

Portfolio Volume 1: Major Research Project

**Students' Sense-Making of Events During the COVID-19
Pandemic and its Relationship to Mental Wellbeing**

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Abstract

Superordinate constructions and meaning making structures are hypothesised by different psychological theories to provide individuals with a sense of integration of events or sense-making, which is associated to psychological wellbeing. There has been a general dearth of research in relation to the integration / sense-making of the COVID-19 pandemic events in Higher Education student populations. Personal Construct Psychology's (Kelly, 1955) methods such as repertory grids and ladders are especially useful tools in the study of sense-making processes.

An online survey which included repertory grids, ladders, and questionnaires of meaning and psychological wellbeing was completed by N=101 students from the University of Hertfordshire. The aims were to explore the students' construing of the COVID-19 pandemic, and to test a series of hypotheses proposed as strategies for clinicians to identify superordinate constructs in repertory grids and ladders, which could help them promote sense-making during interventions.

Emotional, relational and personal content predominated the students' construing of the pandemic; issues related to potentially divisive social or political dynamics of the pandemic generated less important constructs. Although more than half of the sample had levels of psychological distress above clinical thresholds for anxiety, the COVID-specific anxiety was low. Students from the global majority showed lower levels of sense-making of their pandemic worst events than white students.

Two grid and ladder measures were associated to positive outcomes in measures of sense-making and psychological wellbeing: overall grid construct intensity and number of ladder rungs. These relationships were stronger when laddering was undertaken from the

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participants' least important constructs, which were also more reliably identified by them in comparison with the more important constructs.

Clinical implications of these findings and future directions for research are discussed. Limitations were related to data-quality issues arising from the online methodology, as well as from probable statistical underpowering.

Introduction

1.1 Background

1.1.1 *Personal interest*

I recently came across a Spanish Twitter thread¹ that attempted to explain the apparent contradiction that even though Donald Trump is demonstrably a character who, from a politically conservative point of view, is morally questionable, e.g., his sexual scandals, lies, attempt at election manipulation, immature narcissistic womanizing behaviour, etc, he is nevertheless still enthusiastically endorsed by many Christian conservative voters; some even see him as a kind of messiah sent by God to save America. I tend to wonder, like so many other people, how is it possible to psychologically reconcile these opposing sets of observations, so to not experience dissonance? The author of the thread argues that there is an archetypal character deep from the US cultural psyche that can conceptually provide a bridge across the said sets of observations to create that reconciliation: the outlaw who is full of defects, but who ultimately has honour and gets his hands dirty when it matters. The more evangelically-oriented Christians, the thread continues, have their own theory of this: sometimes God uses an imperfect being for His ends, an “imperfect emissary.”

I have always been fascinated at the seemingly endless capacity that human beings have to make sense out of the most apparently incompatible constructions. For example, my paternal grandmother was a dedicated Catholic who often cited the Beatitudes (i.e., blessed are the poor, blessed are the persecuted, blessed are the peacemakers, etc), yet she was also an enthusiastic supporter of Franco, the Hitler-allied Spanish dictator responsible for mass

¹ <https://twitter.com/Argemino/status/1647246476953673730> (accessed April 15th 2023)

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genocide during and after the Spanish Civil War. Ever since I was a child, I was completely startled, baffled, perplexed and in disbelief at this type of apparent contradiction and, equally, always surprised that if I spent enough time querying it, I was able to eventually find a way to, in Cipolletta and Ortu's (2021) words, make the experience “appear acceptable and organized by considering it within a superordinate construction” (p. 281) that would give meaning to it.

When, later on in my life, I came across Personal Construct Psychology (PCP; Kelly, 1955) and repertory grids, I sensed that it was a particularly useful method for understanding the puzzling and disorienting interplay of worldviews that people have. I think PCP appeals to people who are trying to make sense and meaning of, in Bill Warren's words, “the ‘booming buzzing confusion’² with which we are confronted from birth” (Warren, 2015; p. 53).

Given that I am part of the population I am studying, i.e., Higher Education students who have undergone the COVID-19 pandemic in the UK, and that I have lived the distress derived from the social, political and informational chaos of the event, my already stated need to make sense and psychologically contain the world in which I live has been more intense in the last few years.

This project will hopefully help me and others move forward in the aim of understanding the ways in which people have made sense of this challenging time.

² The author borrowed this expression from William James in *The Principles of Psychology* (1890).

