JOURNAL FOR DERADICALIZATION

Summer 2026
No. 47
ISSN: 2363-9849

Enhancing meaning in life and reducing radicalization, extremism, and violence in war and conflict-affected populations: A controlled feasibility study of the Meaning-Making App

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Abstract
This study evaluated the feasibility of the Meaning-Making App (MMA). MMA aimed to help civilians in armed conflicts maintain a sense of meaning in life, to improve psychological well-being and reduce risks of radicalization, extremism, and violence. MMA applied the comprehensive MOSAIC (Meaning Oriented Social and Individual Changes) framework, which indicates that well-being increases and risks decrease when individuals envision and realize five or more diverse types of meaning (mainly self-oriented and social), through critical intuition, realistic appraisal, and emotion regulation. MMA consisted of six toolkits, with tools derived from Systematic Meaning-Centered Psychotherapy: psycho-education about stress, trauma, and meaning; psychological first aid; brief meaning-making exercises; practical goal-setting exercises; structured meaning-making exercises; survivor stories. MMA-participants (N=142) came from armed conflict zones (e.g., Israel, Palestine, Syria, Iran, Ukraine), used MMA on average 70.92 minutes (SD=45.22), were satisfied with its content and impact, and recommended technical/offline improvements. Participants showed statistically significant improvements in meaning-making (measured with the Short-Meaning in Life Questionnaire. Meaning Sextet Questionnaire-Brief, Existential Meaning-Regulation Scale), well-being (PTSD-Check-List-5, General Well-being Item) and radicalization/extremism/violence risk-measures (Radicalism Intention Scale, General Extremism Scale , War-subscale of Attitudes Toward Violence Scale). A non-randomized control-group of 57 individuals from Ukraine, Israel, and Palestine used the app without meaning components, showing no statistically significant changes in meaning-making and moderate, statistically significant improvements in well-being and risk-measures. Mediation analyses and structural equation models empirically supported that improvements and MMA/control-group differences in well-being and risk-measures were mediated by meaning-making improvements. These findings should be interpreted cautiously given the non-randomized feasibility design, and the need for cross-cultural, longitudinal, multi-method validation. The findings suggest meaning-oriented smartphone interventions may improve well-being and reduce radicalization, extremism, and violence during armed conflict.

Article History
Received Feb 02, 2026
Accepted Jun 12, 2026
Published Jun 26, 2026

Keywords: Digital Intervention, Deradicalization, Counter-Violent Extremism, Peace, Trauma

Introduction

Armed conflicts and wars have surged in recent years following a prolonged period of decline, as in 2024, there were 61 state-based armed conflicts and eleven wars (Davies et al., 2025). In

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international humanitarian law, "war" traditionally refers to armed conflicts between sovereign nations, while "armed conflicts" more broadly encompass both international and non-international variants, involving state and non-state actors (Solis, 2021). Recent scholarly consensus emphasizes that these terms have evolved to address modern hybrid conflicts, where internal disputes can internationalize through foreign/proxy intervention, blurring traditional boundaries, with varying parties, intensity, and blending traditional forces with tactics such as drones (Khoraam-Manesh et al., 2021; Moghadam et al., 2023). In 2024, there were 204,605 distinct conflict events, with Sudan, Gaza, Myanmar, and Nigeria emerging as epicentres of casualties (acleddata.com), and an increased number of protracted conflict areas to 56 countries, particularly in post-Soviet spaces and the Middle East (Rustad, 2025).

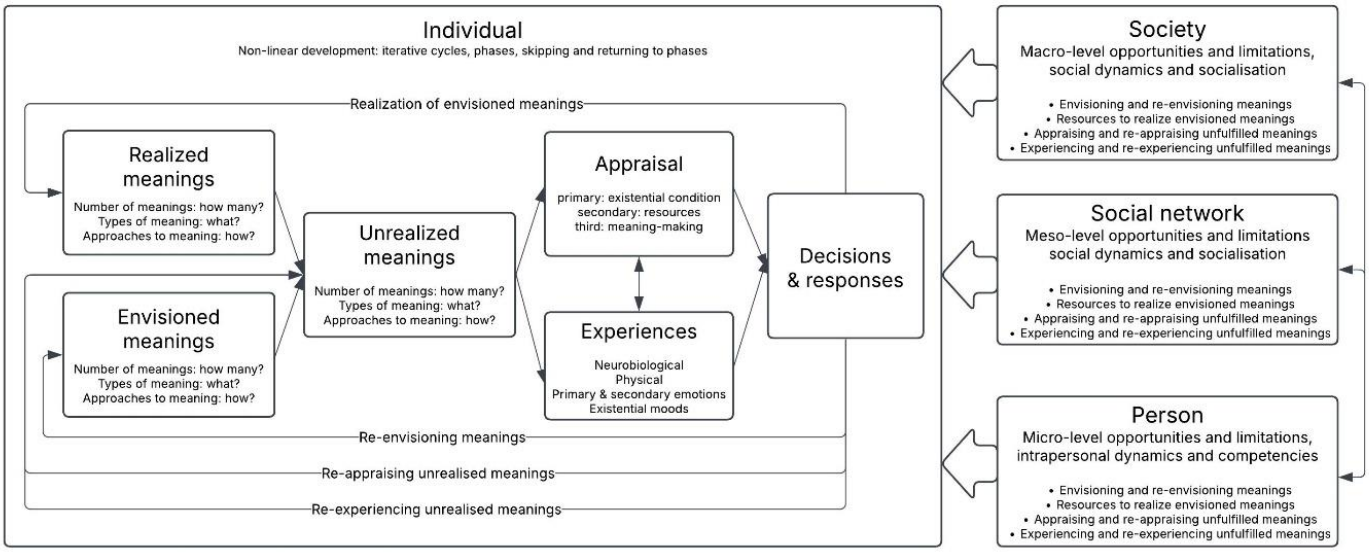
Researchers have described the humanitarian toll of contemporary armed conflicts: every 12 minutes, a civilian dies in armed conflict, with 90% of casualties involving civilians, particularly women and children, with a 40% increase in mortality rates in 2024, 110 million displaced individuals, and 71 million refugees (UN, 2025), although these figures may be underestimated due to methodological challenges (e.g., Roberts & Vos, 2025). Prevalence rates of anxiety, depression, and Post-Traumatic Stress Disorder (PTSD) are two- to three-fold higher amongst populations exposed to armed conflict compared to unexposed people (Carpiniello, 2023), particularly amongst displaced individuals and refugees (Mesa-Vieira et al., 2022). Beyond clinical diagnoses, conflict-exposed civilians report large psychosocial stress (Miller & Rasmussen, 2010), loss of sense of self (Hamadeh et al., 2024), and negative, polarised identities (Ricarte, 2022), which can be passed on to next generations and sustain intergenerational cycles of conflict (Rozanove, 2018).

Armed conflicts threaten, limit and offer opportunities to live meaningfully

How do individuals experience and respond to armed conflict hindering or threatening their abilities to live a meaningful life? Many studies have examined the role of meaning in coping with individual and social changes (e.g., Park, 2010; Vos, 2025, 2019, 2016a-b) as well as in radicalization, extremism, violence and terrorism (e.g., Ali et al., 2017; Altungy et al., 2025; Da Silva et al., 2024, 2023; Dean, 2024; Echelmeyer et al., 2023; Feddes et al., 2023; Firdiani et al., 2025; Kosloff et al., 2019; Kruglanski et al., 2019; Kruglanski & Moskalenko, 2025; Pyszczynski, et al, 2009, 2008; Lösel, et al., 2020). Although many of these models differ

in their specific definitions and operationalizations of key concepts, overall they seem to suggest the following generic components summarized in the comprehensive Meaning-Oriented Social and Individual Change (MOSAIC) framework (Vos, 2025; Vos, Namdar & Park, 2026a-b; see Figure 1).

Figure 1. Basic Meaning-Oriented Social And Individual Change (MOSAIC) Framework (Copied with permission from joelvos.com)



Meaning in life: Researchers describe meaning in life as an individual's multifaceted, dynamic process encompassing motivation (e.g., goals, purpose), values, understanding of one's context (e.g., coherence, worldview, life-story), self-worth (e.g., significance of oneself and one's actions), practical and existential skills, and commitment (George & Park,2016; Martela & Steger,2016; Vos, 2018, 2016a-b; Vos, Namdar & Park, 2026a).

Envisioning versus realizing meanings: All humans experience gaps between the meaningful life they envision and the meaningful life they can actually realize in their current situation (e.g., Heine, Proulx & Vohs, 2006; Kruglanski et al., 2019). Individuals may become (more) aware of their unrealized meanings, gradually after repeated failures of meaning-making in everyday life, or suddenly after personal or collective trigger events (e.g., Feddes et al., 2017; Vergani et al., 2020), such as armed conflicts (Alamdari et al., 2022; Park, 2010; Rudenko et al., 2025; Schok, 2009). Armed conflicts can directly threaten people's life, and reduce the

external resources individuals need to realize the meaningful life they envision (e.g., social connections, food, medicine, hygiene, housing) and internal resources (e.g., problem-focused coping and emotion regulation)(Chudzicka-Czupała et al., 2024; Schwarzer, 2024). Due to these threats and lack of resources, individuals may struggle to realize their envisioned meanings in everyday life, such as being unable to find meaning in their job, social and family life as usual, particularly after traumatic experiences like the loss of loved ones (Hobfoll et al., 2012) and having to focus on safety and acquiring basic resources like food and housing (Chudzicka-Czupała et al., 2024; Schwarzer, 2024). This may also include moral injury when people's actions do no longer align with their usual values (Braun-Lewensohn & Sagy, 2010; Corona et al., 2019; Harrington et al., 2017; Toussaint et al., 2016). Armed conflict may also threaten and limit how individuals approach meaning in life, such as having less time, safety, and psychological capacity for critical thinking and deeply reflecting on one's authentic intuitions about meaning in life; instead, individuals may focus on immediate actions and conform to traditions and expectations from their community and leaders (Arndt et al., 2013; Ellenberg & Kruglanski, 2024; Rottweiler & Gill, 2020; Vos, 2025; Vos, Namdar & Park, 2026a-b). Thus, armed conflicts may threaten and limit the number and types of meanings, as well as the approaches through which individuals can realize the meaningful life they envisioned. Conversely, armed conflicts may also offer opportunities to discover new numbers, types, and approaches to meaning-making, such as developing personal resilience, focusing on life's priorities and key values. supporting the community, peaceful resistance, and post-traumatic growth (Mengin et al, 2025).

