 2012), the *pro-integration model* (Barrelle, 2015), or the *3N model of (de-)radicalisation* (e.g., Bélanger et al., 2014; Kruglanski et al., 2014, 2019), among others. A careful consideration of this research and our experiences in the field has made us aware of the need for an integrative review that could provide a conceptual framework on the potential role of psychological time in the dynamics of terrorism.

Psychological time refers to the subjective perception of time or events located into temporal categories. It is a complex phenomenon that derives from the basic ability to divide the flux of experiences into past, present, and future and manifests through different processes, occupying a significant portion of human's mental life and being critical to many endeavours (e.g., Suddendorf et al., 2022; Suddendorf & Corballis, 2007). For instance, individuals and groups travel back and forth in time, remembering their past and anticipating their future, and, through these travels, they weave the narratives that constitute the basis of their personal and collective identities (Michaelian & Sutton, 2019; Suddendorf & Corballis, 2007). People also strive to achieve a sense of personal and collective temporal continuity (Sedikides et al., 2022). They locate events on a temporal continuum that takes the present as a reference frame,

experiencing such events as psychologically close or distant (Trope & Liberman, 2003, 2010), and think about alternative pasts and futures, navigating mental landscapes constituted by possibilities (e.g., Baumeister & Massicampo, 2010; Epstude, 2018; Epstude & Roese, 2008). Moreover, they differ in their propensity to reflect about the past, the present, and the future, and in their attitude towards them (Stolarski et al., 2018; Zimbardo & Boyd, 2008).

We propose that all these processes are fundamental to better understand violent extremism. However, although the importance of psychological time is explicitly or implicitly acknowledged by most theoretical models of radicalisation leading to violence, deradicalisation, and disengagement, none delves deeply into this aspect, examining the full spectrum of psychological time-related processes. Moreover, there is currently no integrative approach showing the relevance of psychological time across theoretical models. Advancing this approach is the primary goal of the present research. In doing so, this manuscript establishes a unifying thread that spans theoretical models, crafting a meta-perspective that bridges and harmonises the diverse insights provided by the different models. Through this lens, our work highlights how existing models can illuminate each other through shared temporal dynamics, providing a framework that opens avenues for future empirical studies. These studies should incorporate questions about participants' envisioned past, present, and future to deepen our comprehension of the processes related to violent extremism as time-embedded processes.

The importance of psychological time is also underscored by our own field experiences. Our research team has conducted extensive work with individuals at risk of radicalisation, current violent extremists, and former violent extremists across multiple countries and continents. This work has followed a multi-method, multi-theoretical approach, focusing on the central processes highlighted by the main theoretical models in the area, and includes hundreds of in-depth, face-to-face interviews carried out in prisons, conflict zones, and reincorporation centres with individuals associated with a broad spectrum of extremist groups – from religiously motivated groups like ISIS, al-Qaeda, and Jemaah Islamiyah, to ethnonationalist groups such as the Liberation Tigers of Tamil Eelam and Euskadi Ta Askatasuna, and left-wing extremists such as the Revolutionary Armed Forces of Colombia – People's Army. Across these interviews, open-ended questions about participants' life histories and the factors influencing their engagement and disengagement from extremist violence have invariably highlighted the importance of psychological time to reach a better understanding of the processes central to most models. Participants consistently referenced their perceived past, present, and future in shaping their motivations and commitments, lending empirical weight to the idea that the processes related to psychological time are not just contextual factors, but active forces in the dynamics of violent extremism.

To ensure a thorough examination of relevant literature, we conducted a narrative integrative review, which allowed us to capture broad connections between the processes related to psychological time and violent radicalisation, deradicalisation, and disengagement that might have been overlooked in a more narrowly focused systematic review (e.g., Baumeister, 2013; Baumeister & Leary, 1997; Sutton, 2019). We consulted multiple sources, applying inclusion and exclusion criteria based on the relevance and parsimony of the research. This method enabled us to prioritise theoretical development over strict methodological constraints, selecting studies based on their likely contribution to theory development rather than solely on methodological characteristics. This approach led us to include studies that examine non-violent political actions in the review, as these might capture broad psychosocial dynamics that may apply to violent extremism. Nevertheless, we advise caution in generalising these findings directly to violent extremism without further empirical validation. Their applicability to the field should be considered tentative, inviting further studies to empirically assess whether the insights from non-violent political behaviours transfer to violent extremism.

Lastly, given that we combined a wide range of themes that had not been previously integrated, we only could address each theme very briefly, which forced us to exclude a considerable number of theoretical models and research results from the manuscript. We hope that the novelty of the big picture allowed by our approach compensates for the lack of rigour that such exclusions entail (for more details on the procedure followed to conduct the review, see Supplementary Materials).

After providing a brief overview of the main theoretical models of radicalisation, deradicalisation, and disengagement, we introduce several processes of the psychology of time that might be important for the study of violent extremism, relate these processes to the findings offered by existing research, and highlight avenues for future studies. By integrating the insights provided by the research on psychological time with the literature on violent radicalisation, deradicalisation, and disengagement, our work might contribute to enrich the theoretical foundations of most existing models, enhancing their explanatory and predictive power regarding violent extremism. This advancement may open avenues for crafting enlightened intervention and prevention programmes to break down the cycle of terrorist violence, without breeding intolerance, hate, or resentment (for a summary of the main contributions of psychological time to the study of terrorism and a list of future possibilities of research, see Table 1; and for a visual representation of the role of psychological time in the processes of radicalisation, deradicalisation, and disengagement from violence, see Figure 1).

Models of Radicalisation

The beginnings of the research on terrorism were marked by the search of psychological profiles. Early studies followed a criminogenic approach that emphasized the role played by psychopathologies and personality traits (Rae, 2012). However, it was soon realised that violent extremists do not differ from the general population in significant ways (Kruglanski & Fishman, 2006). This situation drove researchers to accept that "normal" people might become terrorists, and to conceptualise violent extremism as a complex and dynamic process that entails a progressive compromise with the use of violence, and depends on the interaction between the individual, the social, and the political environment (e.g., Horgan, 2008).

Consequently, much contemporary models of radicalisation attempt to capture the phases that integrate this process and/or to identify the psychosocial mechanisms that might facilitate or hinder engagement in extremist violence. Among the models that have enjoyed the greatest recognition by the scientific community are the *staircase model*, the *two-pyramids model*, the *attitudes-behaviour corrective (ABC) model*, *identity fusion theory*, the *sacred values model*, the *devoted actors model*, the *3N model of (de-)radicalisation*, *uncertainty-identity theory*, and *the Doosje's stage model of (de-)radicalisation.* All these models acknowledge the relevance of psychological time (for a summary of the specific considerations on psychological time given by existing models on violent extremism and suggestions for future research, see Table 2; and for details on some of the methodological approaches that could be used to conduct this research within the frame of each model, consult Table S1 in the Supplementary Materials).

The *staircase model* (Moghaddam, 2005) depicts radicalisation as a continuous, multistage process that unfolds over an extended period of time and is represented metaphorically as a narrowing staircase. On the initial floors, individuals engage in an interpretation of their material reality and perceive injustices, identify the actors that have caused these injustices, and direct their anger towards the perceived culprits. On latter floors, they start to see terrorism as a justified strategy, join terrorist groups, and are trained and sent to undertake terrorist actions.

The *two-pyramids model* distinguishes between radicalisation of the narrative and radicalisation of action (McCauley & Moskalenko, 2017; Moskalenko & McCauley, 2020).

The radicalisation of the narrative leads individuals to adopt increasingly extreme beliefs and is metaphorically represented by a pyramid with four steps – i.e., neutrals, sympathisers, justifiers, personal moral obligation. The radicalisation of action leads to the adoption of increasingly extreme behaviours and is also represented by a pyramid with four steps – i.e., inert, activists, radicals, terrorists. Additionally, the model distinguishes twelve mechanisms of radicalisation that operate at three levels: (1) the individual – e.g., personal victimisation, political grievances; (2) the group – e.g., extremity shift, competition for the same base of support; and (3) the masses – e.g., hate, martyrdom.

The disconnect between narratives and actions is also central to the *ABC model* (Khalil et al., 2022), which posits that people move along independent continuums of radicalisation of opinion and radicalisation of behaviour influenced by three types of factors: (1) structural motivators – e.g., state repression, political exclusion, discrimination; (2) individual incentives – e.g., economic or psychological benefits; and (3) enabling factors – e.g., mentors, recruiters, access to weapons.

Identity fusion theory (Gómez et al., 2020; Gómez, Brooks et al., 2011; Gómez, Vázquez, Blanco et al., 2024; Swann et al., 2009, 2012, 2024) was originally conceived as a visceral sense of oneness with a group that triggers visceral feelings of responsibility for the group's wellbeing and motivates supererogatory self-sacrifices (Chinchilla et al., 2022; Swann, Gómez et al., 2014). Fusion emerges when people share core values or emotionally intense experiences – e.g., rites of passage, religious rituals, participation in combat – with other group members (Carnes & Lickel, 2018; Whitehouse et al., 2017), but it can also stem from political injustices (Kunst et al., 2018), admiration (Gómez, Bélanger et al., 2021), or from feelings of being understood – self-verification – by other group members (Gómez, Vázquez, Alba et al., 2024; Rousis et al., 2023). Recent research has found that fusion can be experienced towards entities other than groups, like ideological convictions, values, or leaders (e.g., Gómez et al., 2020). It has also shown that fusion drives extreme actions in defence of these targets (Gómez et al., 2020; Gómez, Vázquez, & Atran, 2023; Gómez et al., 2024; Swann et al., 2024).