1.1.2 Epistemological Considerations

Epistemology is defined by Burr (2015) as the study of “the nature of knowledge and the methods for obtaining it” (p. 236), i.e., how we come to know what we claim we know. It is the branch of philosophy that deals with the “how” of knowledge claims, and it is often presented as a counterpart of ontology, the branch of philosophy that focuses on the “what” aspect of knowledge, i.e., what are the fundamental categories of existing nature, or in Harper's (2012) words “what there is to know in the world ‘out there’” (p. 87).

This piece of research will adopt a critical realist epistemological position. Realism is the view that the data collected mirrors a discreet and fundamental reality that is “out there” to be discovered independently of the researcher's knowledge. Two distinctions are usually made within realism: direct realism and critical realism (Harper, 2012). Both positions are ontologically realist, in that they posit that there is a world that exists independently of personal, social and cultural perceptions. Direct realism contends that research data directly correspond to this reality, while critical realism sees knowledge claims as imperfect approximations to reality that necessarily contain biases, measurement errors, interpretations, and even random fluctuations of data. Therefore, throughout this research, I will assume that the collected data has a sufficient degree of correspondence with the experiences and subjective states of the participants, and I will make the necessary comments on reliability and validity.

Following Harper's (2012) contention that it is possible to use certain methods “from different epistemological standpoints” (p. 87), in this research I will combine techniques from Personal Construct Psychology (PCP; Kelly, 1955), a constructivist theory of how individuals make sense of the world's events, with more conventional questionnaires and measurement tools, i.e., those developed from within critical realist assumptions as described above. Constructivism sees individuals as playing an active role in the development of their

knowledge about the world, as opposed to taking in information from a fixed reality-out-there. Although the position that PCP occupies within constructivism is under debate amongst scholars (Raskin, 2016; Warren, 2016), its ontological position makes it compatible with a critical realist approach. Kelly's (1955) ontological position is that “there is a real world, but we can only ever know it through our constructions of it” (Butt & Warren, 2016; p. 20). This stance explicitly states that the world is both “discovered” (i.e., it is really out there independent of ourselves) and “constructed” (i.e., we partly “make” it and refine it to serve pragmatic ends); in other words, “the world we perceive is both found and made” (Butt & Warren, 2016; p. 21). It is this particular element within PCP, similar to critical realism’s notion that there is a reality-out-there that can be represented though always imperfectly, that makes both positions commensurable within each other, as concluded by many authors (Noaparast, 2002; Stevens, 1998; Warren, 1998) and considered plausible by others (Raskin, 2016).

1.1.3 Key Terminology

For a guide of acronyms used throughout this work, please consult APPENDIX 13.

Psychological wellbeing: I will broadly use Martin Seligman's (2011) conceptualisation of wellbeing, described as “a combination of feeling good as well as actually having meaning, good relationships, and accomplishment.” (p. 25). This definition features both subjective and objective components; in the author’s words “... you can believe you have meaning, good relations, and high accomplishment and be wrong” (Seligman, 2011; p. 25). The term “psychological wellbeing” will refer in this study to the subjective component of the construct.

Sense-making (SM): in this study, SM will be referred to as the broad subjective sense that one’s world view is coherent and organised. This is a state mostly related to

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implicit and assimilative cognitive processes (i.e., integrating an event into the existing meaning framework), and thus does not necessarily include the explicit, verbalised and narrative elaborations of particular meaning that a given individual may find at a given moment. It is the subjective experience of the person and their surrounding world as structured and thus “comprehensible” (Park, 2010).

Meaning-making (MM): this term will refer to the active process of elaborating a psychological framework that provides one with a sense of place, direction and worth or importance. This takes place through deliberate and accommodative cognitive processes (i.e., changing one’s current meaning framework to account for unexpected events) which, when successfully carried out, has a positive effect on SM. It is the actively elaborated set of ideas that portray the person and their surrounding world as “significant” (Park, 2010). MM implies SM, but the opposite is not true; in other words, MM will be understood as a particular case within SM.

Integration: similar to SM, this is a term widely used in many different psychological and psychotherapeutic approaches, whether more somatically-based (van der Kolk, 2014), more affectively-based (Greenberg, 2004), more cognitively-based (Ehlers & Clark, 2000), or more socially-based (Muldoon et al., 2019). In this study, it will refer to the effective incorporation of an event into one’s construing activity, whether via assimilative or accommodative processes, resulting in a subjective state of balance, wholeness, coherence, or organisation.