Appraising: Confronted with the threats and limitations/opportunities to the meaningful life they had envisioned, individuals need to appraise the nature and magnitude of these threats (primary appraisal), the limitations and opportunities to cope with these threats, such as the availability of internal and external resources (secondary appraisal), and the successes/failures of their attempts to live a meaningful life despite these threats, limitations and opportunities (tertiary appraisal)(Park, 2010; Vos, 2025; Vos, Namdar & Park, 20216a-b). For example, armed conflicts often challenge basic beliefs about life, such as life's coherence, predictability, and benevolence, and they may trigger denial/avoidance and rigid, black-and-white defences of one's self-esteem and worldview (Crossley, 2010; Janoff-Bulman, 1992; Perez-Murcia, 2021; Pyszczynski et al., 2015).

Experiencing: The appraisals of the threats and limitations/opportunities to the meaningful life people had envisioned are not merely theoretical and cognitive, but have strong biological, neurocognitive and emotional correlates (e.g., Dang et al., 2021; Pyszczynski, et al., 2009, 2008; Sleegers et al., 2015; Smith & Warren, 2020). Although more research is needed, the threats and limitations/opportunities to one's meanings may lead to anxiety, anger and disorientation (Crossley, 2010; Janoff-Bulman, 1992; Pyszczynski et al., 2015). *In summary:* Armed conflicts may threaten and create limitations/opportunities to how individuals envision, realize, appraise, and experience their meanings in life.

Responses and decisions

How do individuals generally make decisions and respond to threats and limitations/opportunities to the meaningful life they envision? 'The optimally functioning person will generally revise his or her constructions if they are invalidated, and construing is therefore a cyclical process in which the individual, similar to a scientist, constantly formulates hypotheses about his or her world, tests them out, refines them if necessary, and retests them' (Winter & Feixas, 2019, p.67). Translated into the MOSAIC framework, this means that individuals may, for instance, use new methods and strategies to realize their meanings ('realizing'), change the examples/numbers, types, or approaches of meanings they consider meaningful ('re-envisioning'), reinterpret the threats and limitations/opportunities to internal and external resources ('re-appraising'), or modify how they regulate their emotional, physical, and existential responses ('re-experiencing')(Vos, 2025; Vos, Namdar & Park, 2026a-b).

What does it mean to 'optimally function' during armed conflict? The psychiatrist Viktor Frankl mentioned about his experiences as a concentration camp prisoner that 'an abnormal response to an abnormal situation is normal behaviour', and that 'it did not really matter what we expected from life, but rather what life expected from us. We needed to stop asking about the meaning of life, and instead to think of ourselves as those who were being questioned by life-daily and hourly. Life ultimately means taking the responsibility to find the right answer to its problems and to fulfil the tasks which it constantly sets for each individual' (Frankl, 1948/1985, p.87). Although more systematic research is needed, it seems that individuals tend to have the following responses and decisions during armed conflicts, which may be described as 'radical' compared to everyday life, whereby some of these radical

responses and decision may be seen as 'normal' (i.e., proportionate, ethical, helpful to the individual and society) and others as 'abnormal' (i.e., disproportionate, unethical, unhelpful)(Horgan, 2008).

Re-envisioning: In armed conflicts, individuals have reported a smaller number of meanings in their life, and a shift away from materialistic, hedonistic, and self-oriented types of meaning (e.g., finding meaning in possessions, career, sports) to social, large and existential-philosophical types of meaning, such as focusing more on the community, national or ethnic identity, justice, core values, religion and ideology (Fayaz, 2023; Mengin et al., 2025; Mironova & Whitt, 2021). This shift may be practically explained by the restricted availability of resources to realize materialistic, hedonistic, and self-oriented types of meaning; individuals may also shift away from these types of meaning as these are generally associated with smaller life satisfaction and well-being than social, large and existential-philosophical types (Vos, 2025, 2023). Thus, the community, national/ethnic identity, justice, core values, religion and ideology may be some of the few meanings that can be realistically achieved and offer a sense of meaning, life satisfaction and well-being amid turmoil (Czyżowska, 2022; Kiang, 2010; Muldoon, 2025; Rovenpor et al., 2019; Grozdanovska, 2016).

Realizing: In armed conflicts, individuals are more likely to become more rigid and extreme in their methods and strategies to realize their meanings, such as participating in protests, leveraging social media to assert and defend their meanings, active militancy, activism or violence (Baker et al, 2022; Mengin et al., 2025; Mironova & Whitt, 2021). These shifts may be explained as ways to defend themselves psychologically against the feelings of terror (Pyszczynski et al., 2015, 2009). Evolutionary and neurocognitive research may also explain the reduced use of critical-intuitive approaches to life, and the increase in traditional-conformist and goal-oriented/mechanistic approaches (Vos, 2026a, 2024); when an individual's Salience Brain Network detects existential threats, the brain may switch from the Default Mode Network (which is associated with critically-reflective and socially-complex meaning-making) to the Central Executive Network (which is associated with goal-oriented action)(e.g., Abdallah et al, 2019; Sridharan et al., 2008; Vos, 2026a).

Re-appraising: In conflicts, the appraisal of the threats, resources, and meaning-making may become more polarized, absolutist, and conspiratorial, interpreting events through a black-

and-white lens, attributing blame to external groups/forces (Crossley, 2010; Janoff-Bulman, 1992; Perez-Murcia, 2021; Pyszczynski et al., 2015; Vos, 2026a; Vos, Namdar & Park, 2026a).

Re-experiencing: Various studies suggest that these radical re-appraisals, re-envisioned meanings and attempts to realize them during armed conflicts, are marked by heightened anger, grief, anxiety, and somatic symptoms such as chronic pain and fatigue; this emotional distress may subsequently deepen the commitment to radicalized beliefs, attitudes, and behaviors (Mengin et al., 2025; Mironova & Whitt, 2021; Sarid et al., 2025).

Iterative cycles: Most people seem to shift or radicalise gradually in response to threats and limitations/opportunities to the meaningful life they had envisioned, through non-linear, gradual, iterative rounds/phases of meaning-making attempts (De Fortuna & De Luca Picione, 2025; Horgan, 2008; McCauley & Moskalenki, 2008; Schmid, 2013).

Social context

Individual meaning-making is often influenced by the narratives, resources, and dynamics of their personal life situation, community, and society (Fattah & Fierke, 2009; Holbrook & Horgan, 2019; Jasko et al., 2020; Vos, 2026a; Vos, Namdar & Park, 2026a-b). For example, extremist social networks, politicians and media may exploit people's unrealized need for meaning by suggesting alternative, radical ways to appraise and experience their meaning-making failures, envision new/radical meanings, and realize social and self-oriented meanings through identity, belonging and involvement in a social network (e.g., Frohlich, 2018; Maynard, 2019). Conflicts may become intractable when opposing groups mutually threaten each other's meanings and resources for a meaningful life, such as security, cultural practices, and political self-determination (Bar-Tal, 2007; Rovenpor et al., 2018; Vos, 2026). That is, individuals may protect their group's meanings by justifying hostility, supporting state-led violence or military actions, or participating directly in violent acts, although this increased hostility and violence may be perceived by the out-group as threats and as a decline in resources, prompting hostile, violent defences of their meanings (Elnakouri et al., 2022; Florez et al., 2016; Rovenpor, 2016; Webber et al., 2018). Thus, securing one group's existential needs may threaten another's, which may fuel escalating cycles of mutual existential threats and defences. These inter-personal vicious cycles of existential self-defence may be exacerbated by the narratives and social pressures/dynamics from political leaders and social networks, who may highlight

grievances and increase in-group favouritism and out-group derogation (e.g., Kruglanski et al., 2019, 2020).

Optimal meaning-making characteristics

Individuals who maintain some sense of meaning in stressful situations are often more resilient, mentally and physically healthier, and less likely to support or engage in extremist networks and violence (Lösel et al., 2020; Marsden & Lee, 2022; Park, 2010; Vos, 2026a), such as war veterans (Kumar et al., 2024; Steger et al., 2015), refugees (Matos et al., 2018; Yukhymenko-Lescroart et al., 2023), civilians during conflicts/wars (Russo-Netzer et al., 2025), and civilians in the aftermath of terrorist attacks (Updegraff et al., 2008). These findings align with research in the general public, demonstrating that meaning contributes to psychological-existential resilience and well-being (Mutuyimana & Maercker, 2024; Park, 2022; Park et al., 1996; Vos, 2016a-b). For example, individuals report better life satisfaction, mental and physical well-being, psychological resilience and post-traumatic growth, if they: (1) envision and realize five or more examples of meaning, (2) realize some social and self-oriented types of meaning (amongst other types of meaning), (3) dominantly use a critical-intuitive approach to life rather than dominantly relying on tradition or conforming to social expectations or leaders, or mechanistic goal-setting, (4) realistically appraise their contextual threats and limitations/opportunities, and (5) have flexible, action-oriented emotion regulation mechanisms (Mutuyimana & Maercker, 2024; Russo-Netzer & Vos, 2026; Vos, 2023, 2024, 2025a, 2026a; Vos, Namdar & Park, 2026a-b). We hypothesize that during armed conflict, individuals with these five optimal meaning-making characteristics experience larger well-being and are at smaller risk of radicalization, extremism and violence than those who do not have these characteristics. Consequently, individuals with these characteristics may be less likely to indirectly contribute to interpersonal vicious cycles of existential self-defence.

Lack of meaning-oriented P/CVE interventions in armed conflicts

In armed conflict zones, humanitarian organizations traditionally focus their emergency response on ensuring immediate physical safety, providing essential medical care, securing access to clean water, food, and shelter, and reuniting separated families (Lau, 2025). Additionally, the World Health Organization developed Psychological First Aid (PFA) to

support people's initial emotion regulation and coping (Hermosilla et al, 2023). These interventions may also be (indirectly) relevant to people's meaning-making, as these may reduce perceived threats, expand access to resources, and support adaptive coping. However, these interventions do not explicitly address and offer tools to cope with the impact of the conflict and displacement on people's meaning-making. Some interventions have been developed to successfully support people maintain a sense of resilience and positive well-being in conflict zones, but they do not systematically explore meaning-making, and they often focus on children, local schools, and refugee centers outside active conflict zones (e.g., Soshani, 2021; Thabet et al., 2023). We hypothesize that the absence of systematic meaning-making interventions represents a missed opportunity to enhance well-being (cf., Lau, 2025).

We hypothesize that interventions maintaining optimal meaning-making characteristics may help Prevent or Counter Violent Extremism (P/CVE) during armed conflict, as individuals who sustain a sense of meaning may not need to radicalize, join extremist groups, or become violent (Da Silva, 2024a-b). Such interventions may also facilitate exit from violent extremism, as disengagement is often associated with insignificance, meaninglessness, disorientation, shame, and hopelessness (Altier et al., 2017; Hogg, 2014; Kruglanski et al., 2014; Meredith & Horgan, 2024; Simi et al., 2017). Additionally, these interventions may help prevent or break interpersonal vicious cycles of existential defenses.