The *sacred values model* (Atran et al., 2007; Ginges et al., 2007) aims to explain why people engage in radical behaviours for values they conceive as sacred – i.e., incompatible and nonfungible with profane issues or economic goods. Sacred values guide behaviour through a rule-bound and emotionally arousing logic that is insensitive to utility calculations (Tetlock, 2003), prompting individuals to engage in actions that run counter to the dictates of instrumental rationality (Ginges et al., 2007), and leading to the development of intractable conflicts with those who do not adhere to the same values (Atran, 2020).

The *devoted actors model* integrates the basic postulates of *identity fusion theory* and the *sacred values model*, applying to individuals who are fused with a group with which they share sacred values (Atran et al., 2014; Sheikh et al., 2016). The combination of a deep connection with the group and a strong devotion to its values instils into devoted actors a firm determination to engage in extreme acts for the members of the group or their ideological convictions (Gómez et al., 2017; Gómez, Vázquez, & Atran, 2023; Sheikh et al., 2016).

The *3N model of (de-)radicalisation* (e.g., Kruglanski et al., 2009, 2019, 2022) postulates that violent radicalisation is driven by the action of three different forces: (1) the need for personal significance; (2) the ideological narrative of the group; and (3) the social network. The need for personal significance refers to the basic desire to matter, to be someone, or to have a meaningful existence. It can be triggered by personal- or group-based loss of significance, threats to significance, or prospects for significance gain. Once activated, this need can turn into the dominant motivational force, suppressing other needs and diving individuals to engage in extreme self-sacrifices (Kruglanski et al., 2009, 2013, 2019). The ideological narrative refers to the prescriptive system of beliefs shared by the extremist group, which is necessary to liberate individuals from the psychological constraints that normally

prevent the use of violence. These narratives are composed of three barebone elements: (1) the depiction of an injustice perpetrated against the group; (2) a simple and compelling explanation for this threat that identifies a culprit of the injustice; and (3) a portrayal of extremist violence as a morally warranted and effective method for reducing or eliminating the injustice (e.g., Kruglanski et al., 2019; Webber et al., 2020; Webber & Kruglanski, 2017). Finally, the social network refers to the group of people who subscribe the narrative, and its contribution to the process of radicalisation is manifold. Specifically, radical networks validate terrorism justifying narratives and make them cognitively salient. They also reward individuals for engaging in narrative consistent behaviour. Furthermore, sharing experiences and values with other members of the network can cause identity fusion and augment the willingness to engage in extreme actions on behalf of the group and each of its members (e.g., Kruglanski et al., 2014, 2019).

Uncertainty-identity theory (Hogg, 2021a, 2021b) posits that contextually induced feelings of uncertainty about the personal self (i.e., attributes that make individuals unique), the relational self (i.e., connections with significant others and role relationships), or the collective self (i.e., attributes that derive from group membership) motivate individuals to join extremist groups, which offer clear identities and reduce uncertainty due to their highly entitative nature.

Lastly, the *Doosje's stage model of (de-)radicalisation* (Doosje et al., 2016; Feddes et al., 2020) recognises the role of the needs for personal significance and self-certainty, adding that violent extremism can also stem from a quest for justice, adventure, or sensation. This model views radicalisation as a dynamic, multistage process. The process begins with a sensitivity stage, where individuals perceive grievances or injustices – e.g., political oppression, economic inequality, personal experiences of discrimination – that create a sense of alienation and foster an "us versus them" mentality. Social factors, like belonging to a marginalised community or witnessing the suffering of one's group, intensify these feelings. Next, individuals enter a group membership stage, where they join extremist groups that affirm their views, solidifying their radical ideology and strengthening their commitment to the cause. The group fulfils their needs for belonging, self-certainty, and personal significance – which is particularly appealing to individuals who feel directionless or disconnected – and provides a sense of justice and adventure. Environmental factors, such as exposure to extremist propaganda or living in conflict zones, can also encourage group affiliation. Finally, in the action stage, individuals transition from holding radical ideologies to engaging in violent actions, convinced that violence is morally justified to achieve the group's ends. Cognitive mechanisms, such as moral disengagement and the dehumanisation of the group's enemies, further entrench their willingness to engage in extremist actions.

All summarized models emphasise the importance of collective narratives centred on past victimisation experiences and the portrayal of extremist violence as a justified and efficient strategy to reach a better future. However, their engagement with the processes related to psychological time is markedly uneven, with none of the models encompassing all relevant processes. For instance, the *two pyramids model*, *uncertainty-identity theory*, the *Doosje's stage model of (de-)radicalisation*, and the *3N model of (de-)radicalisation* suggest that dramatic life changes can foster self-doubt and render the future uncertain, increasing vulnerability to violent extremism (Feddes et al., 2020; Hogg, 2021a; Kruglanski et al., 2019; Moskalenko & McCauley, 2020). But while the first two models focus only on negative changes and compensatory reactions (e.g., decease of a loved one, loss of job), the latter two also underscore the relevance of positive changes (e.g., finding a social network that promises exceptional adventures or extraordinary gains in respect and significance). *Identity fusion theory* and *identity-uncertainty theory* argue that people might be motivated to align with groups seen as stable and continuous (e.g., Hogg, 2021a; Shiromaov et al., 2020; Swann et al.,

2024); and the *two pyramids model* asserts that envisioning opponents as essentially evil promotes hate and contributes to radicalisation (Moskalenko & McCauley, 2020). *Identity fusion theory* posits as well that recalling emotionally intense experiences that have been shared with other group members enhances fusion (e.g., Muzzulini et al., 2021), and that the perceived temporal stability of fusion contributes to sustaining violent radicalisation (Gómez, Atran et al., 2022; Gómez, Chiclana et al., 2022). Finally, the *sacred values model* (e.g., Atran, 2020) contends that sacred values are an extraordinary predictor of extreme behaviours because the events related to them are perceived as temporary close (e.g., Atran, 2020). Additional research also indicates that individuals resist contemplating hypothetical scenarios that might have happened in the past if they clash with their sacred values (Tetlock et al., 2000).

Models of Deradicalisation and Disengagement

The study of the mechanisms related to deradicalisation – i.e., the processes by which an individual's ideological commitment to violent radicalisation is reduced to a point wherein they are no longer at risk of engaging in terrorism – and disengagement – i.e., a change of role or function that implies the abandonment of participation in violence – has received considerably less attention than the study of the processes related to violent radicalisation, and its theoretical development still requires more elaboration (Koehler, 2018). However, during the last years, several authors have developed models to apprehend the causal factors that intervene in the processes of deradicalisation and/or disengagement. Some of these models derive from the models of violent radicalisation discussed in the previous section, whereas others have been developed independently. Within the first group, the contributions from the *ABC model*, *identity fusion theory*, the *3N model of (de-)radicalisation*, and the *Doosje's stage model of (de-)radicalisation* stand out. Within the second group, the most noticeable contributions include the *model of the trajectory of disengagement*, the *pro-integration model*, and the *phoenix model* (see Table 2 and Table S1).

The *ABC model* (Khalil et al., 2020) argues that deradicalisation and disengagement are fostered by factors belonging to the same categories as those that promote radicalisation, namely structural factors (e.g., disillusionment with the ideology or the organisation, political openings), individual incentives (e.g., economic or psychological benefits), and enabling factors (e.g., moderate religious leaders, family support).

Identity fusion theory postulates that individuals can disengage from violence when their commitment to the group and its members diminish due to intragroup frictions, lack of cooperation, violations of intragroup trust, or when the group deviates from their personal values, among others (Fredman et al., 2015; Gómez, Vázquez, Blanco, et al., 2024; Gómez, Chiclana et al., 2022; Gómez et al., 2019, 2020).

The *3N model of (de-)radicalisation* views radicalisation and deradicalisation as mirror processes and posits that is necessary to intervene on one or more of the psychological forces central to the model –i.e., need for significance, ideological narrative, social network – for deradicalisation to take place (Kruglanski et al., 2022; Webber et al., 2020). According to this model, the process of deradicalisation can be either explicit or implicit (Bélanger, 2017). Explicit deradicalisation involves a clear break from the narrative of the violent extremist group and may occur due to a reduced commitment to the group's core ideological objectives, or through the development of the belief that violence is morally unacceptable or ineffective in achieving the group's ends. Implicit deradicalisation happens when individuals are offered the opportunity to achieve personal significance without engaging in violence, or when positive relationships outside the extremist milieu distance them from the radical group and the use of violence.

The *Doosje's stage model of (de-)radicalisation* (Doosje et al., 2016; Feddes et al., 2020) argues that deradicalisation begins with a stage of doubt and disillusionment, where

individuals recognise inconsistencies in the group's actions, hypocrisy among its leaders, or failure to achieve the promised outcomes. This state might also be triggered by exposure to alternative perspectives or intervention programmes. Next, in the disengagement stage, individuals start emotionally distancing themselves from the extremist group, often cutting ties with their radical peers. This shift is supported by new social influences or changes in life circumstances that offer alternative ways to meet the psychological needs that fuelled the radicalisation process. Finally, during the reintegration stage, individuals reject extremist ideologies and reconnect with mainstream society. Successful reintegration involves, among other things, building new social bonds, receiving support from counselling, education, or employment programmes, and reconstructing one's personal identity.

The *model of the trajectory of disengagement* (Rabasa et al., 2010) proposes a path that starts with a trigger that prompts individuals to weight the costs and benefits of staying in the group or leaving it. Individuals who conclude that leaving the organisation offers more benefits than staying reach a turning point and decide to abandon it. After that, they try to attain a new identity and reintegrate into mainstream society.