1.2 Sense-Making, Meaning-Making and Psychological Wellbeing

Current models of wellbeing conceive it as a multifaceted construct that pertains to different elements of life such as the presence of positive emotions, sense of accomplishment, meaningful relationships, spirituality, community, belonging, etc. (Burns et al., 2020;

McNaught, 2011). Amongst these elements, authors like Seligman (2011) have also highlighted the role of meaning-making (hereafter MM) as one of the core components of psychological wellbeing. MM processes are thought to be particularly important in situations in which events may be particularly difficult to anticipate, understand and make sense of. Authors from a variety of clinical and therapeutic perspectives (e.g., Ehlers & Clark, 2000; Janoff-Bulman, 1992; Milman et al., 2019; van der Kolk, 2014) have conceptualised the distress arising from these challenging experiences as a difficulty in integrating events into a coherent narrative or meaning framework that facilitates finding overall direction and purpose. There seems to be agreement amongst authors (Milman et al., 2019) that this integration often takes the form of changes in the core constructions through which individuals perceive the world, others, and themselves. These adaptations can range from partial changes to complete abandonment and/or development of new core constructions. Different terms have been used by different authors to refer to these global perceptions, e.g., “orienting beliefs” (Pargament, 1997), “global meaning” (Park, 2010), “core assumptions or schemas” (Janoff-Bulman, 1992), “core constructs” (Kelly, 1955), etc. These overarching psychological constructions that serve an integrating, coherence-making function of the individual’s world view can take different forms, e.g., values (Sagiv & Schwartz, 2000), moral foundations (Graham et al., 2013), religious ideas (Aten et al., 2019; Koenig, 2012), micro and macro-narratives of purpose (Neimeyer, 2016; Park, 2016), etc, and have been documented to be positively associated with mental and physical wellbeing (Park, 2010).

There are a series of specific psychological constructs and models that operationalise the processes of SM/MM and the ways in which they are connected to wellbeing. In order to lay out a general overview of this area of knowledge, the following section will briefly review three of the most significant models: Terror Management Theory, the construct of Sense of Coherence, and the Meaning-Making Model.

1.2.1 Terror Management Theory

Terror Management Theory was developed by Greenberg, Solomon and Pyszczynski (2015) based on Becker's (1973) previous psychoanalytical work on death anxiety as the fundamental deeper motivation within human life. It proposes that when certain events feature mortality in a salient way (whether consciously or unconsciously perceived) individuals, groups and societies respond by increasing their adherence to the culture's normative and dominant worldview, and associated prescribed behaviours, thus preserving a sense of faith in their worldview, their close relationships and their self-esteem.

The theory further proposes two types of culture-aligned strategies: proximal and distal. When mortality is consciously perceived, proximal strategies are used to eliminate or manage the presence of threat in the person's awareness. Examples of these are denial, distraction (including use of drugs or binge behaviours), or engaging in actions that reduce vulnerability such as switching to healthy habits in the case of an illness, etc. On the other hand, when the presence of mortality is somehow implied or unconscious, distal strategies are employed, which are directed towards elaborating or maintaining a sense of meaning and self-esteem. Examples of these are aligning oneself more closely with group-sanctioned identities and practices that "imbue one's life with meaning, value, and the promise of either literal or symbolic immortality" (Pyszczynski et al., 2021; p. 175). Whereas literal immortality is usually related to beliefs in an afterlife, symbolic immortality consists of practices that are seen as contributing to institutions like family, community, party, nation, etc, thus leaving a legacy.

Terror Management Theory has been criticised on a number of fronts, including an alleged evolutionary implausibility based on erroneous psychoanalytical assumptions (Kirkpatrick & Navarrete, 2006). Navarrete and Fessler (2005) proposed that, rather than a psychological defence against fear of death, adherence to ingroup norms was better explained

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by coalitional thinking as an evolutionary adaptation to enhance group cohesion and coordination. In addition, some of the experimental results on which Terror Management Theory was based have not been successfully replicated (Klein et al., 2022), although the original authors have argued that protocols have not been followed faithfully in those studies (Chatard et al., 2020).