Despite scientific evidence for the central role of meaning-making in radicalization and deradicalization—both within and outside conflict zones—few P/CVE interventions systematically address meaning-making (Reiter, Doosje & Feddes, 2023). Interventions are defined as "any program, service, policy, or product that is intended to ultimately influence or change people's social, environmental, and organizational conditions as well as their choices, attitudes, beliefs, and behaviors" (Bowen et al., 2009). Some P/CVE approaches may indirectly support meaning-making: mentors help individuals realize self-oriented meanings (autonomy, competence) and social meanings through reconnecting with non-extremist relatives and communities (El-Amraoui et al., 2019; Kruglanski & Bertelson, 2020); ideological discourse and education facilitate cognitive reappraisal (Ruffion et al., 2025; Ruyter & Siekelinck, 2023); and psychotherapy, arts, or sports improve emotion regulation (Taylor, 2020).

The potential feasibility of *directly* addressing meaning in P/CVE interventions is suggested by meta-analyses in the general population, showing that meaning-centered

interventions have large effects on meaning-making, mental health, social relationships, and quality-of-life (Schnell, 2020; Szabó & Baji, 2025; Vos, 2019; Vos, Craig & Cooper, 2014; Vos & Vitali, 2019), for example, in veterans, displaced individuals and refugees (Aktan et al., 2022; Constanza et al., 2022; Feddes et al, 2023; Halama, 2014). However, surprisingly little cross-pollination exists between these fields of meaning-centred psychotherapy interventions and P/CVE, with the exception of Koehler and Klosinski (2024), who reported the feasibility of four short counsellor-led meaning-centred interventions on deradicalization and disengagement in Germany. They argued that meaning-centered interventions may enhance our understanding of specific mechanisms of change and improve the effectiveness of P/CVE interventions (e.g., Morrison, 2021).

Research objectives

This study aimed to develop and explore the feasibility of a meaning-centered P/CVE intervention for civilians in armed conflict zones. A key difference from Koehler and Koslinski's 2024 study is that we targeted the general population rather than merely extremists, although we hypothesized that conflict-affected populations are at greater risk of radicalization intentions, extremist beliefs, and violent intentions and actions, as argued previously.

We had to adjust the intervention format, as in-person or video-link counsellor-led sessions are often impossible in conflict or war zones, where care professionals cannot reach people, lack resources, and have unstable internet access (Nisa et al., 2024). Therefore, we developed the Meaning-Making App (MMA), following recent successful studies on online mental health interventions in conflict/war zones (Acarturk et al., 2022; Asanoc et al., 2024; Frankova & Sijbrandij, 2025; Haimi, 2024; Javakhishvili et al., 2023; Parkes et al, 2022), and studies on digital P/CVE interventions, although these studies mainly focused on gamification, young and at-risk people, with mixed and context-dependent long-term effects (Lakomy, 2023; Lobato et al., 2024; Lopez et al., 2025; Van Eerten et al., 2017).

MMA aimed to enhance meaning-making by supporting the five optimal meaning-making characteristics: envisioning and realizing five or more diverse examples of meaning, including social and self-oriented types, with the help of a critical-intuitive approach, realistic appraisal of contextual threats and limitations/opportunities to their meanings, and flexible, action-oriented emotion regulation strategies. We hypothesized that these improved meaning-

making capacities would increase psychological resilience and well-being while reducing risks of radicalization, extremism, and violence in conflict-affected populations. This study had the following Research Objectives (RO), in line with other feasibility studies of psychological interventions (Vos & Van Rijn, 2025a):

RO1:Explore MMA end-users' acceptance of MMA, as indicated by: time usage, satisfaction scores, and answers to open questions about helpful and unhelpful aspects, and their comments and recommendations.

The next research objectives focused on exploring the feasibility of MMA to foster change in well-being and radicalization/extremism/violence risks with the help of questionnaires. However, due to the non-randomized, short-term feasibility design, we interpreted any detected changes and lack of changes cautiously, and we did not have any hypotheses about statistical significance. effect sizes, variation, and precision.

RO2: Explore MMA's feasibility to improve meaning-making, as indicated by changes in scores on relevant questionnaires.

RO3.1.: Explore MMA's feasibility to reduce radicalization intentions, extremist beliefs and attitudes towards violence, as indicated by changes in scores on relevant questionnaires.

RO3.2.: Explore whether changes in meaning-making statistically mediated changes in radicalization/extremism/violence.

RO4: Explore the feasibility of MMA to improve resilience and well-being as indicated by changes in scores on relevant questionnaires.

RO4.2.: Explore whether changes in meaning-making statistically mediated changes in well-being.

RO5.1. Explore whether differences existed between MMA and control-group participants who used a similar smartphone app without the meaning-oriented components on changes in meaning-making, radicalization/extremism/violence, and well-being.

RO5.2.: Explore whether changes in meaning-making statistically mediated differences between MMA-participants and control-group participants in meaning-making, radicalization/extremism/violence, and well-being.

Methods

MMA development

Organic development: This project evolved organically over a period of approximately six months through multiple messages via email and social media, approximately fifteen one-to-one online video meetings, and six online group video meetings between fifteen psychologists, community workers, and researchers in the conflict/war-affected areas of Israel, Palestine, Ukraine, Iran, and the study's author in the UK. This expert panel shared their observations that individuals in their conflict- or war-torn communities struggled to maintain a sense of meaning, which seemed to lead to a desperate search for meaning, sometimes through the development of radical political and ideological beliefs, attitudes, and actions. Meanwhile, they noticed a lack of resources and support for their communities to maintain a sense of meaning. Individual counselling seemed impossible due to a lack of staff, physical or online access, and also felt excessive given the usually non-pathological nature of people's meaning-oriented questions. They noticed a growing interest in their community for meaning-oriented books like Viktor Frankl's '*Man's Search for Meaning*', but this book lacked practical applications. Therefore, they shared a self-help book on meaning in life, which summarised fifty key research findings on meaning in life and offered self-reflective questions (Vos, 2017); although some individuals said people found this self-help book helpful, it was too basic and did not offer a broad range of advanced self-help tools adjusted to their context. This is why we decided to develop a meaning-centered intervention for conflict-affected populations.

Conceptualisation: MMA was based on the before-described MOSAIC-framework and aimed to stimulate the optimal meaning-making characteristics.

Scoping literature review: To identify effective interventions and best practices that could be used to develop MMA, we identified relevant literature: (1) Systematic literature reviews and meta-analyses of meaning-making and meaning-making interventions in the general population (Hoffman et al., 2026; Hoffman & Lac, 2026; Park, 2022, 2010; Russo-Netzer et al., 2016; Russo-Netzer & Vos, 2016; Schnell, 2020; Van Deurzen et al., 2019; Vos, 2026a-b, 2025a, 2024, 2023, 2019, 2016a-b, 2015; Vos, Craig & Cooper, 2014; Vos & Vitali, 2019). (2) Systematic literature reviews and meta-analyses of meaning-making and meaning-making interventions in extremists and P/CVE interventions (Ali et al., 2017; Altungy et al.,

2025; Da Silva et al., 2024, 2023; Dean, 2024; Echelmeyer et al., 2023; Feddes et al., 2023; Firdiani et al., 2025; Kosloff et al., 2019; Kruglanski et al., 2019; Kruglanski & Moskalenko, 2025; Pyszczynski, et al, 2009, 2008; Lösel, et al., 2020; Vos, Namdar & Park, 2026a-b). (3) Systematic literature reviews and meta-analyses of other P/CVE interventions (Amit & Kafy, 2022; Carthy et al, 2020; DaSilva et al.2022; Jayakumar et al., 2019; Jugl et al., 2020; Kelly, 2019; Khalil et al., 2025, 2016; Koehler & Horgan, 2017; Pistone et al., 2019; Ruffion, 2025; Stephens et al, 2021; Schewe & Koehler, 2021; Wood & Hales, 2025).

Identification of generic tools/interventions: Supplemental Table 1 details components identified in the literature. Whereas some P/CVE interventions included education, vocational training, and work placement, these were deemed impossible to offer in conflict/war zones. It was also not possible to offer a personal counsellor, like in some P/CVE and general population interventions, due to lack of accessibility and digital problems. Therefore, we decided to offer a broad spectrum of online tools/interventions from which end-users could choose, with the help of feedback/suggestions based on questionnaires, as research demonstrates that individuals benefit from being offered a broad range of meaning-making tools/interventions (Russo-Netzer & Vos, 2026; Vos, 2025a-b, 2023, 2019; Vos & Vitali, 2019). MMA addressed explanations/psychoeducation, practical goal-management, solution-focused and individual tailoring interventions which were mentioned in meaning-oriented interventions in the general population and in general P/CVE interventions. MMA addressed emotion-regulation, ideological discourses, and self-esteem strengthening interventions which were mentioned in studies on meaning-oriented interventions in the general population and in general P/CVE interventions. MMA addressed meaning-oriented and social integration interventions, which were mentioned both in meaning-oriented interventions in the general population and in meaning-oriented P/CVE interventions.

Identification of specific tools/interventions: Various specific tools/interventions in MMA were directly copied and/or adjusted from Systematic Meaning-Centered Psychotherapy (SMCP), which is an evidence-based intervention aiming to help individuals live a meaningful life despite life's inevitable challenges, through improvement of the aforementioned optimal meaning-making characteristics (Vos, 2025, 2018). In contrast with other meaning-making 'treatments', SMCP was not merely developed by one specific research or psychotherapy school, but was developed as a common denominator meaning-centered psychological

treatment, by systematically integrating all effective interventions/components identified in systematic literature reviews and meta-analyses of meaning-centered and existential interventions (Russo-Netzer & Vos, 2026; Vos, 2026, 2018; Vos, Craig & Cooper, 2014; Vos & Vitali, 2019), including relevant populations such as veterans, displaced individuals, and refugees (Aktan et al., 2022; Constanza et al., 2022; Feddes et al, 2023; Halama, 2014). SMCP has been used in the training of thousands of therapists, applied and validated across various populations, particularly individuals in traumatic/stressful situations and boundary situations in life (Russo-Netzer & Vos, 2026a-b; Vos, 2025a; 2023c; 2018). As previous studies did not show any negative side-effects of SMCP and other meaning-centered interventions, we considered MMA at low-risk of harm, despite the lack of validation of the self-help app and contextual adjustments.

Linguistic and technology development: Our team lacked the linguistic and technological expertise and funding to develop a technologically advanced app in multiple languages; therefore, we developed a beta version of MMA as a basic WordPress website in English with limited offline functionality, which could be launched swiftly to address urgent population needs. The aforementioned panel of experts advised on the cultural appropriateness of formulations, explanations and other aspects of the app.

Overview of toolkits: Following SMCP and the literature it was based on, MMA consisted of six Tool Kits (TK), each of which consisted of multiple tools (see Supplemental Table 1):

Explanations TK: This included instructions on how to use the app, and psycho-education on coping flexibly with stressful situations (Vos & Van Rijn, 2025), and on meaning in life (Vos, 2019), as research shows the importance of psycho-education for meaning-making (Vos, 2026a-b; Vos &Vitali, 2019).

