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Addressing Social Polarization Through Critical Thinking: Theoretical Application in the "Living Well With Difference" Course in Secondary Schools in England

Sara Savage[1], Emily Oliver[2], Ellen Gordon[2], Lucy Tutton[2]

[1] *Department of Psychology, University of Cambridge, Cambridge, United Kingdom.* **[2]** *British Red Cross, London, United Kingdom.*

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Corresponding Author: Sara Savage, 19 Cardinals Way, Ely, Cambridgeshire, CB7 4GF, United Kingdom. Mob: 07948 329732. E-mail: Sarabsavage21@icloud.com

Abstract

Responding to international calls for critical thinking programs to address social polarisations and extremism through education, this article examines the cognitive and socio-psychological foundations of a critical thinking programme for secondary schools in England called "Living Well With Difference" (LWWD). The aim of LWWD is to develop critical thinking about issues of social polarisation, prejudice and any kind of extreme thinking. These issues often involve the interaction of emotion and thinking, which is understood using a dual systems framework, illustrated with examples of course methodology and content. The learning process aims to promote more cognitively flexible, complex and integrated thinking, measured by integrative complexity, and is supported by meta-awareness to enable emotion management. The aim is for participants to engage with difficult social issues through structured group activities, while becoming aware of social, emotional, textual, visual and rhetorical influences to increase Media Information Literacy, as a foundation for engaging with differing perspectives in order to reduce barriers between groups in society.

Keywords

critical thinking, school, PVE-E, emotions, integrative complexity

Non-Technical Summary

Background

Responding to international calls for critical thinking programs to address social polarisations and extremism through education, this article examines the theory behind a critical thinking programme for secondary schools in England called "Living Well With Difference" (LWWD). The programme aims to provide pupils with an opportunity to explore their own values and worldviews and those of others in a safe space. In doing so, it exercises both emotion-infused, sensory, embodied thinking (which is open and curious) and detached, logical thinking (which is focused and linear). These two ways of processing meaning are evidenced by brain studies and a large body of psychological studies.

Why was this study done?

The LWWD programme itself and the testing of it is written up elsewhere as an empirical study. This paper explains the programme and how it is rooted in psychological theory relevant to critical thinking applied to the goal of engaging with social polarisation and extreme thinking.

Each aspect of the programme works with these dual ways of thinking to promote connectivity between them, which in turn supports the ability to think contextually and critically, addressing gaps in current approaches to critical thinking. During the programme, pupils are facilitated to engage with difficult social issues through structured group activities. They are given opportunities to explore their thinking, values and emotions, to be openly demonstrative, to playfully engage with the natural preference for one's own (randomly assigned) "in-group" while challenging the opposing group. They have permission, through the activities, to lean into their emotions and past experiences to help understand how their thinking is shaped by social influences, media and personal needs. In doing so, they begin to understand how they and others think, and what is most important to them.

As each session progresses, participants are challenged through role play to think about the differing priorities of conflicting groups. The activities resource them to take a larger view that balances emotions, values and reasoning into their decision making. Each session concludes with the opposing groups exploring practical solutions based on shared values in order to achieve a collaboration that honours the important values of all parties.

What did the researchers find?

The process facilitates a fuller understanding of contemporary dilemmas regarding tensions such as those between social groups wanting safety and security versus innovation and change; or between those prioritising the individual versus the community. The session activities act as a vehicle for unpeeling layers of social difference involving culture, ethics, values and unquestioned assumptions.

In summary, the programme design is rooted in psychological theory of emotion and thinking. The learning that occurs promotes more cognitively flexible, complex and integrated thinking. Its impact is measured by change in the level of participants' cognitive complexity measured by integrative complexity (IC, Suedfeld, 2010, https://doi.org/10.1111/j.1467-6494.2010.00666.x). IC is a tried and tested cross-cultural metric for identifying the ability to think complexly in the face of intergroup conflict, a change which predicts more harmonious resolution to conflict. To measure programme impact, participants are first invited to select the group or community to which they identify, and the group/s or community that are most different to their own. Next, participants write free-text paragraphs in response to open-ended prompts about these groups. They do this both at the beginning and the end of the programme. These paragraphs are analysed by two independent coders to assess change to the level of complexity in terms of the paragraphs' structure (not their content). Comparison of the pre and post IC scores indicate whether there is a change in participants' ability to see some validity in another's point of view without abandoning their own important commitments. The results of testing this programme showed the expected positive increase in IC, indicating an increase in young people's ability to "live well with difference."

What does the new approach to critical thinking mean?

It is our hope that "Living Well With Difference" offers a creative and effective response to international calls for deep critical thinking in education. The psychological theories which are operationalised provide an explanation of how and why emotions and thinking interact in the way they do. We suggest that LWWD provides a fresh approach to addressing social polarisations, prejudice and extremisms. As LWWD participants come to see their thinking and how it is influenced, they are able to embrace a greater range of viewpoints and worldviews, thus reducing barriers between different groups in British society.

The Red Cross and Red Crescent Movement is mandated to promote its fundamental principles of Humanity, Impartiality, Neutrality, Independence, Voluntary Service, Unity and Universality. In considering a climate of increasing social complexity, prejudice and vulnerability, the British Red Cross sought to develop a programme for secondary schools which reduced barriers between different groups, utilising these principles as its foundation.

The programme was developed in collaboration with psychologists at the University of Cambridge. Using a framework of interacting cognitive subsystems (ICS), we took an educational approach which applied critical thinking to the goals of addressing any kind of social polarisation, prejudice or extreme thinking, enhancing Media Information Literacy (MIL), and providing a safe space for pupils to engage with their own and others' emotional commitments, values and worldviews.