1.2.2 Sense of Coherence

The second of the models is Antonovsky's (1979) personality construct of Sense of Coherence. According to the author, life's essentially dynamic and changing nature poses an unavoidable level of distress to individuals. He developed this dispositional or personality construct to explain why some individuals are more adaptable and resilient to these life stressors. Sense of coherence is theorised to develop in the context of family and community experiences during childhood (Sagy & Antonovsky, 2000), especially under activities that are related to the promotion of autonomy and participation in decision-making.

Sense of coherence is made of three components: comprehensibility, manageability, and meaningfulness. Comprehensibility refers to the degree to which a person feels deeply confident that the events of the world have an organisation and are therefore understandable, predictable, and explainable; it is the SM aspect of the construct. Manageability is the conviction by the individual that available resources are sufficient to cope with the demands, i.e., the stressor is controllable. Finally, meaningfulness refers to the degree to which the demands posed by the stressor are worthy of involvement and effort (Castiglioni & Gaj, 2020); in other words, this is the significance aspect of the construct.

Individuals high in all three components of sense of coherence have an increased ability to use different internal and external resources to cope with challenges; the meaningfulness associated to their behaviours provides the motivation to modify their current

perceptions of events and anticipate them more efficiently in order to increase their wellbeing (Galletta et al., 2019).

One of the main challenges with the sense of coherence construct has been Antonovsky's rather contradictory idea that sense of coherence should be seen as a unidimensional construct that is, however, made of three components. Thus, factorial analyses of the purposefully developed Sense of Coherence Scale (Antonovsky, 1993) have found inconsistent results in relation to the number of factors. There is however a generalised agreement that the construct taken as a whole is predictive of positive health outcomes (Eriksson & Lindström, 2005).

1.2.3 The Meaning-Making Model

Park (2010) carried out an integrative review of previous meaning and trauma research to develop a general model of MM, drawing notions from the Transactional Model of Stress (Lazarus & Folkman, 1984), the Assumptive Worlds Model (Janoff-Bulman, 1989), or the Emotional Processing model (Foa & Kozak, 1986).

According to the MM model, all individuals develop global schemas (named Global Meaning) throughout the course of their lives related to three main aspects: 1- broad beliefs about the controllability, comprehensibility, coherence, fairness, and safety of the world; 2- global life goals, for example religious commitments, long-term relationships, lasting contributions to knowledge, achievement, etc; and 3- a sense of purpose derived from the pursuit of those goals. The MM model claims that Global Meaning decisively influences people's important choices, actions and reactions throughout life.

In addition to Global Meaning, the model posits that individuals also process meaning situationally i.e., meaning that is appraised from particular events in specific moments of time. According to the model, Situational Meaning is continuously and implicitly assessed for

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compatibility with Global Meaning. When aspects of the latter are challenged or invalidated by current events, individuals will experience distress; the greater the discrepancy, the greater the level of distress experienced by the person, who will then engage in MM processes, that is, efforts to reduce the distance between the situationally appraised meaning and their Global Meaning. Several overlapping cognitive mechanisms are proposed that facilitate this MM: 1- automatic vs deliberate processes (non-verbal, non-effortful, parallel processing vs verbally-mediated, effortful and serial processing), 2- assimilative vs accommodative processes (subsuming an event into existing structures vs changing current structures to fit the event), 3- comprehensibility-focused vs significance-focused processes (the organisation aspect vs the worth aspect of the event), and 4- emotional vs cognitive processes (the experiential-affective aspect vs the information aspect of the event). See Park (2010) for a detailed description of these mechanisms.

The result of the MM process is what the model terms “meanings made.” One of its most frequently reported outcomes is the experience of a loose feeling of “having made sense of the event.” Other habitual outcomes include a sense of acceptance and of personal growth or development, changes in identity, changes in global beliefs and existential goals, and a restored sense of meaning in life (MIL), amongst others.

An interesting implication of Park’s model is that engaging in the MM process is not necessarily related to psychological wellbeing; rather it could be expected to be concurrent with significant levels of stress, given that the individual is in that moment trying to repair the insult caused to their Global Meaning. Hence, only meanings made would be expected to exhibit an association with psychological adjustment, which Park (2010) found to be generally supported by the cross-sectional literature.

Amongst her recommendations for future research, Park (2010) noticed that more investigation was needed in relation to the question of whether some types of meanings are more psychologically helpful than others, or whether all meanings made are equal in their ability to provide psychological integration and, therefore, wellbeing.