Practical psychological first aid TK: The first part was based on the WHO Psychological First Aid Guidelines, which advised individuals to assess the situation, ask others to listen to their needs or to others in need, and connect with services, the community, and loved ones (https://www.who.int/publications/i/item/9789241548205). In addition, stress-reduction exercises, such as breathing and grounding, were provided (Vos, 2019; Vos & Van Rijn, 2025b). This first aid aimed to address immediate threats, obtain access to external resources, and improve emotion regulation. Not only did we include this for ethical reasons to help

individuals with their immediate situation, but we also hypothesized that this could help individuals maintain a sense of meaning, for example, by finding safety and connecting with loved ones.

Brief meaning-making exercises TK: This comprised 24 exercises, each taking between five and ten minutes to complete, based on similar brief interventions used in evidence-based clinical trials, adjusted for this self-help app and population (Vos, 2019; Vos & Vitali, 2019).

Practical goal-setting TK: This comprised six exercises about goal-setting and addressing practical hindrances to realizing meaning, to help realize envisioned meanings in everyday life (Vos, 2019).

Structured meaning-making TK: These included eight self-guided lessons to explore the comprehensive, worldwide meaning sextet comprising six types and 27 subtypes of meaning (Vos, 2025, 2023b, 2019), and the meaning-oriented questionnaires MLQ, MSQ, and MAS (Steger et al., 2006; Vos, 2024, 2023). Research indicates that these lessons and questionnaires can help individuals enhance their sense of meaning in life (Vos, 2025a-b; Vos & Vitali, 2019).

Conflict survivors TK: Many meaning-oriented interventions incorporate examples of life stories demonstrating resilience (Vos, 2016a-b; Vos & Vitali, 2019). Therefore, MMA included inspiring quotes and summaries of life stories of individuals who overcame hardships.

Control-group: An intervention for a control-group was created by removing meaning-oriented components from MMA (see Supplemental Table 1).

Psychometric Instruments

Sociodemographics:

To describe the sample, the following items were selected (Vos, 2023b): an open question about country; refugee status (living in a war or crisis zone, including displacement in the own country; refugee in neighbouring country; refugee elsewhere); gender (female, male, other, not disclosed); age. The location was confirmed via the IP-address location; a country was labelled as having armed conflict via ACLED's Conflict Watchlist (acleddata.com).

RO1. Acceptance:

Time: We hypothesized that end-users' acceptance of MMA would be indicated by the time spent in the app; therefore we recorded whether a toolkit was opened and how long an individual spent using the toolkit's tools.

Open questions: MMA participants were asked four open questions, inspired by the Client Change Interview that is often used to explore the impact of psychological interventions (Elliott & Rodgers, 2008): 'What were the most helpful aspects of MMA?', 'What were the least helpful aspects of MMA?', 'Please add any other comments about your experience with this app?', and 'Please share any recommendations for the app developers? '.

Meaning-making App Satisfaction Questionnaire: Following service satisfaction questionnaires in British National Mental Health Services (digital.nhs.uk), 14 items were adjusted to assess the participant's satisfaction with the app. Principal Component Analysis (PCA) revealed three factors (decided on Eigenvalue >1, knee in the scree-plot, and interpretability based on Varimax rotation), confirmed by SEM: overall satisfaction about the content (Cronbach's alpha:.89), overall satisfaction about the technical functionality (Cronbach's alpha:.82), overall positive impact (Cronbach's alpha:.92). Scores ranged between 1, completely disagree, to 7, completely agree.

RO2 Meaning-making:

Short Meaning in Life Questionnaire (SMLQ): We wanted to measure changes in overall meaning in life, but had to select the shortest questionnaire as we were afraid that a long questionnaire could be too time-consuming to fill in for this population, and could reduce participation rates: the five-item Meaning in Life Questionnaire was administered to assess the user's general meaning in life; previous studies indicated good validity and reliability (Steger et al., 2006) . Scores ranged between 1, completely disagree, to 7, completely agree. PCA identified one factor, as confirmed by SEM, and reliability was good (Cronbach's alpha=.90).

Meaning Sextet Questionnaire-Brief: We wanted to assess changes in the types of meaning, but the only questionnaire that measures this, the Meaning Sextet Questionnaire (MSQ), was deemed too long for this population (Vos, 2025a, 2023). Therefore we developed a new 6-item questionnaire to measure the extent to which individuals realized six different types of meaning in their lives: materialistic, hedonistic, self-oriented, social, large, and

existential-philosophical. This sextet was based on a systematic literature review of 107 worldwide studies on people's meaning in life, which was subsequently translated into the comprehensive, multi-validated MSQ (Vos, 2025a, 2023) showing that individuals worldwide experience these six types of meaning; to limit the length of the questionnaire, only one generic question about each type of meaning was asked, and no questions were asked about subtypes of meaning. As the items in each subscale/type of meaning in the long-MSQ had large correlations and reliability (ibidem), we used all these items to create one longer item for each MSQ-brief item/type of meaning (for example, the long MSQ had 5 items for materialistic meanings, which were combined to create one item in the MSQ-brief). Scores ranged between 1, completely disagree, to 7, completely agree. We treated these as six subscales, similar to the long MSQ, as PCA suggested one generic factor, confirmed by SEM, explaining only 40.3% of the variance besides individual factors, with low overall scale-reliability.

Meaning Approach Scale-Brief: We wanted to measure changes in how individuals approach meaning in life, but the only questionnaire that measures this, the Meaning Approach Scale, was deemed too long for this population (Vos, 2025a, 2024). Therefore, we developed a new 3-item questionnaire to measure how individuals find meaning in life through following traditions and conforming to social expectations (traditional-conformist approach), setting personal goals and striving towards these in a linear way (goal-oriented approach), and using one's intuitions and critical reflection (critical-intuitive approach)(Vos, 2024). This triad was derived from a systematic literature review and the multi-validated Meaning Approach Scale (Vos, 2025a, 2024), which indicates that individuals worldwide derive meaning in these three ways. To limit the length of the questionnaire, only one generic question was asked for each approach to meaning. Similar to the development of the MSQ-brief, each item/approach in the MAS-brief was created by integrating/combining the content of the strongly-correlated/reliable items on each of the three subscales/approaches (Vos, 2025a, 2024). Scores ranged between 1, completely disagree, to 7, completely agree. We treated these as three subscales, similar to the long MSQ, as PCA suggested one generic factor explaining only 35.7% of the variance besides individual, with low overall scale-reliability; findings were confirmed by non-converging SEM.

Existential Meaning Regulation Scale: We wanted to measure participants' resilience, particularly their ability to experience a sense of meaning in life while facing life's challenges and uncertainties, which has been described as a 'dual attitude' by Vos (2015) as finding

meaning while simultaneously accepting life's givens. This scale has shown good reliability and validity (Vos, 2015). This ten-item questionnaire had scores ranged between 1, completely disagree, to 7, completely agree. PCA suggested one factor, as confirmed with SEM, with good reliability (Cronbach's alpha:.90).

RO3 Radicalization/extremism/violence:

General Extremism Scale: This 5-item scale measured general extremism, defined as opposition to democratic values, with previous studies indicating strong strongvalidity and reliability (Jungkunz et al., 2024). Scores ranged between 1, completely disagree, to 7, completely agree. PCA suggested one factor, as confirmed with SEM, and good reliability (Cronbach's alpha:.90).

Radicalism Intention Scale: We used the 6-item Radicalism Intention Scale (a subscale from the ARIS) to assess readiness to engage in illegal or violent political action, with previous studies indicating strong strongvalidity and reliability (Moskalenko & McCauley, 2009). Scores ranged between 1, completely disagree, to 7, completely agree. PCA suggested one factor, as confirmed with SEM, and reliability was good(Cronbach's alpha: .94).

Acceptance of violence during war: This 12-item war subscale of the Attitudes Toward Violence Scale measures acceptance of violence during war on a scale from 1 (strongly disagree) to 5 (strongly agree), with previous studies indicating strong strongvalidity and reliability (Anderson et al., 2006). PCA suggested one factor, as confirmed with SEM, and reliability was good(Cronbach's alpha: .92).

RO4. Well-being:

Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5): As acute and post traumatic stress disorder are amongst the most common mental health problems during and after armed conflicts, we used this widely-used 5-item instrument to assess symptoms of post-traumatic stress disorder, with an added dissociation item measuring derealization and depersonalisation ('Sometimes, I feel emotionally numb or as if I am observing myself from outside my body'), with previous studies indicating strong validity and reliability (Blevins et al., 2015). Scores ranged between 1, completely disagree, to 7, completely agree. PCA suggested one factor, as confirmed with SEM, and reliability was good (Cronbach's alpha:.94).

Generic Wellbeing Question: We wanted to assess general well-being, but as this was not a key focus of our study and we wanted to have the smallest number of questionnaire items, we used a validated single-item questionnaire to aske users to evaluate their current emotional and psychological well-being. Scores ranged between 1, completely disagree, to 7, completely agree, with previous studies indicating strong good validity (Howard, 2020).

Analyses

Descriptive statistics (frequencies, means, standard deviation) described sociodemographic variables, time spent in the app, and satisfaction scores. Effects were measured by comparing baseline and follow-up measurements using t-tests (small: D=0.2, medium=0.5, large=0.8). The open questions were analyzed via reflexive thematic analysis as this is one of the most frequently used methods suited for this type of qualitative data (Braun & Clarke 2021) and feasibility studies on psychological interventions (Vos & Van Rijn, 2025). To explore whether the impact of MMA on well-being, radicalization/extremism/violence were mediated by meaning-making, Hayes' PROCESS macro in SPSS 29.0, with 5000 bootstrap samples was selected, as this user-friendly SPSS-macro is considered a robust method to test indirect effects while overcoming limitations of normality assumptions in smaller samples, ensuring high statistical power and accurate confidence intervals for mediation (Hayes & Rockwood, 2017). While the Hayes' macro was used to test each individual mediator with detailed, granular insights, we also wanted to explore how well the overall conceptual models fit the data, through simultaneous estimation of all variables, bias reduction, and formulation of latent constructs. Therefore, we conducted additional Structural Equation Models (SEM) which included MMA/control group as a dummy-coded categorical predictor, and each scale/subscale as latent variables predicted by all questionnaire-items; mediation was modelled as MMA/control group predicting mediator variables, which predicted outcome variables. SEM was interpreted with several fit indices, including the Root Mean Square Error of Approximation (RMSEA),Standardized Root Mean Square Residual (SRMR), and Tucker-Lewis Index (TLI)(as common in research, we interpreted findings as follows: Excellent fit: CFI/TLI > 0.95, RMSEA < 0.06, SRMR < 0.05; Acceptable fit: CFI/TLI > 0.90, RMSEA < 0.08, SRMR < 0.08; Sathyanarayana et al., 2024).