The results of the programme itself are published elsewhere (Savage, Tutton, Gordon, Oliver, & Ward, 2020). However, we believe that the psychological theories that underpin it can be usefully presented both to validate the programme in its current state and to support future educationalists who might build on our approach.

This article therefore aims to describe the context in which the programme was developed, and then to set out the building blocks of psychological theories which we applied to develop the programme. We explain the use of ICS (Barnard & Teasdale, 1991) which was operationalised within our programme, and the Paragraph Completion Test (PCT) tool used to assess changes in complexity of thinking measured by integrative complexity (IC, Suedfeld, 2010), which has been used in similar programs in different cultural contexts, discussed later on. We describe examples from the programme to explain how key concepts were applied practically, and in our discussion, we consider the validity and reliability of our approach in the light of recent reviews of Preventing Violent Extremism—Education (PVE-E).

Context

British youth face economic, environmental and career uncertainties as well an array of extreme ideologies that purport to offer clear solutions to the dilemmas and inequalities of the modern world. Far right extremism continues to increase (Home Office, 2018) in the face of perceived cultural and demographic shifts within the United Kingdom and external threats from terrorism. PVE-E initiatives were originally rooted in security concerns regarding Islamist attacks (Davis & Deole, 2017) with a focus on specific ideologies, which hampered an understanding of today's increasingly interconnected, fluid and easily accessible extremist messaging online (Jolls & Wilson, 2016).

International organisations have persistently called for the integration of critical thinking into education worldwide to equip young people to engage with our complex and polarised social, political and economic world (Davies, 2016; Scott, 2015; United Nations, 2019). English secondary school curriculums are not devoid of taught critical thinking skills to improve reasoning and arguing (Education Endowment Foundation, 2018). However, we argue that in order to enable people to see some validity in differing worldviews, and to reduce extreme thinking and prejudice arising from a sense of threat to cultural identities, a concept of "deep" critical thinking that engages with emotions, values and thinking, rather than focusing on logical reasoning and analysis alone, is needed (Andrews Fearon & Boyd-MacMillan, 2016; Moon, 2008; Savage, 2013a). While all thinking involves aspects of logic and emotion to varying degrees, our programme, entitled *Living Well with Difference* (LWWD), approaches deep critical thinking as an intricate interdependence whereby the dynamic tension generated between logic and emotion can lead to higher levels of understanding and analysis.

To capture this in relation to Red Cross and Red Crescent Fundamental Principles, first, we drew insight from Barnard and Teasdale's ICS framework (Barnard, Duke, Byrne, & Davidson, 2007; Barnard & Teasdale, 1991; Teasdale, 1993; Teasdale & Barnard, 1993) to explore the interaction of cognition and emotion. In LWWD, a narrative on intergroup tensions or prejudice is used to elicit emotions at the start of each session.

Second, a challenge or mild threat which requires reasoned consideration in the face of differing views and values comes next. This allows for natural reactions of judgement and blame to arise from facing into social tensions between groups (Tajfel, 1970). These are attended to with the help of meta-awareness, a form of metacognition that resources students to observe their perceptions, emotions and thinking at a "safe" distance (Bernstein et al., 2015). Meta-awareness involves attending to sense perception concerning what is happening in the room, rather than focusing on preconceived mental content. This shift in focus helps people to "step back" and moderate negative emotions. Creating a safe way for facing into potentially negative evaluations of own or other groups supports deep critical thinking.

Third, we explore how the ICS framework informs fostering a state of interaction between emotion and cognition in order to increase awareness and tolerance of differing views. The aim here is to resource the two steps of integratively complex thinking, comprising the two steps of differentiation and integration (Suedfeld, 2010) in the third stage of each session's design. Differentiation concerns the ability to see beyond "black and white" dichotomies, in order to perceive exceptions to the rule, multiple causes, viewpoints, values, conditions for an outcome, and alternative solutions to a problem. Integration concerns perceiving commonalities and linkages between this diverse array and overarching understandings that make sense of these differences.

Fourth, this sequence helps prepare pupils for the epistemic change that is the goal of this programme in the fourth stage, and is embodied in King and Kitchener's theory of reflective judgement (2002).

The four concepts (eliciting emotions using the framework of ICS, the use of meta-awareness to reduce threat, integratively complex thinking, and epistemic change) are each more fully explained in the Operationalising LWWD in Secondary Schools section, later on. We begin with a brief overview concerning how psychologists have understood the interaction between emotions and thinking, followed by an extended explanation of the ICS framework applied to extreme thinking and the skills needed to emerge from it.

Emotions and Thinking: Two Ways of Processing Meaning

It is common for people to report a difference between emotion-infused thinking (popularly referred to as "heart thinking") and detached, logical thinking (popularly referred to as "head thinking," Watts & Dumbreck, 2013). A number of dual systems models in psychology distinguish between two main ways of cognitive processing. For example, in the field of self-therapy, Epstein (1991) distinguishes between rational and experiential thinking styles. In the field of cognitive therapy, Ellis speaks of "cold" cognition memories ("I recall that I was upset") versus "hot" cognition memories which involve re-experience of past upset (Ellis, 1962). Other dual-processing models distinguish slow deliberative thinking from fast automatic thinking (such as Kahneman, 2011). Neuroscience studies reveal a similar dual-systems understanding. McGilchrist (2009) considers our ability for focused, detailed, linear attention (left hemisphere of the brain) co-existing with broad, open, multi-sensory attention to the world around us (right hemisphere). In short, considerable research presents human thinking as having two core systems for processing meaning: to make focussed distinctions and to make holistic connections.