1.2.4 Measures of Meaning Making

Several ways of measuring aspects of SM and MM have been developed over the years. While Terror Management Theory has mostly relied on experimental designs (Burke et al., 2010) and has not developed psychometric tools that are specific to its constructs, a series of scales are in existence to cover aspects of the other theories.

As already pointed out, the sense of coherence construct can be measured with Antonovsky's (1993) Sense of Coherence Scale, a 29-item instrument that aims to capture its three components. Psychometric studies have generally reported good internal and external reliability (Cronbach's $\alpha = .70$ to $.95$; one year test-retest $r = .69$ to $.78$) for the scale, although findings in relation to its factorial structure (proposed as unidimensional by the original author) have been significantly conflicting across international samples (Eriksson & Lindström, 2005).

In relation to Park's (2010) MM model, a series of scales exist that measure some of its components, with most of them having been developed independently of the model. The component of Global Meaning can be assessed with instruments like the World Assumptions Scale (Janoff-Bulman, 1989) or the Core Beliefs Inventory (Cann et al., 2010); Situational meaning can be captured using Post-Traumatic Stress Disorder (PTSD) scales such as the PTSD Screen for DSM-5 (Prins et al., 2016), the Impact of Events Scale (Weiss, 2004), or via ongoing clinical formulation during psychotherapy sessions (Johnstone & Dallos, 2014); MM processes in research settings have mostly been evaluated using *ad hoc* questions such

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as “during the past month, have you found yourself searching for...” (Park, 2010; p. 273); finally, the Meanings Made component of the model is purposefully addressed by the Integration of Stressful Life Experiences Scale (ISLES; Holland et al., 2010), which was designed with the MM model in mind.

In the conclusions to her review, Park (2010) highlighted the limitations of measurement within the MM area of research. As already pointed out, researchers have often relied on simple *ad hoc* questions, e.g., Holland et al. (2010) assessed SM with the question “How much sense would you say you have made of this event?” (p. 332), which poses significant limitations to our ability to understand this process. Park (2010) recommended that researchers should attempt to expand beyond self-report measures where possible “and use creative alternative approaches to more thoroughly capture meaning-making constructs” (p. 291).

1.3 Personal Construct Psychology

One of the limitations of nomothetic self-report instruments, such as the ones mentioned in the previous section, is that they measure a generic sense of MM that does not reflect the particularities of the individual's unique views and background. In contrast, the instruments in George Kelly's Personal Construct Psychology (PCP; Kelly, 1955) like the repertory grid technique or the laddering technique (Hinkle, 1965) can reflect both qualitative (i.e., the content of the meanings themselves) and quantitative aspects of meaning (i.e., “how much” the different meanings are connected or not to each other). In this way, the methods developed over the years within PCP (Peter Caputi et al., 2011) are particularly well suited for the assessment of SM and meaning integration, and can therefore work as one of the creative alternatives that Park (2010) refers to.

1.3.1 Anticipation as the Fundamental Psychological Process

PCP proposes that people develop their own theories to anticipate the world's events. The theories are articulated via a series of bipolar dimensions referred to as personal constructs, e.g., in the case of anticipating people's behaviour, some constructs could be sociable vs unsociable; visceral vs rational, etc. Throughout their lives and in interaction with their social, cultural and relational worlds (Procter & Winter, 2020), individuals develop a relatively high number of personal constructs which, together, make their unique construing system. Kelly (1955) famously used the metaphor of "the person as scientist" who, when facing events that invalidate their constructs, engages in a series of experiments to refine them in order to progressively become a better anticipator.

Kelly (1955) considered the anticipation of events to be the main psychological process. He stated PCP's Fundamental Postulate as: "a person's processes are psychologically channelized by the ways in which he anticipates events" (p. 32). In other words, our efforts to make sense of the world lead us to constantly strive to become better anticipators. Hence, PCP sees human beings as active construers of knowledge, who never stop trying to develop their understanding. "... movement is the essence of human life itself" (Kelly, 1955; p. 48).

Further, individuals usually have a preferred pole for most of their bipolar constructs, e.g., a person may prefer the "social" pole of the "social vs unsocial" construct. According to Kelly (1955), people choose the construct pole that they anticipate will lead to the greater additional elaboration of their construct system, i.e., the one that they anticipate will turn them into better anticipators, even if this choice consists of actions that would commonly be construed as "unfavourable" or "negative" by others. This is a crucial notion within PCP because it helps understand the reasons why individuals may make certain choices that can appear incomprehensible or unwise to others.