A post hoc power analysis was conducted using G*Power 3.1 to determine the achieved statistical power for the primary outcomes of the study. The analysis was based on the within-subjects design with a sample size of 142 participants, an alpha level of .05, and the observed effect sizes reported in the study: meaning in life (D=1.32), general extremism (d=0.67), radicalization intention (d=0.83), and trauma symptoms (d=0.87). These large effect sizes yielded estimated power values exceeding 0.99 for meaning in life, above 0.95 for trauma symptoms and radicalization intention, and approximately 0.90 for extremism reduction. This indicates a very high probability of correctly rejecting the null hypothesis for these outcomes, minimizing the risk of Type II error.

Recruitment and ethics

The expert panel members shared information about MMA via word-of-mouth and on social media (Facebook, Instagram, X/Twitter). Individuals were invited to participate in this study if they lived in a region affected by war or conflict as identified by ACLED (acleddata.com). Data protection was paramount given the participants' politically sensitive context. MMA complied with the General Data Protection Regulation (GDPR) and other applicable data protection laws in the European Union and the United Kingdom. Individuals could use the app without sharing any data with the researchers (i.e., they used MMA but did not participate in research), and, if they decided to participate in research, they provided explicit consent for the researchers to use their evaluative questionnaires and app usage data. Participants were informed that the app was not a replacement for care by a health care professional and could only be used by individuals 18 years of age or older who have the legal right in their country to consent to research.

For ethical reasons, only the responses to the evaluative questionnaires were visible to and saved by the researchers, along with the time spent in each toolkit and tool. The IP address was only used to temporarily save the end-user answers to questions in the tools for a maximum of four weeks, after which this information was deleted; at the end of each session, individuals were asked whether they wanted to delete the data in the system, and whether they wanted to sent the questions/texts and answers to their email address (no copies of the emails were saved). MMA did not collect personally identifiable information, such as users' names, and researchers had no access to user-level details, including temporary data, but only to automatically

synthesized and anonymized information. No geolocation and other metadata were collected. Ethics approval was provided by the IMEC ethics committee.

Findings

RO1. Acceptance

In total, 185 individuals downloaded the app between 15 November 2024 and 15 February 2025, of whom 43 (23.2%) were excluded from further analyses because they spent less than 5 minutes on the app; the available data did not show any statistically significant differences in IP-address locations or sociodemographic characteristics between excluded and included participants. As common in recruitment via social media, no data was available on how many eligible individuals had seen the social media posts by the fifteen individuals in the expert panel. Of the remaining 142 (76,7%) individuals, 81 (57.0%) lived in a conflict or war zone, 32 (22.5%) lived as refugees in a neighbouring country, and 29 (20.4%) lived as refugees elsewhere (all confirmed by their IP-addresses). This included individuals from the war between Ukraine and Russia, and from regional conflicts in the Middle East (Israel, Palestine, Lebanon, Syria, Iran, Qatar)(see Table 1). On average, individuals spent 70.92 (SD=45.22) minutes in the app, with most time spent on brief exercises to find hope and meaning (M=23.67, SD=15.56) and on systematic methods for living a meaningful life (M=19.20, SD=13.12).

In total, 78 individuals downloaded the control-group app between 15 August 2025 and 20 October 2025, of whom 57 individuals (73.0%) used the app for more than 5 minutes. Recruitment in the control group was discontinued for ethical reasons after interim analyses indicated a lack of benefit from the app. No adverse effects or harm were reported. However, we decided to stop recruitment for the control group as the effects on meaning-making were not statistically significant, and the effects on radicalisation/extremism/violence and well-being were small. We considered that it was insufficiently ethically justified to continue asking people to use an app that had null or small benefits but that did require using potentially restricted time, energy and resources. Individuals were from Ukraine, Israel, and Palestine, and did not differ statistically significantly in sociodemographic characteristics from the MMA-condition. On average, they spent 32.22 minutes (SD=16.29), which was significantly less than MMA (D=1.13).

Overall, individuals were satisfied with MMA's content (M=5.01, SD=1.76) which was statistically significantly more than the control-group (M=3.21, SD=2.17, D=.92). They reported a positive impact on their lives (M=4.87, SD=1.65), statistically significantly more than the control-group (M=3.22, SD=2.12; D=.87). They were on average neither satisfied nor dissatisfied with MMA's technological functions (M=3.67, SD= 1.89), which did not statistically significantly differ from the control-group (M=4.01, SD=1.67), with the lowest MMA score for the item 'I am satisfied with the app's technical functionality (for example, downloading, starting, scrolling through toolkits, selecting tools, answering questions, saving, emailing answers to myself)'(M=2.53, SD=1.32).

121 individuals answered the question of what they found the most helpful content in MMA; 101 (83.4%) of the participants mentioned brief meaning-making exercises (particularly meaningful moments, meaning diary, everyday objects, tragic optimism, meaningful people, Serenity Prayer, Pascal's Wager, and Hope exercises), 89 (73.5%) the theory about responses to stressful situation, 87 (71.9%) theory about meaning in life, and 81 (66.9%) structured meaning-making exercises (particularly questionnaires about the types and approaches to meaning). When asked what they found least helpful in MMA, 67 (55.3%) cited psychological first aid, 35 (28.9%) inspirational narratives, and 30 (24.8%) practical goal-setting exercises.

Comments or recommendations were given by 52 individuals. Thirty-eight individuals reported positive effects on their emotions, and twenty-five mentioned the app's ease of use. Nine participants noted that some exercises and texts were difficult to understand or overly demanding, and seven recommended including more content. Forty-two individuals provided technological recommendations, including developing an app that could also work offline and in bomb shelters (N=42), an easier navigation structure (N=25), and specific technical suggestions (N=5).

As no email and IP-addresses were saved for the aforementioned safety/privacy-reasons, it was impossible to test long-term effects. In April 2026, the author/researchers shared a call on social media for people who had used the MMA-app to fill in again the same sociodemographic, satisfaction, and open questions in a one-off anonymous questionnaire. Twelve individuals from Israel, Palestine, and Ukraine filled in this questionnaire, and reported general satisfaction (M=4.65, SD=1.35), large positive impact on their lives (M=4.25, SD=1.87), and moderate satisfaction about technological function (M=3.92, SD=1.32). The

eight responses to what was helpful all regarded exercises and explanation about meaning; the ten responses to what was unhelpful was all reported that the app was no longer accessible and that the app could not be used offline; the five responses to recommendations regarded improving the technological functionality and making the app available.

Table 1. Sociodemographic variables of individuals who used the app for longer than five minutes

		MMA: N(%)	**Control: N(%)**
Total		142(100)	57(100)
Country(current or country of origin)	Ukraine	36(25.3)	28(49.1)
	Israel	32(22.5)	15(26.3)
	Palestine	26(18.3)	14(24.5)
	Russia	16(11.2)	
	Lebanon	16(11.2)	
	Syria	7(4.9)	
	Iran	7(4.9)	
	Qatar	2(1.4)	
Refugee status	Living in war or conflict zone	81(57.0)	29(50.8)
	Refugee in a neighbouring country	32(22.5)	10(17.5)
	Refugee elsewhere	29(20.4)	18(31.5)
Gender	Female	76(53.5)	33(57.8)
	Male	34(23.9)	14(24.5)
	Other	6(2.1)	1(1.7)
	Not disclosed	26(18.3)	4(7.0)
Age(M, SD)		32.14(20.23)	36.20 (19.98)

Table 2. Average time spent in MMA

Toolkit	**N opened**	**Mean time spent per toolkit***
Less than 5 minutes (deleted from dataset)	43	
Overall	142	70.92 (45.22)
Explanations	142	7.32 (4.28)
Practical Psychological First Aid	132	4.29 (3.21)
Brief exercises to find hope and meaning	132	23.67 (15.56)
Practical Solutions and Skills Guide	101	9.21 (6.53)
Systematic methods for a meaningful life	98	19.20 (13.12)
Meaningful words and stories	105	7.23 (4.32)

*Mean and standard deviation in minutes and seconds

Table 3. Satisfaction Survey

	Factor	**N**	**M(SD)**
Overall content satisfaction	1	129	5.01 (1.76)
Overall technological satisfaction	2	129	3.67 (1.89)
Overall positive impact	3	121	4.87 (1.65)
Overall, I am satisfied with the app.	1	129	5.14 (1.23)
I would recommend the app to a friend or family member.	1	129	5.05 (1.32)
I found the app easy to use.	2	129	3.77 (1.83)
I am satisfied with the app's technical functionality(for example, downloading, starting, scrolling through toolkits, selecting tools, answering questions, saving, emailing answers to myself).	2	129	2.53 (1.32)
I am satisfied with the app design(e.g., colours, font, pictures)	2	129	3.14 (2.09)
The exercises and information were relevant to me.	1	129	6.12 (0.84)

The exercises and information were easy to understand	1	129	4.19 (2.29)
The app has helped me cope better with my current life situation.	3	128	6.05 (0.54)
The app has helped me find more meaning and purpose in my life.	3	126	6.23 (0.43)
The app has increased my hope for the future.	3	127	4.72 (0.67)
The app has positively impacted my well-being.	3	124	5.73 (1.76)
The app has improved my relationships with others.	3	125	5.12 (1.54)
The app has helped me think in a more nuanced way about my life situation(e.g., less black-or-white).	3	121	6.21 (0.38)
The app has helped me think in a more nuanced way about other people(e.g., less black-or-white).	3	121	5.87 (0.76)

Scores on a scale from 1, not at all, to 7, completely satisfied; Factor derived from Principal Component Analysis.

RO2. Changes in meaning-making

Individuals had statistically significant, large pre-post app-usage improvements in overall meaning (D=1.32, p=.001). Individuals reported statistically significant increases in the realization of self-oriented (D= .65, p=.01), social (d=.96, p=.001), and large types of meaning (d=66, p=.02). A statistical trend was found for an increase in hedonistic (D=42, p=.06) and existential-philosophical types of meaning (d=.15, p=.08), but no statistically significant change was found in materialistic types ; (d=.11, p=.16). Individuals showed statistically significant, large decreases in using a traditional-conformist meaning-making approach (D=.57, p=.001), medium statistically significant increases in using a goal-oriented approach (D=.32, p=.03), and large statistically significant increases in using a critical-intuitive approach (D=1.10, p=.001). Individuals showed large, statistically significant improvements in existential meaning regulation (D=1.02, p=.001).

RO3. Changes in extremism, radicalization, and violence

Individuals showed statistically significant, large reductions in general extremism (D=.67, p=.01), radicalization intention (D=.83, p=.001), and acceptance of violence during war (D=.89, p=.001). Statistical details on mediation can be found in Table 5. Overall, the

changes in meaning-making variables were statistically significant in partially mediating the changes in extremism (explaining 76.8% of the total effect), radicalization intentions (79.8% of total effect, with a statistically significant direct effect remaining), and the acceptance of violence during war (explaining 89.6% of total effect, with no statistically significant direct effect remaining). SEM with all variables showed good fit indices (RMSE=.04; SRMR=.03; TLI=.96). These findings suggest that, within this non-randomized feasibility study, meaning-related variables explain MMA's effects on violence acceptance, while these partially explain MMA's effects on reducing extremist views and radicalization intentions (which suggests additional mechanisms beyond meaning-making).