The *pro-integration model* (Barrelle, 2015) describes disengagement as a nonlinear process influenced by mechanisms across five key life areas: (1) social relations – i.e., disillusionment with the members of the organisation, positive relationships with people outside the radical network; (2) coping – i.e., social and psychological resources necessary to address the problems caused by membership in the radical group; (3) identity – i.e., diminished commitment to the radical group, emergence of a personal self, identification with an alternative collective; (4) ideology – disillusionment with the radical ideology, finding alternative ideas, acceptance of pluralism; and (5) orientation towards action – i.e., reduced willingness to engage in violent behaviours.

Finally, the *phoenix model* (Silke et al., 2021) conceives disengagement and deradicalisation as a gradual process of identity transformation comprising changes related to the rejection of the extremist ideology, the search of an alternative identity, or the transformation of a militant identity into a peaceful identity and the elevation of peaceful values. The model also distinguishes three categories of factors that may act as catalysts of such changes: (1) actor catalysts – i.e., healthy relationships with friends and family, intervention programmes, former extremists; (2) psychological catalysts – i.e., disillusionment with the ideology, mental health problems stemming from involvement in violent extremism; and (3) environmental catalysts – i.e., imprisonment. The probability of success is greater when individuals are offered credible and secure opportunities to disengage from violence.

All these models agree that breaking away from the narrative of the extremist group fosters deradicalisation and disengagement and reduces recidivism. Most models also consider the reduction of commitment to the group, changes in personal identity, and positive expectations about the future to be crucial for radicalised individuals to relinquish violence. However, there is not much research on the contribution of psychological time to the processes of deradicalisation and disengagement, despite its critical importance.

The Importance of Psychological Time for Radicalisation, Deradicalisation, and Disengagement

Psychological time lies at the centre of human consciousness (Suddendorf & Corballis, 2007), and it has multiple manifestations (Stolarski et al., 2018). People see themselves and their groups as traversing time and invest a considerable amount of their cognitive resources to remember their past and anticipate their future (Suddendorf & Corballis, 2007; Szpunar & Szpunar, 2016). They also seek personal and collective continuity (Sedikides et al, 2022). Additionally, they envision events as psychologically close or distant (Lieberman & Trope, 2014; Trope & Liberman, 2010); think about hypothetical, alternative possibilities that only

exist in their minds (Epstude, 2018; Roese & Olson, 1997); and approach the past, the present, and the future in a peculiar or distinctive way (Zimbardo & Boyd, 2008). These processes influence perceptions, judgments, affects, and behaviours and may be important to fully understand terrorism. Yet, none of them has received the attention it deserves within the field.

Bridging this gap, the next sections introduce the processes associated to psychological time highlighted before. They do not exhaust the range of mechanisms related to psychological time, which is an extraordinarily complex phenomenon (e.g., Stolarski et al., 2018), but are the most important for violent extremism. We also relate these processes to the models of radicalisation, deradicalisation, and disengagement described in the paper and summarise the main findings of existing research. Lastly, we point out some studies that may be conducted in the future (See Table 1 and Figure 1).

Mental time travel and narrative identity

The capacity to mentally travel through time to recall past events or imagine future scenarios is a remarkable evolutionary accomplishment, which depends on various underlying abilities such as recursion (i.e., the capability to apply a rule o procedure repeatedly to generate complex thoughts from simpler ones), "folk physics" (i.e., the intuitive understanding of the physical world), or "folk psychology" (i.e., the intuitive ability to interpret people's mental states and behaviours) (Suddendorf & Corballis, 2007). These memories and images are highly influenced by current goals, beliefs, and concerns, and are not literal reflections of reality (Conway, 2005). Nevertheless, they provide the basis for the experience of a temporally extended self and are used by people to shape their personal and collective narrative identities (Michaelian & Sutton, 2019; Suddendorf & Corballis, 2007).

Personal narrative identities are internalised, evolving, and integrated stories through which individuals convey to others and to themselves who they are now, how they came to be, and what they believe that their lives may bring to them in the future (McAdams & McLean, 2013). They are important for understanding radicalisation leading to violence, deradicalisation, and disengagement because they guide approach- and avoidance-oriented behaviours (e.g., Oyserman et al., 2004); determine the social groups with which people identify and form emotional bonds (e.g., Pemberton & Aarten, 2018); and influence moral and political actions (Atkins, 2008; Haidt et al., 2009), ultimately driving some individuals to engage in politically or religiously motivated violence (da Silva et al., 2020; Heide-Ottosen et al., 2022, Simi et al., 2016).

Most models of radicalisation, deradicalisation, and disengagement acknowledge the importance of personal narratives. However, few studies have employed a narrative approach to investigate terrorism (Pemberton & Aarten, 2018), and there remain numerous unanswered questions. For example, research on identity fusion has shown that past positive or negative experiences shared with other group members can cause fusion (e.g. Kapitány et al., 2019; Whitehouse et al., 2017), and that the degradation of collective ties – i.e., sentiments toward the group as a whole – or relational ties – i.e., sentiments toward individual group members – due to past events can diminish fusion (see Gómez et al., 2019; Vázquez et al., 2017), but we don't know how expectations about the experiences or the quality of the ties that might be shared with the group in the future impact fusion. Also, despite *significance quest theory* assumes that the quest for significance can be activated by anticipated losses or gains of significance (e.g., Kruganski et al., 2022), the role of future expectations about gains has not been systematically researched, and there are no studies exploring if the impact of anticipated losses and gains varies as a function of their expected duration. Furthermore, conducting personal narrative studies might help us determine whether the division between stages identified by phase models, such as the *staircase model* (Moghaddam, 2005), the *two pyramids model* (McCauley & Moskalenko, 2017), and the *model of the trajectory of disengagement*

(Rabasa et al., 2010), reflects the phenomenological experiences of individuals who have undergone the processes of radicalisation leading to violence, deradicalisation, or disengagement, or if it makes more sense describing these processes as movements along a psychological continuum (Khalil et al., 2020).

Collective narrative identity arises from an ongoing process of negotiation and renegotiation in which shared representations of the past and future of the group are constantly modified, updated, and replaced (Michaelian & Sutton, 2019) to convey information about the behaviours that are prototypical and morally desirable for the group (Haidt et al., 2009; Turner et al., 1994) and to provide norms for action (e.g., Thomas & Louis, 2013). Collective narratives are composed by shared representations that differ in their level of abstraction, ranging from episodic memories of specific historical events to generalised plot structures as historical trajectories (Wertsch, 2008). They may be crucial to understand radicalisation and deradicalisation processes for several reasons.

First, collective narratives provide information about the impoverishment of the group's conditions relative to other groups over time (de la Sablonniére et al., 2009), depict in detail historical group traumas (e.g., Bar-Tal, 2013), and highlight intergroup threats that await the group in the future (e.g., Bar-Tal, 2018). This information can elicit perceptions of injustice and give rise to several emotions essential for collective action that may be conducive to intergroup hostility and violence, like moral outrage (Carpenter et al., 2020; Thomas & McGarty, 2009), contempt (Tausch et al., 2011), anger (Simi et al., 2019; van Zomeren et al., 2008), or collective nostalgia (Cheung et al., 2017; Reyna et al., 2022; Smeekes et al., 2018). For instance, memories of past victimisation can mobilize group members to engage in conflict to take revenge against the culprits of the injustices or to protect the group from future losses (Bilali & Volhardt, 2019); collective narratives portraying a decline in the group's status over time – i.e., regress narratives – can promote hostile political behaviours (e.g., Muro, 2005); and collective narratives depicting present-day injustice as a part of an ongoing legacy – i.e., longstanding injustice narratives – can increase defensiveness and support for violent actions (Bar-Tal, et al., 2009; Shori-Eyal et al., 2017).

Second, collective narratives inform about the types of actions that were successful or unsuccessful in the past. By doing so, they influence perceptions of the effectiveness of different tactics and motivate individuals to engage in the types of actions that were most successful (Philips & Pohl, 2020).

And third, collective narratives portray highly desirable or utopian collective futures that require a disruption of the *status quo*. Such imagined futures can impact political behaviour, leading to revolutionary acts and giving rise to violent extremism actions (e.g., Badaan et al., 2020, 2022; Fernando et al., 2018; Stankov et al., 2018). Utopian collective futures set the upper limits of people's imagination, generating a massive discrepancy between the utopian visions and the current reality (e.g., Fernando et al., 2018). This discrepancy can lead individuals to engage in instrumental behaviours to achieve social change (Badaan et al., 2020; Fernando et al., 2018). Reactions to utopian futures seem to be stronger when people have high expectations about their probability of occurrence and the efficacy of efforts to achieve them (Fernando et al., 2018, 2020), which can be accomplished by depicting progress towards the goals of the group as inevitable (László et al., 2002), or by attributing past successes to internal – as compared to external – factors and to the group as a whole – as compared to particular individuals – (Freel & Bilali, 2022). The emotions – e.g., hope – generated by such imagined futures may be key to motivate behaviour as well (Badaan et al., 2020).

The importance of collective narratives has been widely acknowledged by researchers focused on the study of terrorism. Consequently, most of the models of radicalisation, deradicalisation, and disengagement admit that depictions of past experiences of collective

injustices and portrayals of positively valued collective futures are central pieces of the ideological narrative of terrorist groups; that the internalisation of these views plays a noticeable role in the process of radicalisation; and that the rupture with them is important for deradicalisation and disengagement (e.g., Atran, 2020; Kruglanski et al., 2019; Rabasa et al., 2010). Most models also recognise that the will to engage in extreme actions is higher when people experience feelings of personal agency – i.e., capacity to personally influence the group outcomes – (Gómez et al., 2011; Swann et al., 2010) or when they perceive a high collective efficacy – i.e., capacity to achieve the goals of the group through joint actions – (Kruglanski et al., 2019; Rabasa et al., 2010).