A dual way of processing meaning encompassing both logical thinking and emotions is described in detail by Barnard and Teasdale's ICS framework (Barnard, 2003; Barnard & Teasdale, 1991; Teasdale & Barnard, 1993; Teasdale, Segal, & Williams, 1995). ICS has a strong track record of empirical evidence across cognitive and clinical fields, covering diverse issues such as memory, neural coding, depression, anxiety and pain management (Clarke & Nicholls, 2018), evidencing that humans process meaning using two different main subsystems, called propositional and implicational (Barnard et al., 2007; Teasdale et al., 1995). These two subsystems operate in both separate and sometimes integrated ways, a feature which helps to shed light on extreme thinking and how to emerge from it.

This potential interaction of cognition and emotion is important to the task of developing deep critical thinking, which by necessity, involves both logical thinking and emotional commitments (Johnson & Morris, 2010). Theories of deep critical thinking have previously articulated specific components, such as emotional engagement, curiosity, challenge, disequilibrium (Brockbank & McGill, 1998; De Bono, 1985; Meyers, 1986), divergent thinking, contextual reasoning, meta-cognition and epistemological awareness (Brookfield, 1987; Moon, 2008). But these same theories lack an overarching explanation of how these components might cohere with one another. To this open field, we bring the ICS framework to help explain the inner workings of the LWWD deep critical thinking course.

ICS states that the propositional subsystem processes meaning through language, which is expressed mainly in sentences (propositions), such as "Roger is tall." This subsystem works by identifying difference (such as "Roger is taller than others"). This subsystem receives language-related inputs only: hearing, semantics, grammatical structure, and a precursor to language called "spatial-praxic" which involves directed movement in the space, such as a gesture of pointing to indicate location, to express, for example, "look over there!" (Barnard et al., 2007). Inspired by the popular layman's terms, and for ease of reading, we will henceforth refer to the propositional as "Head Thinking."

Extending the above example to include emotion, if "tall Roger" experiences being ignored by classmates for "being too tall," in this case meaning relies on Roger's sensory, bodily and emotional cues providing, for example, feelings of exclusion or embarrassment that do not easily map on to language. These multiple modes of input are processed through the implicational subsystem, which is neuronally connected with senses, bodily states and emotions (Barnard & Teasdale, 1991). To express this subtle interplay, rather than making logical statements, "Roger" might prefer to write a poem about his state of isolation, or draw a cartoon about his situation. For ease of reading, the implicational will be assigned the popular term "Heart Thinking." Heart Thinking finds meaning holistically, with a sense of self embedded

within a community and social hierarchy, rather than as a separate individual. Emotions also are not-free standing, but rather are based in a network of relationships and a person's life experience. Heart thinking, with its older evolutionary heritage and faster synchronous processing of multiple modes of input, tends to leap into action when emotions run high (Barnard et al., 2007).

Furthermore, Heart Thinking has no sense of time; past is not distinguished from present. From infancy and throughout life, our experiences of threat to survival and security, our important relationships and cultural values remain within the Heart Thinking subsystem. Emotions arising from past experiences can find their way into present day events, echoing past threats (Clarke & Nicholls, 2018).

When Head and Heart Thinking Interact or Separate

Whereas Head Thinking and Heart Thinking naturally interact, they do so in an oppositional tension. At any point in time, focal attention is limited, and one subsystem tends to be more dominant than the other (Clarke & Nicholls, 2018). For example, a complicated sentence requires us to pay close attention to the words and grammatical structure; thus Head Thinking is dominant here. ICS theory argues that there is no "executive" in charge of which cognitive subsystem is dominant. Rather, it is the nature of the incoming stimuli that elicits one subsystem or the other. A blame-laden and threat-inducing message, such as hate speech or radicalising narratives, where the speaker is cajoling the listener to become emotionally charged rather than rational and logical, engages Heart Thinking. Such emotionally-charged messages seek to echo past threats and stifle alternative interpretations of current problems. When Heart Thinking is dominant in this way, emotions can overwhelm logical thinking, and Head thinking may be reduced to simpler black and white, "us versus them" forms that show lower cognitive complexity, measured by IC (Suedfeld, Cross, & Logan, 2013).

In light of this, should critical thinking programmes delete emotion entirely, or do they add important layers of complexity which deepen the thinking process? Teasdale et al. (1995) propose that by promoting the right conditions, Heart Thinking can make multiple interpretations and perception of commonalities available to Head thinking through interacting with it. By reframing and modulating Head Thinking's more linear, focused, logical processing, Heart Thinking's ability to perceive commonalities and multiple meanings helps to promote cognitive complexity, (also termed cognitive flexibility), which is predictive of improved educational outcomes (Kercood, Lineweaver, Frank, & Fromm, 2017) as well as an ability to "live well with difference" (Beck, 2011). Indeed, these authors collectively agree that without the input of what we term Heart Thinking, Head Thinking alone would be limited by its difference-focused language and logic.