RO4. Changes in well-being

Individuals showed statistically significant, large reductions in PCL-5 trauma symptoms (D=.87, p=.01), and generic well-being (D=1.02, p=.002). Changes in meaning-making were statistically significant in almost completely mediating PCL-5 changes (explaining 96.6% of total effects), and general well-being (97.7% of total effects). SEM with all variables showed good fit indices (RMSEA=.04; SRMR =.04; TLI = .95). These findings suggest that improvements in meaning-related variables accounted for MMA's effects on psychological symptoms and well-being within this non-randomized feasibility study.

RO5. Comparison with the control-group

The control-group did not show statistically significant changes in the meaning-making variables, and statistically significant improvements in extremist beliefs (D=.23, p<.01), radicalization intentions (D=.41, p<.01), violence attitudes (D=.30, p<.01), trauma symptoms (D=.41, p<.01) and well-being (D=.33, p<.01). Compared with MMA, participants had smaller improvements in extremist beliefs (D=.89, p<.01), radicalization intentions (D=1.11, p<.01), violence attitudes (D=1.99, p<.01), trauma symptoms (D=2.21, p<.01) and well-being (D=1.01, p<.01). The SEM model fitted well, with differential effects between MMA/control-conditions on extremist beliefs, radicalization intentions, violence attitudes, trauma symptoms and well-being being predicted by larger changes in meaning-making in MMA-participants (RSMEA=.042, TLI=.972; SRMS=.049). These findings may be tentatively interpreted as suggesting that within this non-randomized feasibility study, MMA-participants had larger

improvements in their well-being and risk-measures thanks to their larger improvements in meaning-making compared with the control-group.

Table 4. Outcomes

		N	Baseline M(SD)	Outcome M(SD)	Difference D(p)
Short Meaning in Life Questionnaire*		121	3.01(1.22)	1.47(1.15)	1.32(.001)
Brief Inventory of Psychosocial Functioning(PCL-5)		121	4.01(2.01)	5.68(1.89)	-0.87(.01)
Generic Wellbeing Question		123	2.21(1.32)	0.93(1.21)	1.02(.002)
Meaning Sextet Questionnaire -Brief	Realized materialistic type of meaning	119	3.45(1.87)	3.25(1.75)	.11(.16)
	Realized hedonistic type of meaning	118	3.87(2.19)	3.01(2.03)	.42(.06)
	Realized self-oriented types of meaning	118	3.45(.01)	3.44(.02)	.65(.01)
	Realized social type of meaning	118	4.21(1.66)	2.67(1.58)	.96(.001)
	Realized large type of meaning	118	2.87(1.03)	2.21(.98)	.66(.02)
	Realized existential-philosophical type of meaning	118	2.64(1.67)	2.40(1.79)	.15(.08)
Meaning Approach Scale-Brief	Traditional-conformist approach	118	4.56(1.54)	5.43(1.67)	-.57(.001)
	Goal-oriented approach	118	4.02(1.32)	3.59(1.45)	.32(.03)
	Critical-intuitive approach	118	3.44(2.01)	1.36(1.85)	1.10(.001)
Existential Meaning Regulation Scale		115	3.76(2.29)	1.48(2.10)	1.02(.001)
General Extremism Scale		112	4.12(1.68)	3.01(1.62)	.67(.01)
Radicalization Intention Scale		112	3.78(1.75)	2.33(1.71)	.83(.001)

Acceptance of Violence During War		112	4.46(2.23)	2.69 (1.49)	.89(001).

Scores on 1-7 scale ranging from completely disagree – completely agree.

Table 5. Parallel Multiple Mediation Analysis of Meaning-Related Variables in the Relationship Between MMA Intervention and Outcomes

Outcome	**Mediator Path**	**Effect Estimate**	**SE**	**95% CI**	**Proportion Mediated**
PCL-5 Reduction	Short Meaning in Life	-0.33	0.09	[-0.52, -0.18]*	28.7%
	Realized social type of meaning	-0.25	0.05	[-0.35, -0.16]*	21.7%
	Realized self-oriented type of meaning	-0.16	0.07	[-0.30, -0.04]*	13.9%
	Realized large type of meaning	-0.12	0.08	[-0.28, -0.02]*	10.4%
	Traditional conformist approach	-0.14	0.04	[-0.22, -0.07]*	12.2%
	Critical intuitive approach	-0.15	0.05	[-0.25, -0.08]*	13.1%
	Total indirect effect	**-1.15**	**0.25**	**[-1.64, -0.72]***	**96.6%**
	Direct effect	**-0.04**	**0.14**	**[-0.32, 0.23]**	**3.4%**
Generic Wellbeing Improvement	Short Meaning in Life	0.28	0.15	[0.04, 0.55]*	29.8%
	Realized social type of meaning	0.24	0.12	[0.03, 0.47]*	25.5%
	Realized self-oriented type of meaning	0.11	0.03	[0.05, 0.18]*	11.7%
	Realized large type of meaning	0.08	0.07	[0.01, 0.21]*	8.5%

	Traditional conformist approach	0.11	0.05	[0.02, 0.20]*	11.7%
	Critical intuitive approach	0.12	0.06	[0.03, 0.24]*	12.8%
	Total indirect effect	**0.94**	**0.21**	**[0.57, 1.39]***	**97.9%**
	Direct effect	**0.02**	**0.12**	**[-0.22, 0.25]**	**2.1%**
General Extremism Scale Reduction	Short Meaning in Life	-0.27	0.07	[-0.40, -0.14]*	24.1%
	Realized social type of meaning	-0.19	0.09	[-0.36, -0.05]*	17.0%
	Realized self-oriented type of meaning	-0.09	0.06	[-0.21, -0.01]*	8.0%
	Realized large type of meaning	-0.06	0.03	[-0.12, -0.01]*	5.4%
	Traditional conformist approach	-0.11	0.05	[-0.21, -0.03]*	9.8%
	Critical intuitive approach	-0.14	0.07	[-0.28, -0.04]*	12.5%
	Total indirect effect	**-0.86**	**0.18**	**[-1.19, -0.56]***	**76.8%**
	Direct effect	**-0.26**	**0.12**	**[-0.49, -0.04]***	**23.2%**
Radicalization Intention Scale Reduction	Short Meaning in Life	-0.25	0.08	[-0.41, -0.12]*	22.9%
	Realized social type of meaning	-0.18	0.09	[-0.36, -0.05]*	16.5%
	Realized self-oriented type of meaning	-0.11	0.06	[-0.23, -0.02]*	10.1%

	Realized large type of meaning	-0.07	0.03	[-0.13, -0.01]*	6.4%
	Traditional conformist approach	-0.12	0.07	[-0.26, -0.02]*	11.0%
	Critical intuitive approach	-0.14	0.09	[-0.31, -0.02]*	12.8%
	Total indirect effect	**-0.87**	**0.17**	**[-1.21, -0.57]***	**79.8%**
	Direct effect	**-0.22**	**0.10**	**[-0.42, -0.03]***	**20.2%**
Acceptance of violence during war	Realized social type of meaning	-0.10	0.05	[-.15, -.05])*	11.7%
	Realized large type of meaning	-0.11	.07	[-.18, -.04])	14.2%
	Realized existential-philosophical type of meaning	-0.20	.08	-.28, -.12*	21.4%
	Traditional conformist approach	-.11	0.08	[.03, .19])*	9.8%
	Critical intuitive approach	-.21	0.08	[-0.29, 0.13]*	22.3%
	Total indirect effect	**-.89**	**0.08**	**[-.97, -0.81]***	89.6%
	Direct effect	**-0.11**	**0.15**	**[-.26, .04]**	10.4%

Discussion

The results of this study suggest the feasibility of MMA in armed conflict and war zones, as indicated by time spent in the app and end users' overall satisfaction. The large effect changes across various outcomes are notable, particularly given the relatively brief engagement with the app (average of 70.92 minutes).

MMA-users had statistically significant improvements in their overall sense of meaning in life and existential meaning regulation. However, what do these generic meaning-making improvement specifically entail? The MOSAIC framework suggests zooming in with micro-level questionnaires on the specific approaches and types of meaning (although these findings should be interpreted as mere indications, as they were measured with new questionnaires)(Vos,

2025). MMA-users started to rely less on traditional-conformist approaches and more on critical-intuitive ones after app use. This shift was particularly noteworthy as individuals in conflict zones typically rely more heavily on traditional-conformist approaches (cf., Ellenberg & Kruglanski, 2024; Hogg, 2021; Rottweiler & Gill, 2020). Meanwhile, MMA-users had statistically significant changes in the types of meaning that they were able to realize, with large effects in social types of meaning; this may suggest that individuals were better able to fulfil their needs for social types of meaning, which may hypothetically reduce reliance on extremist networks and ideologies.

Mediation analyses suggested that improvements in meaning-making mediated/explained the changes in radicalization intentions, extremist beliefs, and violence attitudes. Although the non-randomized feasibility design cautions not to overinterpret these findings, it may be speculated that by improving meaning-making through the app, participants may have found less radical, extremist and violent pathways to meaning, confirming the generally protective nature of meaning (Vos, 2025a). Although these findings are limited by the study design, they seem to provide empirical support for the role of meaning-making in P/CVE interventions, as P/CVE experts have previously suggested (e.g., Koehler & Klosinksi, 2025). However, as changes in extremist beliefs and radicalization intentions were only partially mediated by meaning-making, other P/CVE interventions may be needed beyond meaning-making (see for an overview: Koehler & Horgan, 2016).

MMA-participants showed large, statistically significant improvements in trauma symptoms and general well-being, which were mediated by enhanced meaning-making and meaning regulation. These changes are consistent with prior research on the mental health benefits of meaning (Mutuyimana et al., 2024) and meaning-centered interventions (Litz et al., 2009; Vos & Vitali, 2019). These changes are notable as MMA was a self-help intervention while previous meaning-making interventions involved a counsellor/therapist.

Limitations

Technical: The app's technical functionality posed a significant challenge, as reflected in the relatively low satisfaction scores for technical aspects (M=3.67, SD=1.89). This limitation was primarily due to the researchers' lack of web development skills and financial resources, resulting in a basic beta-version with limited offline functionality. User feedback

indicated a preference for an app with offline functionality suitable for environments with limited or no internet access, such as bomb shelters or areas with restricted connectivity, such as Gaza. As with other apps, MMA use is often limited by unreliable electricity and mobile networks in conflict/war zones.