For example, the *ABC model* (Khalil et al., 2022) suggests that collective narratives can channel the impact of structural drivers of radicalisation leading to violence by framing the extremist group's struggle as a just cause and creating expectations of future success. The *sacred values model* (Atran et al., 2007, 2020) assumes that sacred values are often embedded in collective narratives of past sacrifices. The *3N model of (de-)radicalisation* (Kruglanski et al., 2009, 2019, 2020) argues that depictions of past injustices and future victories in the narratives of violent extremist groups play a crucial role in the processes of radicalisation by portraying terrorism as a morally justified strategy and offering the possibility of attaining significance through violent actions. The *Doosje's stage model of (de-)radicalisation* (Doosje et al., 2016, Feddes et al., 2020) argues that exposure to collective narratives of past victimization and future redemption are critical in the early stages of radicalisation, as these narratives foster a sense of belonging and significance, and activate the quest for justice and sensation. The *model of the trajectory of disengagement* (Rabasa et al., 2010) contends that the disengagement process requires a radical transformation of social identity, which often involves distancing oneself from the radical group's narrative. Analogously, the *pro-integration model* (Barrelle, 2015) and the *phoenix model* (Silke et al., 2021) underscore the importance of creating secure alternatives to the extremist group's narrative to facilitate deradicalisation and disengagement from violence.

Nevertheless, despite the clear links between collective narratives and violent extremism, most research on collective narratives has been characterized by the use of qualitative methods and secondary sources, with few studies adopting a quantitative approach or relying on data obtained through interviews with violent extremists (Gómez, Vázquez, Chinchilla et al., 2023). Conducting more field studies might help us understand the relative impact of narratives about historical traumas and utopian futures on the processes of radicalisation, deradicalisation, and disengagement from violence, as well as the relationships between these narratives and other major variables, such as identity fusion, sacred values, or the quest for personal significance, self-certainty, justice, and sensation, among other things (see Tables 1 and 2).

Personal and collective narratives can motivate collective action and radical behaviours, but they also serve to satisfy several basic needs, such as the need for self-esteem, the need for belonging and acceptance, the need to feel competent and capable, and, more closely related to the psychology of time and the study of terrorism, the need for personal and collective continuity.

Personal and collective continuity

Personal continuity refers to a subjective sense of connection between one's past and present selves – past-present self-continuity – between one's present and future selves – present-future self-continuity – or between one's past, present, and future selves – global self-continuity – (Sedikides et al., 2022) and is one of the central motives implicated in the construction of the self-concept (Vignoles et al., 2008). It is achieved by essentialist and narrativist rhetoric strategies (Chandler & Lalonde, 2008). The essentialist approach assumes

that change is superficial and insignificant because there is some inherent essence – e.g., the genes, the soul – that ensures that a person remains the same across different life episodes. In contraposition, the narrativist approach recognises that the person changes deeply during their life but reaffirms personal continuity by tracking the trajectory of these changes and building a narrative that explains how the person comes to be who they are.

Notwithstanding the fact that low past-present continuity can help individuals to admit previous misdeeds (Helgason & Berman, 2002), and to abandon inferior courses of action after having invested irrecoverable resources on them (Schanbacher et al., 2021), high personal continuity confers a wide range of benefits. Between others, it is positively associated to meaning in life (Van Tilburg et al., 2019), self-esteem (Zou et al., 2018), life satisfaction (e.g., Iyer & Jetten, 2011), eudaimonic well-being (Sedikides et al., 2015), self-control (Adelman et al., 2017), perseverance (Peetz et al., 2009), and ethical behaviour (Herschfield et al., 2012). Moreover, threats to personal continuity cause discomfort, confusion, uncertainty, and negativity and lead to regulatory cycles aimed at offsetting discontinuity and restoring continuity (Sedikides et al., 2022).

The role of personal continuity has scarcely been studied in the field of terrorism, although there are solid grounds to suppose that it can be important for violent radicalisation, deradicalisation, and disengagement. In connection with this, several theoretical models highlight the relevance of processes related to personal continuity in the adoption of violent extremist beliefs. For instance, *Alexander's dislocation theory* (2012) posits that social dislocations – i.e., events that disrupt the symbolic and cultural framework of a community – can lead to deep existential crises that destabilise the personal identity, potentially driving individuals to adopt extremist views to restore their sense of coherence. On a related vein, Snook and collaborators (2022, 2023) argue that exposure to overwhelming stressors may cause disillusionment and questioning of subjective beliefs important to one's identity, a phenomenon they describe as a crisis of belief. This disillusionment, in turn, can open individuals to the adoption of radical ideologies to regain psychological stability. Lack of personal continuity also diminishes meaning in life (Van Tilburg et al., 2019), which may instigate feelings of self-uncertainty and loss of significance and drive individuals to join radical networks (e.g., Hogg, 2021a; Kruglanski et al., 2019). Additionally, research on identity fusion has shown that when the personal identity of strongly fused individuals is threatened by information that does not verify their self-views, there is a compensatory reaction leading to an increase in their inclination to perform extreme acts for the group (Gómez et al., 2011; Swann et al., 2009). Given that threats to self-continuity are also threats to the self-concept, the idea that they can cause a compensatory response like the one caused by non-verifying information seems highly plausible. Moreover, when people develop an obsessive passion for an extremist ideology, their identity becomes unidimensional, revolving exclusively around their engagement with this ideology (e.g., Bélanger, 2021). In such circumstances, narratives that challenge the ideology are often perceived as threats to personal freedom and identity, triggering an aversive state of psychological reactance that may drive individuals to strengthen their support for violence (Bélanger, 2021; Bélanger et al., 2020), as implied by psychological reactance theory (Brehm, 1966).

In addition to that, many models of deradicalisation and disengagement, like the *Doosje's stage model of (de-)radicalisation* (Doosje et al., 2016; Feddes et al., 2020), the *model of the trajectory of disengagement* (Rabasa et al., 2010), the *pro-integration model* (Barrelle, 2015), or the *phoenix model* (Silke et al., 2021), adduce that renouncing to the use of violence requires a radical transformation of the personal identity of violent extremists, which intimates that feelings of lack of continuity between the past self – i.e., the self that was implicated in violent extremism – and the present and future selves might be germane to explain the processes of deradicalisation and disengagement. This means that the impact of lack of

personal continuity probably depends on the stage at which individuals are situated. Specifically, that lack of personal continuity might have a positive impact among individuals who are deradicalising or disengaging from terrorism, whereas it might have a negative impact among individuals who are becoming terrorists or are engaged in terrorism.

The need for continuity also extends to the groups to which people belong. Individuals are motivated to identify with groups that are seen as temporally stable and continuous (e.g., Smeekes & Verkuiten, 2013), and might be more inclined to fuse with groups that exhibit a high degree of consistency (Swann et al., 2024). Perceptions of collective continuity confer multiple benefits. Among others, said perceptions are positively related to collective self-esteem (Sani et al., 2007), provide a sense of predictability and order (Selvanathan et al., 2022), and buffer group members from existential anxiety, casting the group as a means to achieve symbolic immortality (Castano et al., 2004; Smeekes & Verkuiten, 2013). As is the case with personal continuity, collective continuity can be reached emphasising the beliefs, values, and cultural practices and traditions that are passed down through generations – essentialist strategy – or highlighting the links between episodes and events related to the group – narrativist strategy – (Sani et al., 2007).

A considerable number of studies have shown that the need for collective continuity impacts political preferences and group behaviours. For instance, the desire to achieve collective continuity may motivate people to forego democratic principles and choose autocratic leaders (Selvanathan et al., 2022). Threats to future collective continuity cause feelings of collective angst and existential danger, which can promote antisocial behaviours, such as rejecting or harming the groups blamed for them, if such actions are perceived as necessary to protect the group's continuity (e.g., Smeekes et al., 2022; Wohl et al., 2014). There is also some preliminary evidence showing that perceived collective continuity is positively related to identity fusion, which encourages individuals to take extreme steps to protect the group's wellbeing (Shiromaov et al., 2020).

In line with these findings, several models of radicalisation leading to violence point to the importance of psychosocial processes related to collective continuity in the context of terrorism. To illustrate, *Alexander's dislocation theory* (2012) argues that social dislocations undermine the stability of the group's identity, triggering reactions that can push individuals, especially within radical groups, to engage in violent acts. The *ABC model* (Khalil et al., 2022) suggests that extremist behaviours often stem from perceived threats to the group's survival. The *3N model of (de-)radicalisation* (Kruglanski et al., 2019) contends that the need for personal significance can be triggered by perceptions that the ingroup's future is at risk. Similarly, the *two-pyramids model* (McCauley & Moskalenko, 2017) highlights that individuals often see violence as justified to protect their group when they perceive it as vulnerable to existential risks. Furthermore, there are reasons to speculate that the desire of collective continuity might be a key instigator of violence among members of radical groups that glorify the past, such as Islamist and far-right extremist groups (Ebner, 2017). These groups often built their narratives around perceived disruptions to the group's continuity – whether due to cultural, immigration, or political changes – and frame violent actions as necessary to restore the group's prior status.

Although the relevance of the need for collective survival and stability is widely acknowledged in the field, several key processes remain understudied. For instance, it is necessary to explore how different types of threats to collective continuity – i.e., past-present continuity, present-future continuity, global continuity – affect the process of radicalisation leading to violence. It is also necessary to examine the relative impact of essentialist vs. narrativist collective discontinuities on endorsement of extreme actions. Moreover, we have yet to compare the role that the need for collective continuity plays across different types of extremist groups. Also, while there is some evidence indicating that the envisioned continuity

of fusion with group and values may contribute to sustain radicalisation among imprisoned terrorists (Gómez, Atran et al., 2022; Gómez, Chiclana et al., 2023), it remains unclear whether perceptions of collective continuity cause identity fusion or the other way around (see Tables 1 and 2).