Given the oppositional tension mentioned above, there are two conditions in which interaction between the Head and Heart Thinking subsystems is suspended: experiences of nervous system over-arousal and nervous system under-arousal (Clarke & Nicholls, 2018). Heart Thinking has a superfast "hotline" to the nervous system which generates instant physiological arousal in response to real or perceived survival or social threat. This arousal response, often referred to as "fight, flight, freeze" is not atypical in normal life, and usually subsides when the threat subsides. But in the case of chronic stress or unprocessed past trauma, the nervous system remains over-aroused and on high alert, regardless of whether the threat is physical and present (such as living in a dangerous neighbourhood) or social and internalised (such as experiencing online bullying). As the brain's fundamental task is to ensure survival, the faster-functioning Heart Thinking can easily override slower, deliberative Head Thinking. This gets more complicated when Heart Thinking adds the memory of threatening past problems or injustices to current difficulties, such as being bullied at school. This strategy of evoking emotions of both past and present problems is exploited by extreme ideologies (Savage, 2013a), fuelling the appearance of providing a compelling explanation and a "cure" for real grievances and threat to identity. In this way, a separated Heart Thinking can drown out a more reasoned approach in regard to the problem at hand.

It is Head Thinking that can make precise distinctions, separate the past from the present and provide distance and context through reasoned arguments (such as "this same old hate speech breaks school rules; I don't have to take it personally anymore; I can report it"). In short, both subsystems working in concert are needed for optimal, cognitively flexible functioning, discussed below.

The second way the two subsystems can cease to interact is nervous system under-arousal. This is signalled by a lack of engagement and proneness to boredom. More pronounced under-arousal is signalled by stimulation-seeking, risky behaviours or problematic use of the internet as individuals immerse in conspiracy theories or extreme ideologies to compensate for the under-arousal of isolation or boredom (Clarke & Nicholls, 2018). Rote teaching methods focusing on questions that have a single right answer, or problems for which important values are not locked in a dynamic tension, do not require more complex thinking (Tetlock, 1986) and may not elicit the optimal interaction of both subsystems. As a rule, the brain will save itself from unnecessary expenditure if not sufficiently engaged by stimuli that demands attention from both subsystems. A normal day at school can seem for some students like a mild form of under-arousal. Ironically, this can leave the faster default Heart Thinking dominant, and the opportunity to develop deep critical thinking within the school curriculum can be missed. Using Kahneman's (2011) terminology, "fast thinking" takes shortcuts and relies upon readily available or stereotypic information. Fast thinking means default positions of judgement and blame against groups who are different or opposed to our own can more easily enter the frame (Kahneman, 2011).

In order to transcend social polarisation, prejudice or any extreme thinking that might compensate for threat and grievance, or isolation and boredom, the natural capacity for Head Thinking and Heart Thinking to interact needs to be engaged. The two subsystems can be engaged according to ICS by alternating from one to the other, according to the type of stimuli involved. Ideally, when the context affords, meanings arising from both subsystems can be integrated, bringing together the multiple modes of both, which, we will argue below, occurs through LWWD content and activities structured by ICS at higher levels of complexity. But first let us consider recent evidence that Head Thinking alone is insufficient to address prejudice or extreme, polarised thinking.

The Limitations of Head Thinking

In view of the spread of radicalising ideology online, PVE-E and CVE (countering violent extremism) efforts have tended to take the form of logical arguments and factual information to counter these narratives' toxic emotional spin. Initiatives were launched to dismantle extremist narratives' intellectual frameworks by undermining the legitimacy of radicalisers as messengers, highlighting the destruction that extremist violence wreaks upon their audiences' own communities, arguing against the morality of using violence, and challenging the efficacy of violence in achieving desired goals (Briggs & Feve, 2013; Radicalisation Awareness Network [RAN], 2015).

However, evidence from these efforts show limited behavioural impact (Hamilton, 2018). This may be for several reasons. The first is reactance, a cognitive defence that occurs when someone feels that another person is trying to persuade them to change their minds. Reactance means that people "double-down" on their thinking, stop listening, and become even more committed and extreme in order to bolster their thinking against change (Berger, 2020). An example of reactance in Hamilton's (2018) review is the finding that people often refused to engage with government information which aimed to correct extremism-related disinformation. And, if people felt they were unjustly targeted by these communications, they strengthened their resistance against any change to their thinking (Jaffer, 2018). Another reason has to do with the impact of emotions in comparison to factual information. Deeper personal motivations such as the need to belong, to reverse disappointed expectations (e.g., concerning marriage or a career), to restore one's personal honour through "acts of valour," or to right a local wrong by fighting afar, were not addressed by logic (Briggs & Feve, 2013). In short, rational argument and correct information alone lack the compelling emotional impact of extreme narratives which purport to confront injustice and grievance (Davies, 2016).

The above sections highlight: 1) the risks of unexamined prejudice or extreme thinking arising from Heart Thinking dominance at both over-arousal and under-arousal ends of the spectrum, and 2) the paucity of Head Thinking dominance for addressing emotion-laden issues of injustice and belonging. We argue that it is the interacting nature of the two meaning subsystems that best promotes the ability to think critically about contested social issues.

Operationalising LWWD in Secondary Schools

To develop "deep" critical reasoning in secondary schools, LWWD uses content and activities that are likely to invite Head Thinking and Heart Thinking to interact at higher levels of complexity towards the end of each session. LWWD is designed for students aged 14–19 in secondary schools in England. It is designed to be integrated into existing curriculum time through eight hours of teacher-led group activity (four two-hour sessions). An additional five hours of student-led activity and homework helps to reinforce the group-based learning pertaining to issues of social cohesion and intergroup conflict. The programme includes training teachers to facilitate the process.