Sampling: On the one hand, this sample was diverse across countries and various sociodemographics, which enhanced the generalizability of our findings. On the other hand, the sample was recruited via social media and word-of-mouth, which enabled a swift recruitment, but which is inherently limited by the specific social networks of the expert panel members and self-selection of individuals using social media. The sample were relatively young English-speaking individuals, which may reflect greater technology use among younger generations and which may have limited the generalisability of the intervention to individuals with less access to or experience with smartphone apps. The likelihood of Type II error was possibly higher in the control-group due to the smaller sample size, and therefore differences between MMA/control-group should be interpreted as initial indications that future large-size randomized controlled trials should validate.

No randomization: Mediation analysis and structural equation models suggested theoretical insights into the mechanisms through which meaning-oriented interventions may impact mental health and extremist views. For ethical reasons, individuals were not randomized between the MMA and control groups, and the control group was kept smaller than the MMA group; due to this non-randomized study design, the differential effects between MMA and control groups should be interpreted cautiously.

Measurements: The reliance on self-report measures introduces potential bias, particularly given the sensitive nature of constructs like extremist views. We had to omit several relevant questionnaires to keep the measurement brief, including hope, optimism, and social-dominance scales. We also used the MSQ-brief and MAS-brief for the first time; they showed good psychometric properties in this study but require further validation in future studies. The relatively short follow-up period prevents us from determining the longevity of the observed effects.

Large changes: Some changes in participant scores were extremely large (even with Cohen's D values larger than 2); the large size of these changes may be explained by the low meaning-making and high stress scores at baseline which may have created a statistical flooring

effect; the size may also be explained by a realistic likelihood of self-selection bias, as well as regression to the mean, shared method variance, and response shift bias (Vos, 2023).

No follow-up: Another limitation was the lack of a quantitative measurement of long-term effects. While bearing in mind the large risk of self-selection bias, the individuals who did fill in a questionnaire approximately a year later were still generally positive.

Following these limitations, future studies should focus on developing and testing a more robust, multi-lingual version of MMA with improved technical functionality, particularly offline capabilities. Longitudinal studies with larger samples and randomized control-groups could help establish the durability and causal nature of the observed effects. Additionally, examining potential moderators of effectiveness, such as trauma severity, displacement status, or cultural factors, could help tailor the intervention to different contexts and populations.

Despite these limitations, our findings contribute to the growing literature on the role of meaning in P/CVE and in maintaining well-being under stressful life circumstances. A key strength of this study was the grounding of MMA in systematic reviews and meta-analyses on meaning in the general population (Vos & Vitali, 2019), and in radicalization and extremism (Vos, Namdar & Park, 2026a-b), which the findings generally seemed to confirm. The large changes observed across outcomes suggest that even brief engagement with meaning-oriented interventions may benefit for individuals in conflict zones. The app format enables rapid scalability and may offer a cost-effective alternative to resource-intensive P/CVE interventions, for example, in refugee camps, education, and among young people.

Thus, this study suggests that digital interventions may offer a promising avenue for P/CVE and well-being support in conflict/war zones where traditional forms of support are limited or inaccessible, for example, by improving, testing, and scaling up MMA as a standalone, offline, Android and iOS-compatible application.

Acknowledgment

The author extends sincere gratitude to the numerous researchers and community workers for their significant contributions to the development of the Meaning-Making App, participant recruitment, and the drafting of this article. This article is dedicated to the study participants who contributed to this study in some of the most stressful periods in their lives.

Declaration

The author discloses no conflict of interest. The author self-funded, developed and owns the concepts, content, technology, and research about the not-for-profit Meaning-Making App.

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JOURNAL FOR DERADICALIZATION

Summer 2026
No. 47
ISSN: 2363-9849

Supplemental material for online publication only.

Supplemental Table 1. Scoping literature review of meaning-making and P/CVE on which MMA is based

Group of P/CVE interventions	**Key findings on meaning-making interventions in the general population[1]**	**Key findings on meaning-making in radicalization, extremism, and terrorism[2]**	**Key findings on P/CVE interventions (related and unrelated to meaning-making)[3]**	**MMA**
Psychoeducation	1.Education about meaning in life and existential processes 2.Motivating taking responsibility for one's own life		1.Education about intergroup processes	1.How to use this app 2.How do people respond to stressful situations and crises 3.What is meaning in life
Psychological and experiential measures	1.Addressing immediate needs and safety that may prevent meaning-making 2.Meaning involves various neurocognitive networks and may calm the autonomic nervous system 3.Experience-focused exercises improve meaning (e.g., accepting experiences, mindfulness, focusing, meditation, art) 4.Increase a critical-intuitive approach to life combining	1.Perceived existential threats can have physical, neurobiological, and psychological impacts	1.Emotion regulation training and self-control 2.Learn to trust and critically explore personal experiences, intuitions, and values 3.Mental health assessment, counselling, and trauma-informed care*	1.Psychological first-aid 2.Brief meaning-making exercises (assess your situation; meaning in the body; frustration tolerance)

	listening to one's intuition and critical reflexivity (instead of merely a dominant traditional-conformist approach)			
Meaning-centered interventions	1.Explicitly address meaning in life 2.Develop self-insight, identify and explicate concrete and specific meaning-centred topics in individual everyday experiences 3.Identify pre-existing envisioned, realized and unrealized meanings 4.Systematically explore all possible types of meaning to find new meaning examples and/or confirm existing meanings ('broad fishing net approach') 5.Help develop six or more varied examples of diverse types of meaning in life (e.g., balance abstract ideals with examples of self-oriented,	1.Experiencing a gap between realized and envisioned meanings ('unrealized meanings') may lead to radicalization 2.Having few meanings and significance increases radicalization and extremism risk; having multiple examples of meaning reduces extremism risk 3.Having mainly abstract types of meaning increases risk; having diverse types of meaning, particularly self-oriented and social types, reduces the risks 4.Unstable meaning-making (rapidly trying various meanings in a short period) 5.Radicalization involves extreme re-envisioning of	1.Explore non-extreme ways to find meaning and significance	1.Brief meaning-making exercises (meaningful moments; meaning diary; meaningful objects; meaningful photos; focus on something larger than yourself; gratitude) 2.Guide to identifying and breaking vicious cycles in your meaning in life 3.Eight lessons for living meaningfully in life's toughest moments 4.Meaning in Life Questionnaire

	hedonistic, and materialistic meanings, or social meanings in non-extremist groups) 6.Meaning-centred tools/questionnaires 7.Focus on social and large types of meaning (e.g., transcend oneself, see larger perspective) 8.Various evidence-based meaning-making exercises/interventions (e.g., Schnell, 2020; Vos, 2019)	meanings, extreme strategies to realize meaning, extreme appraisals, and extreme experiences		5.Meaning Sextet Questionnaire 6.Meaning Approach Scale 7.Helpful and unhelpful Beliefs about Meaning in Life Questionnaire
Practical goal-management and solution-focused interventions	Stimulate effective goal-management skills		Decision-making and problem-solving skills training	Exercises in setting realistic goals in life and achieving them
Social integration	Increase social and large types of meaning	Search for social types of meaning in extremist social networks	1.Address stigma and social inclusion without dehumanising/polarising 2. Emphasize connections, community, self-esteem (e.g., connect with family and community, derive personal strength from the community)	1.Several brief meaning-making exercises (meaningful people; acts of kindness) 2.Guide to overcoming being passive and social withdrawal

			3.Emphasize meaning derived from altruism and connecting with community (e.g., helping others, group action learning, civic engagement)	3.Guide to break the cycle of violence: prevent victims from becoming aggressors 4.Guide to setting boundaries in relationships 5.Guide to finding new friends and communities
Ideological discourses	1.Developing a questioning approach 2.Critically identify and analyse one's approach/attitudes to life 2.Increase a critical-intuitive approach to life (instead of merely a dominant traditional-conformist approach) 3.Give an independent but connected answer to the influences from their social context	1. Decline in critical thinking and intuitive understanding (reduced 'critical-intuitive approach') 2. Increase in rigid conformism or focus on traditions to find meaning (rigid 'traditional-conformist approach') 3.In later radicalization phases a strong focus on few abstract goals (narrow 'goal-oriented approach')	1.Critical thinking training Cognitive-behavioural interventions 2.Alternative narratives and counter-narrative in-person, online, in general public discourse*** 3.Ideological or theological counselling*** 4.Engagement with credible ideological people*** 5.Explicit support for disengagement***	1.Brief meaning-making exercises (problem-free talk; reframing) 2.Guide to critical thinking and develop more rational and helpful alternatives
Strengthen sense of self and existential resilience	1.Develop self-worth to follow one's own meaning	1. Decline in self-oriented meanings (e.g., self-esteem, autonomy, self-	1.Enhancing self-efficacy, control and autonomy 2.Building positive self-identity	1.Brief meaning-making exercises (compliment

	2.Normalising and developing self-compassion for one's existential struggles as part of the human condition 3.Identify and explore existential paradoxes, threats and (lack of) resources/opportunities 4.Assess proximate and distal existential defences against threats 5.Tolerate existential frustration due to the impossibility to realize all meanings that one envisions (e.g., practice frustration tolerance, gratification postponement, taking time and rigour for situation appraisal) 6.Stimulate meaning-centred coping (use meaning to cope with crisis) and combine a realistic understanding of the situation with	efficacy, self-care) 2.Unrealistic or unhelpful primary appraisal of the threat to one's meanings 3.Unrealistic or unhelpful secondary appraisal of the resources/opportunities to cope with threats 4.Unrealistic or unhelpful tertiary appraisal of attempts to align the situational meanings to their global meanings in life 5.Identify proximate existential defence mechanisms (e.g., denial, avoidance) 6.Identify distal existential defence mechanisms (e.g., worldview and self-esteem boosting)	3.Improve self-expression and identity, e.g. arts, sports* 4.Stimulate adaptive skills to cope with social challenges and emotions, e.g. active, expressive and social skills	s exercise; self-compassion; Pascals' Wager; resilience self-assessment; hope; tragic optimism; personal strengths; crystal ball; Serenity Prayer; time machine) 2.Meaningful quotes & stories from people finding meaning in crisis

	meaning (e.g., double attitude, existential resilience, tragic optimism) 7.Use existential resilience in the past to cope with the current situation and develop hope			
Individual tailoring of interventions	1.Individual assessment 2.Empowerment and autonomy in decision-making and following their tempo		1.Individualized assessment 2.Individual tailored plan of multiple interventions 3.Regular progress reviews 4.Adjustment of intervention plans as needed 5.Long-term support	1.Self-assessment questionnaires 2.Options that individuals can select from according to their needs and preferences 3.Questionnaires with automated scoring and suggestions to assess progress 4.Self-guided selection of interventions 5.App can be used long-term
Education and vocational training and placement**	Explore and increase practical resources/opportunities to realize one's envisioned meanings	Personal and collective triggers to radicalization, e.g., socioeconomic instability and inequality	Interventions to increase socioeconomic stability, e.g.vocational/educational training and support, job	

			placement assistance**	
Personal connection with a counsellor*	Humanistic-relational skills for the counsellor		1.Individual counsellor* 2.Multi-agency coordination*	