Thus, conducting studies focused on the impact of personal and collective continuity might contribute to our knowledge of terrorism. Another of the processes of the psychology of time that deserves more research is the temporal distance at which people ubicate events.

Perceived temporal distance

Individuals react to events very differently depending on whether they are envisioned as temporally close or remote, connected to the present or not (Epstude & Peetz, 2012). In general, people tend to place less weight on costs and benefits the further away they are from the present (Sheikh et al., 2013), and are more motivated to pursue positive states and to avoid negative states that are psychologically close (e.g., Badaan et al., 2020; Shori-Eyal et al., 2017). This happens because psychologically close events are built in highly concrete terms and include contextualised, detailed, and vivid mental representations that activate cognitive, emotional, motivational, and behavioural schemas like those that typically emerge when individuals must confront the current reality (Gilead et al., 2018; Trope & Liberman, 2010). Such closeness is important to research on terrorism because it is critical to understand responses to collective trauma (Bilali & Vollhardt, 2019), and to events related to sacred values (Sheikh et al., 2013).

Regarding collective trauma, past studies have revealed that, compared to perpetrators, victims of traumatic events tend to perceive them as closer in time and more important to understand the group's situation and intergroup relations in the present (e.g., Bar-Tal et al., 2009). Historical victimisation experiences are quickly associated with current threats and political enemies (e.g., Hirschberguer, 2018; Schori-Eyal et al., 2017), leading to perceptions of continued suffering (Starzik & Ross, 2008), and to greater vigilance and mistrust towards outgroups (e.g., Bilali & Vollhardt, 2019; Hirschberger & Ein-Dor, 2020). Such effects are stronger among individuals who identify with their group (Sahdra & Ross, 2007; Shori-Eyal et al., 2017), generalise to groups unrelated to the original trauma and across different contexts (Schori-Eyal et al., 2014; Wohl & Branscombe, 2008), and may serve to legitimise current violence and to explain the reasons for the victimised group's sacrifices (Bar-Tal, 2013). Most models of radicalisation highlight the role played by collective traumas and experiences of past victimisation in the processes of radicalisation leading to violence (e.g., Feddes et al., 2020; Kruglanski et al., 2019; McCauley & Moskalenko, 2017; Moghaddam, 2005). Envisioning these events as temporally close may help violent extremists to construe them in concrete ways and to close the gap that exist between the past and the "here and now". Respecting sacred values, research has shown that events of the past and anticipated events of the future related to them are envisioned as temporally closer than events non-related to sacred values and seen as more important than current mundane concerns (Atran, 2020; Sheikh et al., 2013).

While group- and value-related events perceived as temporally close seem to play a significant role in extremist violence, some scholars argue that temporally distant goals can also motivate violent extremism (e.g., Atran, 2010; Rabasa et al., 2010). Several studies indirectly support this idea showing that dreams about distant utopian futures instigate political behaviours and give rise to sustained efforts to achieve them (e.g., Badaan et al. 2020, 2022). Utopian or millenarian beliefs may be central components of the militant extremist mindset as well (Stankov et al., 2010; 2018). These beliefs offer a vision of a radically transformed future, where corrupt social and political structures are overturned in favour of an idealised world – thereby providing a moral justification for extremist violence.

In contrast to temporally close events, remote events are construed in abstract terms, using schematic representations that emphasise a few superordinate core features and omit features that are not central to the events (Liberman & Trope, 2014; Trope & Liberman, 2010). Such abstractions accentuate the overriding value of the actions' end state and downplay concerns about their feasibility (Liberman & Trope, 1998), which may increase the attractiveness of events that are greatly desirable but hard to obtain and decrease the attractiveness of events that are less desirable but easy to obtain (Liberman & Trope, 2010), and augment the will to take risks (Sagristiano et al., 2002).

Temporal distance is undoubtedly important, but there are many questions regarding its role in violent extremism that have not been empirically addressed yet. For example, no studies have examined the effect of distant utopian states on violent extremists or compared how temporally distant and temporally close past and future events influence the behaviour of different types of terrorists. It is unclear whether individuals with varying extremist ideologies – e.g., religious, far-right, far-left – react differently to narratives about the past and the future based on their perceived temporal distance. Furthermore, the role of shifting perceptions of temporal distance during the process of radicalisation, deradicalisation, and disengagement remains unexplored. Shifting temporal perspectives may be crucial to understand changes in commitment to violence, as individuals who perceive progress towards utopian goals may remain more committed to extremist beliefs (e.g., Kruglanski et al., 2019). In this context, bringing utopian goals closer to the present may intensify perceptions of progress, fostering feelings of hope and collective efficacy and reinforcing radicalisation. Conversely, pushing these goals further into the future could encourage disengagement from violence. Future studies should examine these temporal dynamics. (see Tables 1 and 2).

Along with the perceived closeness of events, psychological time might influence radicalisation, deradicalisation, and disengagement through the thoughts that individuals have about alternative possibilities. We address this topic next.

Thoughts about alternative possibilities
The consideration of alternative possibilities is fundamental when people reflect about the past and the future. When people think about the past, they often have counterfactual thoughts, or thoughts about what might have been or how the past might have been different if circumstances had differed (Kahneman & Miller, 1986). Counterfactual thoughts have an if-then structure, containing an antecedent and a consequent. They can include simulations about how an outcome might have been better or worse (upward vs. downward counterfactuals), about events that should or could have happened or not (additive vs. subtractive counterfactuals), and about actions performed by the self or by someone else (self- vs. other-focused counterfactuals) (e.g., Roese & Epstude, 2017).

Counterfactual thoughts tend to arise in circumstances of goal blockage – e.g., failure, lack of progress, disconfirmed expectancies – and are normally motivated by the desire to improve behaviour to achieve goals and needs (Epstude et al., 2022; Roese & Epstude, 2017). Upwards and additive counterfactuals are extremely useful for improving behaviour because they lead to the discovery of causal contingencies that may be accurate, helping individuals to learn from their mistakes, plan for their future, and select the means needed to reach their virtuous and non-virtuous ends (Epstude, 2018; Philiphs & Pohl, 2020). Politically, they are useful to determine the effectiveness of past actions, choose the policies that will be supported, and assign blame (e.g., Catellani & Covelli, 2013).

At the same time, counterfactual thoughts can evoke negative affect – e.g., regret, shame, guilt – (Roese & Epstude, 2017), and individuals may strategically use or avoid them to maintain a positive view of the self or protect their most cherished values and beliefs. For example, individuals who are more motivated to prove their morality than to improve it are

inclined to engage in downward counterfactual thinking and imagine transgressions that they could have done, but did not do (Effron et al., 2012, 2013); people who are motivated to justify their political ideas tend to dismiss upward counterfactuals that do not align with their views (Effron, 2018; Epstude et al., 2022); and people who are motivated to protect their sacred values experience a strong aversion to even considering counterfactuals that are incompatible with them (e.g., Tetlock et al., 2000; Tetlock & Visser, 2000).

Thoughts about alternative possibilities are also essential when people think about the future. Mental simulations of the future are not for predicting how things will turn off, but for imagining situations in which numerous outcomes are possible and for steering behaviour in the direction that best fits individual selected goals and needs (Baumeister et al., 2020). Thoughts about the causal relationships between future possible actions and outcomes – i.e., prefactual thoughts – help people to consider alternative contingencies and to select the behavioural option that brings more benefits (Epstude et al., 2016). Besides, prefactual thoughts may help to determine if individuals pursue their goals, depending on the extent to which the linkages between the possible actions that come to their minds and such goals seem plausible to them (Epstude et al., 2016).

Counterfactual and prefactual thoughts might have a conspicuous impact in the processes of radicalisation, deradicalisation, and disengagement, but none of the programmes of research within the area of terrorism has methodically focused on them. For instance, research has shown that the effect of identity fusion on extreme progroup behaviour is due to the belief that the group cannot do anything wrong (Besta et al., 2014). This conviction may lead fused individuals to avoid entertaining counterfactual or prefactual thoughts that could cast doubt on the group's integrity, and exploring whether fused individuals engage in such acts of avoidance could provide novel insights into the mechanisms responsible for maintaining their unwavering group loyalty. Further studies could also explore whether individuals who hold sacred values or are passionately obsessed with an ideological cause resist engaging with counterfactual or prefactual thoughts that challenge these beliefs, and whether this resistance explains why deradicalisation efforts based on the use of counter-narratives are generally futile (Bélanger, 2021; Bélanger et al., 2021; Braddok, 2020). Other studies could explore whether counterfactual and prefactual thoughts shape the type of tactics, locations, and targets chosen by violent extremists, as these thoughts shape evaluations of past actions and expectations about future outcomes (Philips & Pohl, 2020). Additional research could explore whether prefactual thoughts determine the decision of violent extremists to stay in or to leave the terrorist group, shaping the perceived rewards and risks associated with continued group membership (Levine & Kruglanski, 2022; Rabasa et al., 2010). Other research could examine whether prefactual thoughts influence perceptions of credible and secure opportunities for deradicalisation and/or disengagement, as suggested, among others, by the *phoenix model*, which emphasises the importance of presenting realistic alternatives to extremist pathways (Silke et al., 2021). Additional studies could also explore whether counterfactual thoughts help terrorists justify past violence by imagining scenarios where different actions could have led to more pernicious outcomes, shedding light on the mechanisms that allow them to rationalise and justify their commitment to violence (e.g., Effron et al., 2012, 2013). Lastly, research could examine how terrorist recruiters use counterfactuals or prefactual narratives to persuade potential recruits. By focusing on "what could have been" if certain historical injustices had not occurred, or "what could happen" if recruits join the group, recruiters might shape people's worldview and increase their willingness to join violent extremist networks, as hinted at by the *sacred values model* and the *3N model of (de-)radicalisation*, among others (e.g., Atran, 2010; Kruglanski et al., 2019).