1.3.2 Superordinate Constructs and Sense-Making

Kelly (1955) also argued that personal constructs are organised hierarchically. Some are in a superordinate position, subsuming other constructs into wider “theories”, and serving an integrating function of the different anticipations within the individual’s construct system (Adams-Webber, 1979; Gallifa & Botella, 2000; Landfield, 1977). These constructs, called superordinate constructs (hereafter SOCs), represent the broader, more important, and meaningful anticipations people make about the world’s events (Walker & Winter, 2007). SOCs are theorised to be more abstract in content, and to pertain to moral and existential issues (e.g., purposeful vs purposeless) in the person’s overall construing of the world (Feixas et al., 2002). Contrastingly, those constructs in more subordinate positions within the system are theorised to have a concrete content and a more specific applicability (e.g., has a house vs does not have a house). In this way, SOCs overarch or subsume relatively large proportions of other constructs, linking them together under common “theories,” consequently giving the individual’s view of the world a sense of coherence and direction. SOCs can be seen as PCP’s operationalisation of Park's (2010) Global Meaning, and thus play an important role in the individual’s sensation that the world makes sense and that the choices they make move them in an essentially meaningful direction.

1.3.3 Construct Assessment Techniques

Laddering Technique. One of the ways in which SOCs are elicited within PCP practice is by using the laddering technique (Hinkle, 1965), an example of which can be seen in Figure 1. The technique begins by asking participants to say which pole of a given bipolar construct they would prefer to be described by.

Figure 1*Laddering Technique Example*

Note. (✓) indicates the preferred construct pole chosen by the individual.

Following the example in Figure 1, the person has chosen the left pole of the initial construct “good with words vs not good with words” as their preferred side. The person is then asked why it is important for them to be that way; in the example, the participant has indicated that being “good with words” leads to more “clarity.” After this, the person is asked to come up with what they see as the opposite of this newly emerged pole, which in the example has turned out to be “confusion,” hence forming a new bipolar construct (“clarity vs confusion”). This process is then reiterated with all newly emerged constructs, thus generating subsequent ladder rungs, until the person cannot give more answers, or the answer seems obvious in some way (Procter & Winter, 2020). As indicated by Fransella (2005), this can often be when the construct pertains to issues such as “that is what I am on Earth for”, “one must help others”, etc.

Although there has been some questioning of whether laddering really achieves the aim of eliciting increasingly superordinate content, there seems to be agreement amongst authors that it generally works in this way (Procter & Winter, 2020). The validation study

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conducted by Neimeyer et al. (2001) is often cited in this respect. The authors tested the following hypotheses (amongst others):

- 1- When a ladder was initiated from a construct that was more concrete in content, a higher number of rungs would be required to reach the SOC at the top of the ladder.
- 2- Constructs that were rated as more important for the person would tend to be situated higher up in the ladders.
- 3- SOCs at the top of ladders would feature abstract and existential content, whereas subordinate constructs at the start of ladders would reflect more concrete content.

Neimeyer et al. (2001) found support for hypotheses 1 and 3, and partial support for hypothesis 2 (constructs in the middle and top ladder rungs received the highest importance ratings with no significant difference between them). Unfortunately, there have been no studies that have followed up or attempted to replicate these results.

Repertory Grid Technique. This is possibly the most well-known of the personal construct assessment methods and one of the main ways of eliciting constructs. A repertory grid or “rep grid” (Kelly, 1955) starts with a series of “elements” that are placed on its columns (see Figure 2). Elements demarcate the domain of construing that is under exploration, the most frequent of which has been the interpersonal or social world of the individual, with elements like mother, father, partner, siblings, etc., as well as elements that reflect aspects of the self, such as “current self”, “ideal self”, “self in the future”, etc. Nonetheless, the domains of construing are not limited to the social world, as elements can be chosen to explore virtually any domain, e.g., rival companies (Baldauf et al., 2010), concepts of infinity (Aztekin et al., 2010), class pupils (Smith, 2000), life episodes (Sewell, 1991), shoe brands (Zinkhan & Braunsberger, 2004), or mythological characters (Orley, 1976).