This scoping review focuses on P/CVE interventions for individuals and excludes governmental/nationwide and international P/CVE interventions. [1]Based on systematic reviews and meta-analyses: Hoffman et al., 2026; Hoffman & Lac, 2026; Park, 2022, 2010; Russo-Netzer et al., 2016; Russo-Netzer & Vos, 2016; Schnell, 2020; Van Deurzen et al., 2019; Vos, 2026a-b, 2025a, 2024, 2023, 2019, 2016a-b, 2015; Vos, Craig & Cooper, 2014; Vos & Vitali, 2019; [2]Based on systematic reviews and meta-analyses: Ali et al., 2017; Altungy et al., 2025; Da Silva et al., 2024, 2023; Dean, 2024; Echelmeyer et al., 2023; Feddes et al., 2023; Firdiani et al., 2025; Kosloff et al., 2019; Kruglanski et al., 2019; Kruglanski & Moskalenko, 2025; Pyszczynski, et al, 2009, 2008; Lösel, et al., 2020; Vos, Namdar & Park, 2026a-b; [3]Based on systematic reviews and meta-analyses: Amit & Kafy, 2022; Carthy et al, 2020; DaSilva et al.2022; Jayakumar et al., 2019; Jugl et al., 2020; Kelly, 2019; Khalil et al., 2025, 2016; Koehler & Horgan, 2017; Pistone et al., 2019; Ruffion, 2025; Stephens et al, 2021; Schewe & Koehler, 2021; Wood & Hales, 2025; *Not suitable in a context without a counsellor; **Not suitable in an active conflict/war context; ***Potentially not relevant for individuals who are not involved in extremist groups.

Supplemental Table 2. Overview of the Meaning-Making App

Toolkits	Tool	Description
Explanations	How to use this app (theory)	1.What is this app's purpose? 2.Is this app for you? 3.What can you find in this app? 4.What is a good way to use this app?
	How do people respond to stressful situations and crises (theory)	1.What is psychological stress? 2.What is psychological trauma? 3.What are normal responses to stressful and traumatic situations? 4.What can help you in stressful and traumatic situations? 5.When should you worry about your responses to stressful and traumatic situations (how can you use the emotional traffic light system)? 6.How can you find further help for your stress and trauma responses?
	What is meaning in life (theory)*	1.What is meaning in life?* 2.How can your sense of meaning in life help you with life's toughest moments?* 3.Who can benefit from meaning in life?* 4.How can reflecting on meaning in life help you prevent or stop conflicts with other people?* 5.How can you grow despite going through tough life moments? 6.How can you use your brain optimally to cope with life's toughest moments? 7.What are common (but untrue) myths about meaning in life?* 8.What does science tell about meaning in life?* 9.How can your upbringing influence your meaning in life?* 10.How can politicians influence your meaning in life?* 11.How can companies influence your meaning in life?* 12.How can friends and family influence your meaning in life?* 13.How can 'your enemies' influence your meaning in life?*
Psychological First Aid	Step 1. Look what is going-on	1.How safe are you? 2.What do you need (priorities)? 3.How stressed are you?
	Step 2. Listen to others and find people to listen	1.How can you get more information about your situation? 2.How can you get help from others? 3.How can you help others?
	Step 3. Link with others	1.How can you get emergency medical care?

		2.How can you get basic needs (shelter, blankets, water, food)? 3.How can you connect with others and loved ones?
	Step 4. Lower your stress	How can you lower your stress? Exercises: rhythmic breathing, grounding, orienting, 3-2-1 senses, shaking, safe space visualisation, muscle tension and relaxion, body-scan, mindfulness, physical self-care, sound muting / music, distraction, creating your own physical space, meaningful objects.
Brief meaning-making exercises	Assess your situation	1.What has happened to you? (How is Power operating in your life?) 2.How does it affect you? (What kind of Threats does this pose?) 3.What sense do you make of it? (What is the Meaning of these experiences to you?) 4.What do you have to do to survive? (What kinds of threat response are you using?) 5.What are your strengths? (What access to Power resources do you have?) 6.What is your story? (How does all this fit together?)
	Meaningful Moments: Past, Present, and Future*	Identify small and larger meaningful moments in the past, present and future*
	Meaning diary*	Record small meaningful moments at the end of each day*
	Meaning in the Body*	Explore and deepen the physical experiences of meaning in life, and use this to cope with stressful moments*
	Meaningful everyday objects exercise*	Identify underlying meanings in everyday objects*
	Meaningful photos exercise*	Find meaning by looking at photos in your phone*
	Meaningful people exercise*	Identify the meanings of other people *
	The ‘Seeing all the Meanings Beyond their Masks’ Exercise	Identify the multiple meanings that each individual has, even possible enemies
	The “focus on something larger than yourself” exercise*	Explore examples of larger perspectives, principles, and values, e.g. peace, love, humanity, religion*
	Tragic optimism*	Finding meaning and hope in life’s toughest moments*
	Personal Strengths Exercise	Identify personal strengths
	Crystal Ball Exercise	Focus on a positive future

	Problem-free talk	Focus on exceptions and good aspects in your current situation
	Gratitude exercise	Explore examples of gratitude
	Serenity Prayer Exercise	Learn to differentiate what is under your control and what is not
	Reframing Exercise	Identify unhelpful beliefs about yourself, your situation, your future, and the world, and formulate more helpful beliefs.
	Resilience self-assessment	Explore strengths and areas of improvement in how you cope with life's toughest moments
	Time Machine Exercise	Explore the possible and realistic outcomes of your current situation
	Frustration tolerance	In life, we rarely achieve everything we want; this exercise helps cope with frustration over unfulfilled life meanings.
	Compliments Exercise	Learn to receive, ask, and give compliments, starting with complimenting yourself
	Self-Compassion Activity	Develop a sense of kindness and compassion towards yourself
	Acts of Kindness	Find meaning through being kind to others
	Pascal's Wager*	An exercise for sceptical people who do not believe that a meaningful life is possible*
	Hope exercises	Self-reflective questions to develop a sense of hope in seemingly hopeless situations
Practical goal-setting exercises	Goal Setting Guide: Exercises in setting realistic goals in life and achieve them*	1.Identify type of meaning 2.Identify goal 3.Identify steps 4.Identify and improve skills 5.Remind of steps 6.Trial-and-error 7.Evaluation and adjusting goals
	Guide to break the cycle of violence: prevent victims from becoming aggressors	Six steps: 1.Decide to stop the cycle; 2.Recognize automatic stress responses; 3.STOP! (Sit Think Observe Plan); 4.Use self-care, self-compassion and meaning; 5.Find helpful alternatives; 6.Connect and help others.
	Guide to overcoming being passive and social withdrawal	1.Overview 2.Identify long-term meaning 3.Identify short-term goals 4.Create a plan to gradually achieve goals
	Guide to setting boundaries in relationships	1.What are boundaries 2.How to set boundaries 3.How to communicate boundaries 4.How to give consent

	Guide to critical thinking and develop more rational and helpful alternatives	Question your thought patterns: 1.Evidence 2.Logics 3.Pragmatic 4.Philosophy
	Guide to identifying and breaking vicious cycles in your meaning in life*	1.Attention bias 2.Avoidance 3.Self-fulfilling ideas 4.Physical vicious cycles 5.Selective people around you 6.Social interactional style 7.Online echo chambers 8.Loosening the band with the past
	Guide to finding new friends and communities	
Structured meaning-making exercises	Eight lessons for living meaningfully in life's toughest moments*	1.How to use your critical intuition to find out what is meaningful to you 2.Materialistic types of meaning 3.Hedonistic types of meaning 4.Self-oriented types of meaning 5.Social types of meaning 6.Large types of meaning 7.Abstract philosophical types of meaning 8.Evaluation and next steps
	Meaning in Life Questionnaire: find out how much meaning you have in your life and how much you are searching for meaning*	Two subscales 1.Presence of meaning 2.Search for meaning
	Meaning Sextet Questionnaire: learn what gives you a sense of meaning in life, what types of meaning are the best for your well-being, and how you can achieve these types of meaning*	Six types of meaning: 1.Materialistic 2.Hedonistic 3.Self-oriented 4.Social 5.Large 6.Existential-philosophical
	Meaning Approach Scale: learn what your usual style of	Three approaches: 1.Traditional-conformist 2.Goal-oriented

	finding meaning in life is*	3.Critical-intuitive
	Helpful and unhelpful Beliefs about Meaning in Life Questionnaire: identify beliefs that may be holding you back from living a meaningful life*	
Inspirational narratives from conflict survivors	Meaningful quotes*	Inspiring quotes from famous people about meaning in life
	Brief stories of people who found meaning in life despite difficult life situations*	1.Viktor Frankl 2.Nelson Mandela 3.Malala Yousafzai 4.Desmond Tutu 5.Martin Luther King 6.Nando Parrado 7.Wilma Rudolph 8.Stephen Hawking 9.George Washington Carver 10.Mahatma Ghandi 11.Amelia Earhart 12.Temple Grandin

*Not included in the app for the control-group.

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The JD Journal for Deradicalization is the world's only peer reviewed periodical for the theory and practice of deradicalization with a wide international audience. Named an "essential journal of our times" (Cheryl LaGuardia, Harvard University) the JD's editorial board of expert advisors includes some of the most renowned scholars in the field of deradicalization studies, such as Prof. Dr. John G. Horgan (Georgia State University); Prof. Dr. Tore Bjørgo (Norwegian Police University College); Prof. Dr. Mark Dechesne (Leiden University); Prof. Dr. Cynthia Miller-Idriss (American University Washington D.C.); Prof. Dr. Julie Chernov Hwang (Goucher College); Prof. Dr. Marco Lombardi, (Università Cattolica del Sacro Cuore Milano); Dr. Paul Jackson (University of Northampton); Professor Michael Freeden, (University of Nottingham); Professor Hamed El-Sa'id (Manchester Metropolitan University); Prof. Sadeq Rahimi (University of Saskatchewan, Harvard Medical School), Dr. Omar Ashour (University of Exeter), Prof. Neil Ferguson (Liverpool Hope University), Prof. Sarah Marsden (Lancaster University), Prof. Maura Conway (Dublin City University), Dr. Kurt Braddock (American University Washington D.C.), Dr. Michael J. Williams (The Science of P/CVE), Dr. Mary Beth Altier (New York University) and Dr. Aaron Y. Zelin (Washington Institute for Near East Policy), Prof. Dr. Adrian Cherney (University of Queensland), Dr. Wesley S. McCann (RTI International), and Dr. Daren Fisher (Hampton University).

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ISSN: 2363-9849

Editor in Chief: Daniel Koehler