The research reviewed in this section shows that thoughts about alternative possibilities may be highly consequential for terrorism, but the general frequency at which people contemplate such alternative possibilities might depend on their time perspective.

Time perspective

Time perspective has been defined as the "personal attitude that each of us holds towards time and the process whereby the continual flow of existence is bundled into time categories" (Zimbardo & Boyd, 1999, 2008). Time perspective is conceived as a stable personality trait as well as a transient state; and it encompasses temporal orientation and affect (Stolarsky et al., 2018). As a trait, it covers individual differences in the tendency to remain chronically oriented towards different time frames – i.e., past, present, or future – along with the stable affective evaluations or attitudes – e.g., positive, negative – associated with them.

There are five fundamental "time zones" or "time perspectives": (1) Past-Negative; (2) Past-Positive; (3) Present-Hedonistic; (4) Present-Fatalistic; and (5) Future (Zimbardo & Boyd, 1999). Past-Negative is the tendency to recall negative memories related to trauma and regret. Past-Positive is the tendency to focus on good memories and to hold favourable views of the past, family, and traditions. Present-Hedonistic is the tendency to focus on pleasure, avoiding discomforts, taking risks, and sensation seeking. Present-Fatalistic reveals a fatalistic, helpless, and hopeless attitude towards the future and life. And Future is the tendency to focus on discipline and planning for the achievement of future goals (Zimbardo & Boyd, 1999, 2008). The combination of these perspectives results in different time profiles that influence virtually every decision and action (Metcalf & Zimbardo, 2016).

The most adaptive of such profiles consists in the balance of a high Past-Positive perspective, moderately high Present-Hedonistic and Future perspectives, and low Past-Negative and Present-Fatalistic perspectives (Zimbardo & Boyd, 2008). This balance allows individuals to switch effectively among time perspectives depending on situational constrains, task characteristics, and personal resources (Stolarski et al., 2018; Zimbardo & Boyd, 2008); and, between other things, it is related to positive mood (Stolarski et al., 2014), psychological well-being (e.g., Boniwell et al., 2010), emotional intelligence (Stolarski et al., 2011), ego-integrity (Webster, 2016), and executive functioning (Zajenkowski et al., 2016). Deviations from this ideal pattern arise from the habitual overuse or underuse of one or more perspectives and are extremely consequential (Zimbardo & Boyd, 1999).

Howbeit they have not been the subject of much research in the field of terrorism, several deviations might be relevant to understand violent radicalisation. Specifically, the most pertinent seem to ensue from the overuse of the Past-Negative, Present-Hedonistic, and Present-Fatalistic perspectives, from the underuse of the Past-Positive perspective, and from the overuse of a temporal perspective non considered thus far: the Transcendental-Future perspective. We will talk about the last perspective first.

The Transcendental-Future perspective covers the period ranging from the death of the physical body to infinity and entails the conviction that what matters most is the spiritual life after death (Boyd & Zimbardo, 1997). Its overuse may help us understand religiously inspired terrorist acts, such as the attacks perpetrated by Islamist extremists. Rewards and goals expected to be reached in the transcendental future – e.g., eternal life, paradise, significance – may extend to infinity, becoming one of the main sources of motivation of their exceptional self-sacrifices – e.g., suicide bombings – (Boyd & Zimbardo, 1997). The long temporal horizon of religious terrorists might also make them less amenable to admit defeat, because they can believe that God will ensure the group's eventual victory (Atran, 2010; Rabasa et al., 2010).

The remaining deviations that we have mentioned before may be useful to explain the process of radicalisation of religiously inspired as well as non-religiously inspired violent extremists. First, the overuse of the Past-Negative perspective is positively related to negative

affect, emotional reactivity, and affective disorders, such as depression (Stolarski et al., 2018). It can drive individuals to manipulate others and behave in antisocial ways (Birkás & Csathó, 2015), or to engage in aggressive actions (Stolarski et al., 2016). It can also give rise to feelings of loss of significance, paving the way towards violent extremism, as implied by the *3N model of (de-)radicalisation* (Kruglanski et al., 2013, 2019). Second, the overuse of the Present-Hedonistic Perspective is positively related to aggression (Stolarski et al., 2016), risk taking (Stolarski et al., 2018), and novelty and sensation seeking (Zimbardo & Boyd, 1999). It might increase the chronic disposition of certain individuals to engage in violent extremist networks in search for adventure, particularly when the environment does not offer other alternatives to satisfy the need for sensation, as suggested by the *Doosje's stage model of (de-)radicalisation* (e.g., Feddes et al., 2020). Third, the overuse of the Present-Fatalistic perspective increases feelings of frustration, anger, and hostility (Stolarski et al., 2016), and steers an unclear vision of the future self (McElwee & Haugh, 2009). It can be conductive to acceptance of radical political measures (Miconi et al., 2020), and augment support of violence (Stolarski et al., 2016). Fourth, the underuse of the Past-Positive perspective may undermine the ability to cope constructively with negative past experiences (Stolarski et al., 2018), and reduce the tendency to foster connections between the past and the present through reminiscing (Ely & Mercurio, 2011). Since the last two deviations interfere with the development of a positive self-view and hinder the establishment of meaningful ties between the past, the present, and the future selves, they might cause feelings of self-uncertainty and loss of significance and motivate individuals to join violent extremist groups (e.g., Hogg, 2021a; Kruglanski et al., 2019).

Over and above that, helping individuals to achieve a balanced time profile might facilitate the processes of deradicalisation or disengagement. As implicitly or explicitly recognised by many of the models discussed in this manuscript (e.g., Barrele, 2015; Kruglanski et al., 2019; Silke et al., 2021), getting unstuck from the traumatic events of the past, learning to enjoy the small hedonistic pleasures of the present, planning for a hopeful future free from violent extremism, and leveraging on past positive experiences unrelated to the terrorist ideology and network might be pivotal to build a peaceful identity and to positively engage with society. In fact, some of the programmes of deradicalisation with a high positive impact, such as the programme used with Liberation Tigers of Tamil Eelam in Sri Lanka, seem to owe part of their success precisely to this (Kruglanski et al., 2019; Webber et al., 2020). Insofar as a balanced time perspective promotes psychological health, executive functioning, and well-being, its achievement may also contribute to prevent recidivism. Despite of their relevance, the last two issues have never been explicitly researched (see Tables 1 and 2).

Conclusions

Even though the processes related to psychological time have not been thoroughly studied in the area of terrorism, the research conducted thus far in this and related fields reveals that psychological time might be vital to comprehend radicalisation, deradicalisation, and disengagement from violence.

Mental time travel, or the ability to mentally revisit the past and imagine the future, plays a pivotal role in shaping personal and collective narratives that foster grievances, injustices, or thoughts about utopian futures that justify violent acts. The need for continuity between past, present, and future personal and group identities might intensify extremist behaviour, particularly when such continuity is threatened by dramatic changes in life or risks to the group's survival. Perceived temporal distance, or how near or far past traumas or future aspirations feel, also plays a critical role in understanding the motivations for violent actions. Extremists may strategically shape these perceptions by presenting events as either imminent to create urgency or remote to underscore the overarching value of the group's goals, downplaying concerns about feasibility. Additionally, thoughts about alternative possibilities,

such as counterfactuals or prefactuals, might solidify extremist commitments by validating extremist actions as necessary and justified, or alternatively, weaken these commitments by highlighting credible and secure alternatives to extremist violence. Lastly, unbalanced time perspectives, characterised by a lack of positive or an excess of negative memories, an emphasis on fatalistic views of life, or an overreliance on future transcendental outcomes, may create fertile ground for radicalisation, driving individuals to join extremist networks in search for significance, self-certainty, or adventure.

From a practical standpoint, these insights underscore the need to incorporate questions about the past, the present, and the future in research with individuals at risk of radicalisation, current terrorists, and former terrorists. They also emphasise the importance of integrating psychological time into policies aimed at preventing and mitigating terrorism. Community interventions, for instance, could foster resilience by promoting the development of a balanced time perspective and encouraging personal and collective narratives that emphasise positive past experiences and future aspirations. The same principles could be extended to interventions with individuals at risk of radicalisation, who might also benefit from strategies aimed at challenging distorted perceptions of temporal distance and threats to personal and collective continuity. Lastly, interventions targeting current or former violent extremists could also build on the previous strategies to facilitate deradicalisation and disengagement from violence. Additionally, they can assist these individuals in constructing new personal and social identities by fostering hope in a non-violent future, providing credible and secure opportunities to reconnect with society, and promoting prefactual and counterfactual thoughts that highlight peaceful avenues to satisfy their material and non-material needs. These suggestions offer a preliminary roadmap for practitioners, but more empirical studies are urgently needed to refine these strategies and develop comprehensive approaches to combat violent extremism through the lens of psychological time. We hope our work contributes to encouraging this research.