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Once the elements have been selected, a series of comparisons are made between them to elicit the bipolar constructs. There are a number of different comparison methods (Fransella et al., 2004), but here I will only describe the one used in the empirical part of this study, the dyadic method (Landfield, 1971). In this method, two of the elements are presented to the individual, who is then asked whether they see a difference or a similarity between the two. If a difference is chosen, such as one of the elements being “deep” and the other being “superficial,” the elicited bipolar construct would be “deep vs superficial.” If a similarity is chosen, for example both elements are seen as “deep,” the person is then asked “what would be in your own view the opposite of deep?” The answer is then annotated as the contrasting pole. Emphasis is put on reminding the participant that the researcher is interested in their very own ways of seeing things, so to capture the uniqueness of the person’s construing. Once elicited, the constructs are placed on the grid’s rows.

Figure 2

Example of Completed Repertory Grid.

CONSTRUCTS		ELEMENTS												Construct subjective importance
LEFT POLE	RIGHT POLE	SELF NOW	SELF IN 2 YEARS	IDEAL SELF	FATHER	MOTHER	PARTNER	FRIEND 1	FRIEND 2	FRIEND 3	FRIEND 4	DISLIKED PERSON 1	DISLIKED PERSON 2	
Doesn't like to be with people for long	vs Likes to be with people all the time	1	1	4	1	7	5	4	4	5	6	4	6	10
Good with words	vs Not good with words	1	1	1	5	2	5	1	5	4	1	6	5	9
Aristocratic	vs Gets dirty	5	5	5	5	2	5	4	6	6	6	6	1	6
Deep	vs Superficial	1	1	1	1	5	5	2	5	3	1	6	6	7
Old attitude	vs Revolution	6	6	6	3	3	5	2	4	6	7	4	1	2
Having to think things a lot	vs Visceral	2	3	4	6	1	2	2	5	6	6	6	4	8
Sellout without a soul	vs Does not betray himself	6	7	7	7	4	5	6	5	5	7	1	4	5
Believes they are a good person	vs Knows their dark side	6	6	6	7	3	2	6	5	6	7	4	4	3
Wants to enjoy	vs Depressed	1	1	1	4	1	2	3	2	1	4	2	2	11
High moral standard	vs Consumerism	2	2	1	3	3	4	2	4	3	1	6	5	1
Mature	vs Immature	2	2	1	5	2	4	2	3	2	3	7	3	12
Wants to go to sleep	vs Wants to awaken	7	7	7	4	3	6	5	5	5	7	2	1	4

The participant then scores each of the elements on each of the bipolar constructs using a Likert scale, usually made of seven points. A value of one would indicate that the

element is situated on the left extreme of the construct, while a value of seven would place the element on the right extreme; the middle score (four) would situate the element in the centre of the construct. In this way, elements and constructs form a matrix of numbers (Figure 2) that expresses how they are interrelated. This matrix can be mathematically analysed, providing different measures of construct system structure, such as how differentiated or integrated constructs are within the grid with respect to each other (Herrán-Alonso et al., 2020; Kovářová & Filip, 2015).

Finally, individuals can be asked to rank their constructs by their perceived order of importance (top right column in Figure 2), which has been hypothesised to be a way of identifying SOCs (McDonagh & Adams-Webber, 1987), on the basis that superordinate content would generally be experienced as more important by people. This idea will be further elaborated after the next section.

1.3.4 Construct System Differentiation / Integration

A construct system that anticipates events in a relatively coherent and functional way is referred to by some authors as an integrated system (Adams-Webber, 1979; Gallifa & Botella, 2000; Landfield, 1977). This can be operationalised as a system in which constructs have a high degree of interrelatedness, i.e., they are highly connected to one another (Feixas et al., 1992; Hinkle, 1965).

This interrelatedness of constructs is sometimes described in the literature in terms of “differentiation” (Feixas et al., 2004; Herrán-Alonso et al., 2020; Kovářová & Filip, 2015); that is, constructs that are more disconnected, separate or even isolated from the rest are conceptualised as highly differentiated. As can be inferred from the previous explanation of superordination and subordination, highly differentiated constructs tend to occupy subordinate positions and feature concrete content, whereas lowly differentiated constructs

tend to have the opposite characteristics. Concisely, in terms of their structural properties, constructs can be seen as subordinate-concrete-separate-differentiated, and as superordinate-abstract-connected-integrated.

Similar to the MM literature seen in the preceding sections, a high degree of construct integration (i.e., a construct system that is useful in making sense of events) has been theorised to be positive for general psychological adjustment (Adams-Webber, 1979; Herrán-Alonso, 2014; Landfield & Cannell, 1988). Such a system would necessarily have a significant presence of SOCs to provide for those connections. In metaphorical terms, SOCs could be seen as “the agents” of integration and thus of psychological wellbeing.