Each of the four cumulative sessions follows a four-stage A, B, C, D pattern (with A and B stages usually of equal duration to C and D stages) which developed through piloting the method over years in different contexts (Boyd-MacMillan, Andrews Fearon, Ptolomey, & Mathieson, 2016; Liht & Savage, 2013; Savage & Andrews Fearon, 2021). The A, B, C, D pattern is explained below in terms of how attention is shifted between Heart Thinking and Head Thinking through the type of stimuli per task, and later in the session to promote interaction between the two subsystems at higher levels of complexity. The four key theoretical concepts (engaging emotion, meta-awareness to manage the risk of emotions overwhelming thinking, cognitively complex thinking involving differentiation and integration, and epistemic awareness) which were introduced earlier, are now explained through course examples, below.

Engaging Emotion in Stage A

Stage A of each LWWD session engages emotions in a playful way as it introduces a theme relevant to current social issues, often using a film clip depicting a narrative on intergroup tensions or prejudice. The purpose of Stage A is to engage students' curiosity and emotional engagement in a narrative that parallels something of their own social/school experience, but does not replay it literally. Stage A also aims to avoid eliciting participants' already established mental content by the facilitator asking questions which are meta-awareness prompts, such as "What do you observe happening in the room?." This is to promote a focus on embodied cognition and present tense experience as a group rather than discussing attitudes or opinions. For example, a film clip from the movie *Divergent* sets the scene in a post-apocalypse Chicago where the post-war peace is forcibly maintained by separating the population into five Factions. This scene is role-played in class in a light-hearted manner in randomly assigned subgroups, employing senses, physical movement, music, drama, colour and dialogue in a playful way. Facilitators invite students (in pairs or trios to avoid over-exposure of any participant) to share what they have observed and to mention parallels in their own experience concerning inter-group tensions.

Meta-Awareness to Manage Emotions in Stage B

Stage B in each session intensifies participants' experience of a social issue by introducing a challenge or mild threat using words, sparking the Head Thinking's specialism in processing difference ("our group is right; they are wrong"). In particular it provokes judgement and blame concerning different groups. Taking the activity above from Stage A, in Stage B the "post-apocalypse high school" introduces a new rule that cross-faction friendships shall henceforth be forbidden on school premises. Schools that say Yes to the ruling will receive more funding; schools that say No lose funding. The participants are randomly divided into Yes and No sides to debate this issue using their team's list of logical arguments to support their side. Head thinking is the focus here, with encouragement to brainstorm as many arguments as possible, regardless of whether individuals personally support their side's position or not. The group activities go on to polarize thinking through staging a protest demonstration, using verbal chants to express their side's demands, moving together in synchrony, as one side opposes another side, as if in a public demonstration. The activity progresses to assigning leadership and creating a manifesto speech for each side, which is delivered by each leader with the followers showing support.

After this, the facilitator prompts participants to reflect on what they have observed with their senses during these activities, and what is happening in the body, emotions and thinking. This timely application of meta-awareness creates a "space" to help participants to observe their emotions and thought content as a malleable dynamic rather than a

fixed state of knowing or preconceived ideas. As previously mentioned, meta-awareness is understood as the skill of "reflecting upon one's subjective experience of thinking, sensing, and feeling" (Segal, Williams, & Teasdale, 2013). This helps to create a "space" between the observing self and current subjective experience during the learning activity, so that strong emotions can be distanced without being suppressed (Segal et al., 2013). This further helps participants to relativise and dis-identify from negative judgements of self or other (Bernstein et al., 2015), which in turn allows for a broader and more flexible view. Meta-awareness does not entail denial of thoughts and feelings. Rather than being fused to one's feelings or those of one's social group, instead, it brings attention to thoughts and feelings as if from a distance (Bernstein et al., 2015). By reducing negative judgement of self and other through meta-awareness, a moderate level of arousal is sustained, even when engaging with contentious issues. In this way, we argue that it is possible to reliably achieve a "Goldilocks zone" of middle range arousal in sessions—neither too hot nor too cold—through careful course design that elicits emotion paired with meta-awareness prompts. More generally, meta-cognitive skills (including meta-awareness) have been shown to be the strongest predictor of positive impact of programs designed to foster critical thinking (amongst other learning goals) according to meta-analytic reviews (Education Endowment Foundation, 2018).

Stage B makes clear that experience of social threat, with its oft associated constricted, difference-focused cognition which can lead to black and white thinking and potential derogation of an "all bad" outgroup, is a common human experience. The tendency to prefer one's own group over other groups, even *without* any substantive cause, has been demonstrated in a number of experiments (Tajfel, 1970). Role playing these tendencies in sessions with randomization of groups made explicit, observing them as they happen through the activities, and explaining these common dynamics afterwards, helps to remove blame from any one group or belief system. At the end of Stage B, participants often express (in their own terms) a growing awareness of ingroup preference, outgroup derogation, avoidance of disconfirming information, polarised views, reduced complexity, increased in-group bonding, loyalty to group norms and leader, culminating in intensified commitment to their group's manifesto, even though group membership had been randomly assigned. This "aha" moment often helps participants to "dis-identify" with negative thoughts and emotions concerning the "other." Awareness that one's own and others' thinking has been changing through the sessions leads to perceiving some grounds for mutual trust between opposing groups. Building trust between randomly assigned groups in the course supports cooperative group activities, such as negotiation and problem solving, which occur later on in the course (Goldenberg et al., 2018).

Increasing Cognitive Complexity in Stage C

In Stage C of each session, participants are supported to increase differentiation, the first step of more complex thinking (Suedfeld, 2010). This includes broadening perception to include multiple viewpoints, values, dimensions, conditions or causes, which is measurable by coding verbalisations according to IC (Baker-Brown et al., 1992) as used in the empirical assessment of LWWD (Savage et al., 2020), explained below. A more complex structure of thinking enables participants to re-appraise the problem with more options, in more flexible ways. As mentioned above, this is associated with well-being and better mental health outcomes, as well as more cooperative intergroup attitudes (Andrews Fearon & Boyd-MacMillan, 2016).