Overlooking the ways in which the envisioned past, present, and future shape the attitudes, thoughts, feelings, and behaviours of individuals at risk of radicalisation, current extremists, and former extremists has led to a critical gap in understanding the dynamics of violent extremism. This oversight has fragmented theoretical models, making it challenging to synthesise insights across different perspectives, and limiting the development of a cohesive approach to better navigate the literature and connect research findings more effectively. Furthermore, without incorporating enough psychological time-based strategies into intervention frameworks, efforts to foster resilience, support deradicalisation and disengagement, and prevent recidivism may hay been heavily undermined. Such strategies, if pursued wisely, could be essential for countering violent extremism without relying on the use of oppressive measures or militaristic force, in alignment with humanitarian and democratic principles that recognise the dignity and intrinsic value of all human beings. A commitment to further research that leverages psychological time could ultimately pave the way for the development of transformative, humane approaches to understanding and countering violent extremism.

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Positionality Statement. This work was shaped by the personal and professional journeys of the authors, who bring unique experiences and perspectives to the study of violent extremism and psychological time.

Juana Chinchilla has spent over twenty years actively working with social activists advocating for the rights of vulnerable groups through non-violent but extreme actions. This involvement convinced her that the psychosocial processes driving violent extremism would sharply diverge from those underlying non-violent extremism. However, upon conducting research in terrorism studies, she discovered unexpected parallels in the motivations and commitments fuelling both types of extremism, leading her to re-evaluate her initial assumptions.

For Ángel Gómez, the 2004 Madrid train bombings marked a pivotal moment, redirecting his career towards understanding and countering violent extremism after witnessing its profound impact first-hand. His previous work as a volunteer and coordinator in various NGOs exposed him to individuals who exhibited an extreme dedication when they felt deeply connected to the people or causes benefiting from their work. These observations became foundational in the formulation of identity fusion theory, developed in collaboration with William B. Swann Jr., to explain how feeling viscerally united to a group can lead individuals to engage in extreme progroup actions. His latter conversations with individuals at risk of radicalisation, current terrorists, and former terrorists have further reinforced his recognition of shared processes and mechanisms between non-violent and violent political actors.

Together, these experiences have led both authors to focus on studies involving non-violent political actions, seeking insights potentially applicable to the understanding of violent extremism.

In addition, both authors are deeply influenced by humanistic principles that emphasise respect for human dignity, epistemological humility, and an appreciation for the complex, dynamic nature of human behaviour. This philosophical foundation underpins a steadfast commitment to non-militaristic, humane approaches to countering extremism, motivating them to focus on research that highlights the potential for personal and social transformation.

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Table 1
Contribution of the processes related to psychological time to the study of radicalisation leading to violence, deradicalisation, and disengagement, and suggestions for future research.

Process	Contribution to the Study of Radicalisation Leading to Violence, Deradicalisation, and Disengagement	Suggestions for Future Research
Personal and Collective Narratives – evolving stories through which individuals convey to others and themselves what their personal self or group is now, how they came to be, and what the future might bring to them.	*Personal Narratives* · Guide approach and avoidance behaviours, determine the groups to which individuals align, and influence moral and political actions, leading some individuals to engage in politically or religiously motivated violence. *Collective Narratives* · Depict historic traumas, victimisation experiences, and future dangers that raise feelings of injustice; inform about the past efficacy of different tactics; and outline utopian collective futures that lead to discontentment with the *status quo* and hope in the possibility of social change.	- Examine the relative impact of historic traumas and utopian futures on the process of radicalisation. - Examine the relationships between personal and collective narratives and other relevant variables – e.g., identity fusion, sacred values, personal significance, self-certainty, justice, sensation.
Personal and Collective Continuity – subjective sense of connection between the past, present, and future personal selves or group identities.	*Personal Continuity* · Threats to personal continuity may a have a negative impact among individuals who are becoming terrorists or who are engaging in terrorism – e.g., augmenting the impact of identity fusion or leading to feelings of loss of significance or self-uncertainty. · Lack of personal continuity may have a positive impact among individuals who are deradicalising or disengaging from violence – e.g., facilitating identity transformation. *Collective Continuity* · The desire for collective continuity may drive individuals to support authoritarian leaders and motivate violent extremist behaviours in groups that glorify the past. · Threats to future collective continuity may cause existential angst and promote antisocial behaviour.	- Examine whether threats to personal continuity facilitate violent radicalisation. - Examine whether feelings of lack of continuity between the past self and the present and future selves facilitate the transformation of the identity of individuals who are deradicalising or disengaging from violence. - Examine the effect of the desire for collective continuity across different types of terrorist groups – e.g., left-wing terrorists, right-wing terrorists, religious terrorists. - Examine how different threats to collective continuity – i.e., past-present continuity, present-future continuity, global continuity – impact violent radicalisation across different types of terrorist groups.
Temporal Distance - perceived proximity or remoteness of events in time.	*Temporally Close Events* · Close events motivate behaviours through highly contextualized and vivid metal representations. Group- and	- Compare the effects of temporally distant and temporally close events across different types of terrorist groups.

	value-related events of the past or the future may instigate radical actions through perceptions of temporal closeness. *Temporally Distant Events* · Distant utopian beliefs often offer a vision of a future where corrupt social and political structures are overturned by a highly idealised world, which may provide moral legitimation for extremist violence. · Distant events motivate behaviours through abstract mental representations that accentuate the overriding value of actions and decrease feasibility concerns. Distant utopian futures may lead to radical behaviours through this mechanism.	- Examine changes in perceptions of temporal distance of group- and value-related events during radicalisation, deradicalisation, and disengagement.
Thoughts About Alternative Possibilities – thoughts about how the past might have been different if the circumstances had differed (counterfactuals) or the casual relationships between future possible actions and outcomes (prefactuals).	*Alternative Pasts — Counterfactuals* · Counterfactuals may be used by violent extremist recruiters to persuade potential recruits. · Counterfactuals may be used by violent extremists to assign blame to adversaries, determine the effectiveness of past political actions, and select the means that will be used to reach the group's ends. · Counterfactuals may be used by violent extremists to justify their past violence. · The motivation to defend the group and its values may lead violent extremists to reject counterfactuals that oppose them, which could explain their resistance to counternarratives. *Alternative Futures – Prefactuals* · Prefactuals may be used by violent extremists recruiters to persuade potential recruits. · Prefactuals may shape the type of tactics chosen by violent extremists, determine whether they stay in or leave the terrorist group, and influence perceptions of credible and secure opportunities for deradicalisation and/or disengagement. · The motivation to defend the group and its values may lead violent extremists to reject prefactuals that oppose them, which could explain their resistance to counternarratives.	- Examine changes in counterfactual and prefactual thoughts during radicalisation, deradicalisation, and disengagement. - Examine whether the resistance to considering counterfactual or prefactual thoughts that oppose the terrorist cause explains the ineffectiveness of counter-narratives. - Examine whether counterfactual and prefactual thoughts influence the tactics selected by violent extremists. - Examine the effect of prefactual thoughts on the decision to abandon radical networks and the perception of opportunities to disengage or deradicalise. - Examine the use of counterfactual and prefactual narratives by violent extremist recruiters. - Examine whether counterfactual thoughts focused on actions that may have had worst consequences contribute to the moral legitimation of past extremist violence.

| *Time Perspective* – individual differences in the tendency to remain chronically focused on different time frames (the past, the present, or the future), along with the stable attitudes (positive or negative) associated with them. | <u>Unbalanced Time Profile</u>
· Overuse of the Transcendental-Future perspective may motivate the behaviour of religious terrorists.
· Overuse of the Past-Negative, Present-Hedonistic, and Present-Fatalistic perspectives and underuse of the Past-Positive Perspective may promote violent radicalisation.
<u>Balanced Time Profile</u>
· A balanced time profile may promote the processes of deradicalisation and disengagement and reduce recidivism. | - Examine the impact of the overuse of the Transcendental-Future perspective on religiously motivated terrorism.
- Examine the effects of the overuse of the Past-Negative, Present-Hedonistic, and Present-Fatalistic perspective and the underuse of the Past-Positive perspective on the process of radicalisation.
- Examine the effect of interventions aimed at achieving a balanced time profile on the processes of deradicalisation and disengagement, and their efficacy to prevent recidivism. |

Table 2

Specific considerations on psychological time given by the models of radicalisation leading to violence, deradicalisation, and disengagement, and suggestions for future research.

Radicalisation Models	Specific Considerations on Psychological Time	Suggestions for Future Research
Staircase model (Moghaddam, 2005)	· None.	- Examine whether the phases of the model are captured in the phenomenological experiences and personal narratives of current or former terrorists.
Two pyramids model (e.g., McCauley & Moskalenko, 2017; Moskalenko & McCauley, 2020)	· Envisioning opponents as essentially evil across time promotes hate and contributes to radicalisation. · Dramatic changes in life that cause self-doubts and render the future uncertain promote radicalisation.	- Examine whether perceptions of the enemy as evil across the past, the present, and the future increase hate and promote violent radicalisation. - Examine whether threats to personal continuity motivate ideological or behavioural radicalisation. - Examine whether the phases of the model are captured in the phenomenological experiences and personal narratives of current or former terrorists.
Sacred values model (e.g., Atran, 2022; Atran et al., 2007; Ginges et al., 2007)	· Past and future events related to sacred values are perceived as temporally close. · Individuals resist thinking about counterfactual events that clash with their sacred values. · Sacred values are frequently embedded in collective narratives of past sacrifices.	- Examine whether individuals who hold sacred values resist prefactual thoughts that conflict with those values. - Examine whether the resistance to counterfactual or prefactual thoughts contrary to sacred values explains the ineffectiveness of deradicalisation strategies based on counter-narratives. - Examine whether the sacrifices made by the group in the past for its central values contribute to their sacralisation.
Uncertainty identity theory (e.g., Hogg, 2021a, 2021b)	· Self-uncertain individuals join extremist groups because they provide identities that are clear and stable.	- Examine whether individuals are more inclined to join groups seen as continuous in circumstances of self-uncertainty. - Detail the role played in the model by anticipated losses and gains of self-certainty. Examine the impact of all relevant future expectations. - Examine whether threats to personal continuity cause self-uncertainty.