In Stage C, this is done in steps. The first is to focus on Heart Thinking inputs. Continuing our example session, participants from both Yes and No sides of the debate infer what is of felt importance to their side's arguments, in other words, their values. They write these down in their own words. Next, participants view the values list of both groups, side by side, in a task that connects Heart Thinking with Head Thinking. Values-in-common across the opposing sides are identified by students, circled and connected with a line across both papers. The next step is to identify values-in-tension where some trade-offs might be managed, underlining these and connecting them with a line. Values that are completely different between the two sides are identified, and each is encased by drawing a square around it, illustrating that over-harmonizing of viewpoints is being avoided. This task uses "spatial-praxic" processing (Barnard et al., 2007), a visual, spatial and movement technique, drawing lines to connect words across two flip chart papers. According to ICS, "spatial-praxic" stimuli is the only non-verbal input that has direct access to word-based Head Thinking subsystem (Barnard et al., 2007). We think this activity works to expand Head Thinking

without provoking cognitive overload (and possible reactance), which would be more likely to occur if additional words and verbal arguments were used. This multi-modal activity (using visuals, movement and words) encourages students to "see with their own eyes" some shared values between the two sides, which can promote a desire to problem solve based on shared values or values-in-tension. Equipped with value complexity in this way, participants become able to think beyond fast, unexamined thinking. This is an example of an expanded Head Thinking interacting with Heart Thinking. The adaptive, higher complexity of the multi-modal stimuli and interaction between the two meaning subsystems seems to generate novel higher-level connections for the learner. Its richly layered processing has the felt qualities of vividness, clarity and impact (Teasdale et al., 1995) and the result is a more complex, contextualised and integrated thinking.

In other LWWD sessions, participants in Stage C similarly explore "where they stand" regarding an array of values and "how it feels" as they slowly walk along a values spectrum anchored by opposing value poles (marked with signs such as "the individual is important" versus "the community is important," or "security and safety are important" versus "innovation and change are important"). This is another way of using "spatial-praxic" input to coordinate visual or verbal information with movement in the space, conveying abstract meanings directly into Head Thinking.

During this activity, participants are encouraged to connect with a visceral sense of the pros and cons of each point along the spectrum, which helps to make transparent that each person's way of knowing is "closely tied up with our ethics and values" (Brown & Rutter, 2006, p. 14). We argue that both cognitive subsystems are now interacting, illustrated in verbal data taken at post-test that show how the students have come to a greater acceptance that different people and cultural groups have different value priorities, and that finding a middle position to avoid extreme positions has become possible (discussed below).

Supporting Epistemic Change in Stage D

In Stage D in each session, it is important to focus on expanded Head Thinking, which has been re-framed by interaction with Heart Thinking in Stage C. New, more complex, flexible thinking skills are now used to explore "reflective judgement" (King & Kitchener, 2002). Generally, it is in the latter stages of developing critical thinking that learners become able to evaluate their sources of knowledge (Moon, 2008), "knowing how we know things." Starting at a point where a person might make assumptions due to the influence of an "authority figure" (King & Kitchener, 2002, p. 39) and as such is considered certain and true, a process of deconstruction and reconstruction in epistemic change can eventually lead to a state of "reflective judgement." In LWWD, the students are ready to reflect on "how they know things" as a result of the awareness that has developed through the previous A, B, C steps. This leads to understanding that polarised or prejudicial ideologies do not straightforwardly deal with "the world-in-itself, but with the world-as-we-define-it to be in relation to our interests, perspective and point of view" (Paul, 1987, p. 131). This sequence of thought development is theorised by King and Kitchener's (2002) multi-stage theory of reflective judgement. This new state can be defined as "the outcome of a process of reasonable enquiry in which solutions to ill-structured problems are constructed" based on assessment of fuller evidence (King & Kitchener, 2002, p. 42). This means that participants move beyond unquestioned ingroup or outgroup binaries shaped by the Head Thinking's focus on differences, or the unexamined "fast" thinking. As well, they have become aware of emotionally charged memories of Heart Thinking and through meta-awareness have taken a "step back" to view the interplay of these influences upon their thinking.

Following through with our earlier example, in Stage D, both teams together select what they think is the most important shared value across both teams. Each team uses its selected value-in-common as a starting point from which to brainstorm practical solutions for compromise or collaboration to resolve the polarised debate about the (*Divergent*) factions in the school. Both teams write their practical solutions on a flip chart, and all vote for the best ideas for practical compromise. Sweets are handed out to the winning team, which turns out to be both teams, as all have participated in the discovery of a shared value and practical starting place for compromise and collaboration. In other sessions, reflective life skills are taught such as Active Listening, creative problem solving, and MIL skills to resource the ability to "see through" extreme messaging. In the case of MIL skills, "memes" (images with persuasive text) are presented on projected PowerPoint, and participants are invited to explore, in pairs, the different ways that black and white, polarised thinking is being promoted by the memes. Through applying skills of deconstruction and reframing,

participants apply more flexible and integrated thinking, the second step of integratively complex thinking (Suedfeld, 2010). This includes the ability to perceive some commonalities in differing perspectives, find multiple alternatives for problem solving, and an overarching framework to make sense of difference (Baker-Brown et al., 1992). Such an approach results in the de-categorisation of ingroup and outgroup values and identities, allowing for the breaking down of prejudicial distinctions about the "other" (Wilder, 1978). The goal of Stage D is for students to be able to transfer re-appraisal skills such as "stepping back to see a bigger picture" or deconstructing memes to other contexts (Ayduk & Kross, 2008).