	- Examine whether the overuse of the Present-Fatalistic perspective causes self-uncertainty.	
	- Examine whether the underuse of the Past-Positive perspective causes self-uncertainty.	

Radicalisation and Deradicalisation/Disengagement Models	Specific Considerations on Psychological Time	Suggestions for Future Research
ABC model (Khalil et al., 2022)	· Perceived threats to the ingroup's survival promote violent extremism.	- Examine whether the phenomenological experiences and personal narratives of current and former terrorists embody the processes of radicalisation and deradicalisation or disengagement as continuous. - Examine whether perceptions of threats to future collective continuity contribute to violent radicalisation.
Identity fusion theory (e.g., Gómez et al., 2020, 2024; Swann et al., 2012, 2024)	· Envisioning the group as temporally stable and consistent might increase fusion. · Recalling past experiences shared with other group members increases fusion. · The perceived temporal stability of fusion sustains radicalisation. · Recalling past events that degrade collective or relational ties diminishes fusion.	- Examine whether individuals are more inclined to fuse with groups seen as continuous. - Examine whether the expectations about the experiences that will be shared with group members in the future increase fusion. - Examine whether threats to personal continuity augment willingness to engage in extreme behaviours among strongly fused individuals. - Examine if strongly fused individuals envision past and future events related to the target of fusion as temporally close. - Examine if strongly fused individuals are more inclined to avoid counterfactual and/or prefactual thoughts casting the target of fusion in a negative light.
3N model of (de-)radicalisation (e.g., Kruglanski et al., 2009, 2019 2022)	· The need for significance is activated by losses and anticipated losses or gains of significance. · The decision to join or leave the extremist group depends on the expected costs and benefits.	- Conduct additional research on the effects of anticipated gains of significance. - Examine whether the effects of anticipated losses and gains of significance depend on their expected duration.

		- Examine whether threats to personal continuity cause feelings of insignificance.
		- Examine whether the overuse of the Present-Fatalistic perspective causes feelings of insignificance.
		- Examine whether the overuse of the Past-Negative perspective causes feelings of insignificance.
		- Examine whether the underuse of the Past-Positive perspective causes feelings of insignificance.
		- Examine whether the balance between the expected costs and benefits of joining or leaving the group determines the decision.
Doosje's stage model of (de-)radicalisation (Doosje et al., 2016, Feddes et al., 2020)	· The need for significance is activated by losses and anticipated losses or gains of significance. · The need for sensation is activated by losses and anticipated gains of sensation. · The decision to remain in or to leave the extremist group depends on its expected costs and benefits. · The processes of deradicalisation require a transformation of the personal identity of violent extremists.	- Detail the roles played in the model by anticipated losses and gains of self-certainty and justice, and the role of anticipated losses of sensation. Examine the impact of all relevant future expectations. - Examine whether the overuse of the Present-Hedonistic perspective increases the chronic disposition of some individuals to engage in terrorist groups in search for sensation. - Examine whether threats to personal continuity cause feelings of insignificance and self-uncertainty. - Examine whether the overuse of the Present-Fatalistic perspective causes feelings of insignificance and self-uncertainty. - Examine whether the underuse of the Past-Positive perspective causes feelings of insignificance and self-uncertainty. - Examine whether the balance between the expected costs and benefits of joining or leaving the group determines the decision. - Examine whether individuals who leave terrorism behind change their personal identity.
Deradicalisation/Disengagement Models	**Specific Considerations on Psychological Time**	**Suggestions for Future Research**

Model		
Model of the trajectory of disengagement (Rabasa et al., 2010)	· The processes of disengagement and deradicalisation require a radical transformation of the personal identity of violent extremists. · The decision to leave the extremist group depends on the expected costs and benefits.	- Examine whether the changes in the personal identity and the phases postulated by the model are captured in the phenomenological experiences and personal narratives of individuals who have deradicalised or disengaged from violence. - Examine whether the balance between the expected costs and benefits of leaving the group determines this decision.
Pro-integration model (Barrelle, 2015)	· The processes of disengagement and deradicalisation require a radical transformation of the personal identity of violent extremists.	- Examine if the changes in the personal identity postulated by the model are captured in the phenomenological experiences and narratives of individuals who have deradicalised or disengaged from violence.
Phoenix model (Silke et al., 2021)	· The processes of disengagement and deradicalisation require a radical transformation of the personal identity of violent extremists. · The impact of the catalysts of deradicalisation and disengagement is greater when people are given credible and secure opportunities to leave terrorism in the future.	- Examine if the changes in the personal identity postulated by the model are captured in the phenomenological experiences and personal narratives of individuals who have deradicalised or disengaged from violence. - Examine if future expectations and prefactual thoughts influence perceptions of the credibility and security of the opportunities for deradicalisation and disengagement.

For details about some of the methodological approaches that could be used to advance each model through the study of psychological time, see the Supplementary Materials.

Figure 1.

Contribution of psychological time to violent radicalisation, deradicalisation, and disengagement.
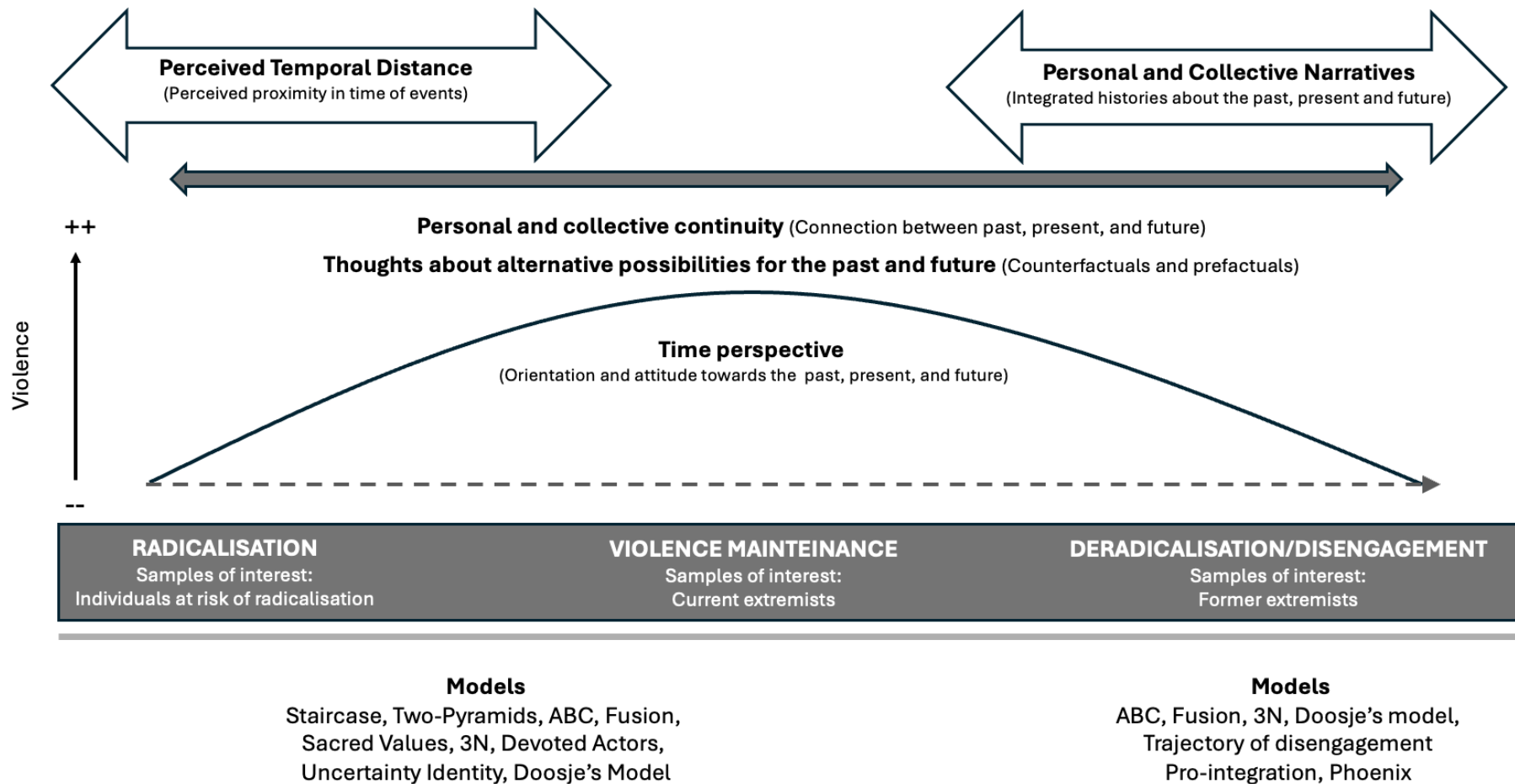
Figure 1 represents violent extremism as a continuum comprising three main processes: radicalisation, violence maintenance, and deradicalisation or disengagement.
Below the continuum, the main theoretical models developed to explain these processes are listed.

Above the continuum, the figure illustrates that all of these models consider one or more of the following processes related to psychological time as critical for understanding violent extremism: **perceived temporal distance** of events, **personal and collective narratives**, **personal and collective continuity, thoughts about alternative possibilities** for the past and the future, and **time perspective**.

As indicated by the bidirectional arrows, each of these processes can either promote or hinder radicalisation, violence maintenance, and deradicalisation or disengagement.