The ICS framework suggests that novel, higher order conceptualisations can emerge as a result of Head Thinking being moderated and re-framed by Heart Thinking (Barnard et al., 2007). This in turn supports the ability to perceive some commonalities across different groups, which is a key to reducing prejudice (Brown & Turner, 1981; Campbell, 1958; Doise, 1978). These gains are measured using IC coding, explained next.

Research Design and Effectiveness Measurement Using Integrative Complexity

Recommended best practice suggests that assessments of deep critical thinking should require students to exercise judgement in regard to ill-defined problems reflecting real world situations (Bonk & Smith, 1998; Silva, 2008) for which there is more than one right answer (Moss & Koziol, 1991), assessing the quality and structure of thought processes, rather than for correct answers (Norris, 1989). In line with these recommendations, the primary evaluation instrument used in LWWD and IC Thinking method more generally is an open-ended PCT of around 15–20 minutes duration to assess change in participants' structure of argument measured by IC (Suedfeld, 2010). PCTs are widely used to assess cognitive complexity and its integrative components (Gardiner & Schroder, 1972; Suedfeld & Tetlock, 2014), and as such are appropriate for ages 14 and above with normal literacy skills. Previous research has found satisfactory test-retest reliability and convergent validity with cognitive and personality variables (Bottenberg, 1969). In LWWD, the PCT asks the participants first to name the group or community with which they identify (with the help of an open-ended list) and then name the group/s that are different or opposite to their group, with the help of an open-ended list of examples, such as white, British, female, student, "my group of friends," sports fan, English, Muslim, male, South Asian, Catholic, British Pakistani, European, West Caribbean, secular, Welsh, other, any combination, and so forth. Participants are next prompted to write paragraphs in a free-flowing way, as if they are "thinking aloud," in response to two open-ended prompts: 1) "When I think about my group…" and 2) "When I think about the other group…." This results in four coded paragraphs per participant across pre- and post-testing conditions. The written paragraphs are analysed by IC coding, a measure of a person's structure of argument rather than its substantive content (such as attitudes or beliefs).

IC is coded by two trained "blind" coders, to mitigate the potential for test bias against particular cultures or beliefs, and according to a standardised manual (Baker-Brown et al., 1992) with good cross-cultural and predictive validity over four decades (Suedfeld, Leighton, & Conway, 2006). Following standard coding procedures, verbal data is scored on a scale from 1 to 7, with a score of 1 representing, for example, the most simple cognitive structures, ("our group is completely right"), a score of 2 representing emerging complexity ("we are mainly right but there is an exception in this case"), and a score of 3 representing fully differentiated cognitive structures that acknowledge the validity of different perspectives or values ("we think the most important thing in this situation is to ensure equality between the groups, whereas they are concerned with economic prosperity, which is sort of needed too"). Scores of 4–7 represent higher-level integrations between these different viewpoints and more advanced complexity of cognitive structures (e.g., as might be observed in the writings of supreme court justices) and are rarely observed in written PCT field data. IC scores are then assessed for inter-coder reliability. The research design compares pre- to post-test responses, and intervention to control conditions.

Increases in cognitive complexity measured by IC have a long track record of predicting increases or decreases in pro-social behaviour and peaceful conflict resolution (Tetlock, 1986). For example, analysis of archived communications of political and military decision-makers involved in conflicts such as the American Civil War, WW1, WW2, Cuban Missile Crisis and Gulf War 1 show that a significant drop in decision-makers' IC predicts intensified conflict and

violence in subsequent real-world events (summarised in Conway, Suedfeld, & Tetlock, 2018; Suedfeld et al., 2006). Linguistic analysis including IC of a wide range of extremist discourse also has evidenced low complexity thinking, which intensifies in groups that advocate violence (Conway, Gornick, Houck, Towgood, & Conway, 2011). Low IC precludes the ability to understand the validity of different viewpoints, which is integral to deep critical thinking, and without it, collaborative conflict resolution is likely to fail. Conversely, higher IC, as in the negotiation process that helped to resolve the Cuban Missile Crisis, can render individuals or groups more amenable to mutual understanding resulting in more peaceful outcomes to conflict (Suedfeld et al., 2006). Higher IC can be understood as a structural feature of deep critical thinking needed to promote the ability to live well with difference, and as such, is the hypothesised effect of LWWD.

Discussion

In this section we discuss the impact of the LWWD programme, and then explore the contribution it makes to the field of PVE-E and social and political psychology more broadly.

First, we ask, has the programme based on this theoretical application achieved what it set out to do? This question was examined by pre and post-testing LWWD using a control and intervention design to assess whether the expected gains in cognitive complexity associated with peaceful conflict reduction (measured by IC) were achieved. Assessment of effectiveness of LWWD was delivered to 199 secondary school students in England. At the time of writing, results from an empirical assessment of 10 LWWD courses in secondary schools in England, comparing control groups to intervention groups across a range of socio-economically diverse catchment areas has been published, with the expected positive results regarding significant gains in IC scores (reported in Savage et al., 2020). Given the focus of interest is change in IC after the LWWD intervention, the framing of the PCT measurement captures IC as a "state" (a cognitive response to the current state of things) more than "trait" IC.

LWWD results are part of an 11-year long body of applied research. Overall, results from 103 assessed courses designed to increase cognitive complexity each show significant IC gain, including courses run in secondary schools in Scotland, Finland and Pakistan (reviewed in Boyd-MacMillan et al., 2016; Nemr & Savage, 2019; Peracha, Savage, Khan, Ayub, & Zahr, forthcoming). This body of research, leveraging and measuring IC, has been delivered across 10 countries to address a range of extremisms (Islamist, right wing, left wing, sectarianism, national separatism, and inter-group conflicts), showing cross-cultural replication, with each course adapted to context, using a process similar to the A, B, C, D stages described above (Boyd-MacMillan et al., 2016; Liht & Savage, 2013; Nemr & Savage, 2019; Peracha et al., forthcoming; Savage & Andrews Fearon, 2021; Savage, Liht, & Khan, 2014). Of this, LWWD is the first critical thinking course designed to increase cognitive complexity to address social polarisations or extreme thinking of any kind in secondary schools in England.

The task of bringing the critical thinking literature into dialogue with the LWWD model led to ICS as an explanatory framework to help us account for what works and what hasn't worked these past 11 years. For example, early on in the development of this approach to addressing extreme thinking and social polarisation through cognitive complexity, one course in Finland was hampered by small room size which in turn prevented the normal group activities, related meta-awareness prompts and "spatial-praxic" movement tasks. Discussion dominated the course, and is the only IC course showing null effect (Savage, 2013b). On another occasion, IC measurement was used to assess a different course method comprising a 16-hour negotiation training for Bangladeshi politicians which was entirely word-based in delivery. Participants' IC scores dropped in the post test (Savage, 2012) suggesting again that words and discussion alone were insufficient to promote perspective taking concerning emotionally-laden issues of social polarisation. Since then, all IC courses leveraging and measuring IC have been delivered using the full A, B, C, D process with consistently significant results cross-culturally mentioned above. Longitudinal evidence is accruing, showing maintained behaviour change observed at intervals from 6 months to 2 years as a result of delivering the full method (Savage & Andrews Fearon, 2021).

How does the LWWD programme compare to other PVE-E initiatives? An international review of PVE-E looking at 23 countries (Davies, 2017a, 2019) reports that successful educational initiatives are those that prevent students from

thinking in black and white terms, make them less prejudicial towards "others" and less likely to support violence as a means to an end. Davies applauds education initiatives that are oriented to rights and justice, take a more complex view of "victims" and "perpetrators," and understand a conflict from multiple viewpoints (Davies, 2017b). This review also pinpoints practices to avoid, including: arguing against other's ideologies or beliefs, individualistic exhortations to love and harmony, appearing to stigmatise any single group, suppressing free speech, or prescribing "approved" alternative narratives (Davies, 2019). The best practices, and the practices to avoid, are consonant with those of LWWD and other IC courses.

Another PVE-E review carried out by Finnish researchers (Benjamin, Salonen, Gearon, Koirikivi, & Kuusisto, 2021) shows that teachers often report feeling ill-prepared to manage difficult conversations without entering into dangerous territory where emotions run high and reactance is provoked. LWWD and other IC courses are distinctive given the entire course design aims to moderate reactance and perceived threat, operationalised through the ICS framework and A, B, C, D stages. The practices of eliciting emotional engagement with meta-awareness, coordinating visual, verbal and movement in the space as the means to integrate Head Thinking and Heart Thinking while remaining in a safe zone of middle arousal, are unique in the field of PVE-E, to our knowledge. Davies (2017a) also acknowledges that evaluation in PVE-E is notoriously difficult. We argue that using predictive IC coding (while aiming for research design using control/intervention and longitudinal assessment when possible) is another distinctive.

The two reviews above consider one-off interventions inadequate (Benjamin et al., 2021; Davies, 2017a). Both argue for programmes that are embedded in a whole school policy including students, teachers, family, community, and for which there are practical and visible outcomes such as civic engagement. This approach to school as a "node of a wider ecosystem" is a new frontier for LWWD, although consonant with recent developments in Pakistan. IC courses in Pakistan were first designed for detained young militants (Peracha et al., forthcoming), next, expanded to a largescale critical thinking programme for secondary school students and teachers, and now is extending to universities (using online and in-person learning), connecting with core subjects like history and literature, using scalable means of IC-related measurement and teacher/facilitator training. Our longer-term aim is to bring this deep critical thinking method to teacher training colleges, parents and communities.

We hope this examination of the theoretic frameworks underpinning LWWD contribute not only to PVE-E but also to the broader field of social and political psychology by providing a new, overarching framework of analysis. Taken together, the patterns of empirical results arising from this body of research make good sense in terms of ICS theory, and shed light on how emotions and thinking interact concerning issues of social polarisation and extremism. We hope this understanding of how the two meaning subsystems can be brought into an optimal interaction using ICS and IC will inform future research.

Conclusion

To summarise, the aim of LWWD is to foster a natural state of interaction between Head and Heart Thinking subsystems through content and activities that are structured to promote complex, integrated, reflective thinking. It is our hope that LWWD offers a creative and effective response to international calls for deep critical thinking in education. The ICS framework, operationalised to develop LWWD, provides an explanation of how and why emotions and thinking interact in the way they do, providing a guide for educational interventions. Along with predictive IC measurement, we suggest that LWWD transcends divisions of social and intellectual paradigms and provides a fresh approach to addressing social polarisations, prejudice and extremisms. As LWWD participants come to see their thinking in the light of social, emotional, visual, and rhetorical influences, they are able to embrace a greater range of viewpoints and worldviews thanks to integrating thinking with emotions, values, relatedness and embodied experience, and thus reducing barriers between different groups in British society.

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