However, one challenge here is there is no definitive method for identifying which constructs within repertory grids or ladders may be more superordinate or subordinate. Developing ways of doing this would be a clinically important tool for repertory grid users as it would allow them to estimate the integrative potential of a construct, and thus their capacity to affect psychological wellbeing.

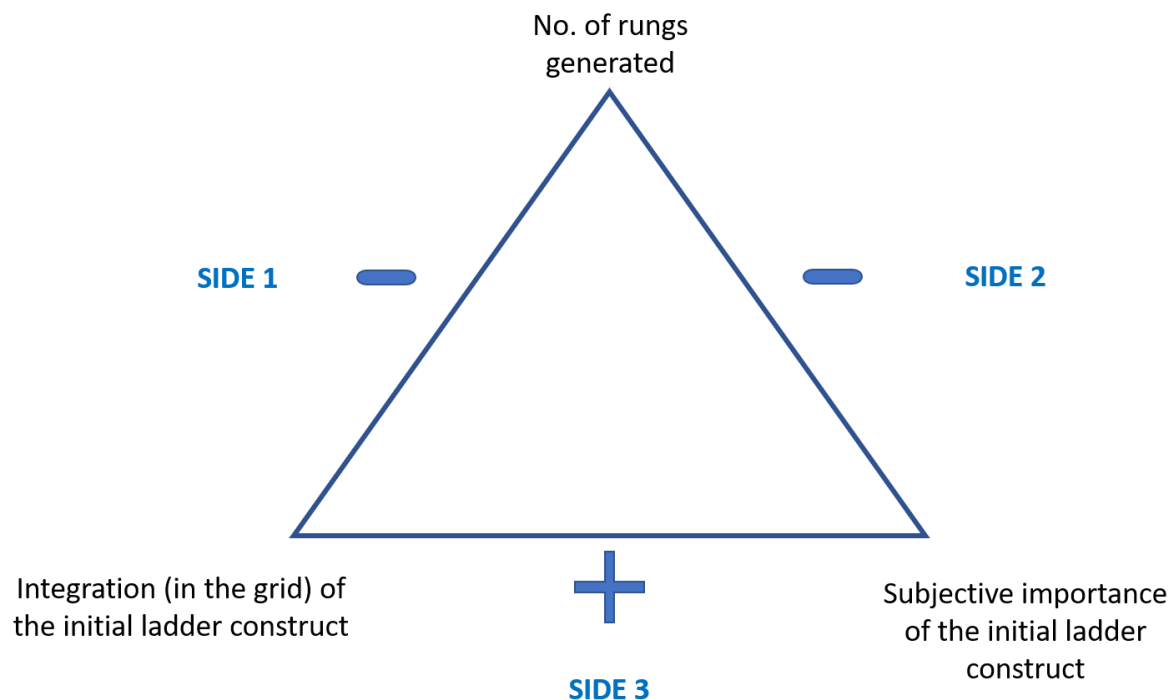
1.3.5 Identification of SOCs

As part of a repertory grid procedure, participants can be asked to rank the elicited constructs by their subjective importance. Research has suggested that constructs that are seen as subjectively more important tend to have more implications (i.e., connections) with other constructs, which can in turn be seen as an indication of higher superordinacy (Hinkle, 1965; Mcdonagh & Adams-Webber, 1987). Therefore, participant stated subjective importance may be an indirect way of identifying SOCs within a repertory grid.

Drawing from this literature as well as the study by Neimeyer et al. (2001) reviewed earlier, the following tentative model can be devised that would help identify SOCs in repertory grids and ladders (Figure 3).

Figure 3

Hypothesised relationships between a construct's integration, subjective importance and number of rungs when laddered.



Following this model, we would expect:

SIDE 1: when less integrated constructs (more subordinate and concrete in content) are laddered, they will require a higher number of rungs to reach the “top” of the ladder, where superordinate content can be found.

SIDE 2: constructs that are more subjectively important will generally require a smaller number of rungs to reach the “top” of the ladder.

SIDE 3: more integrated constructs (i.e., superordinate and abstract) will be perceived as more important.

A confirmation of these relationships would indicate that construct integration and subjective importance in repertory grids as well as number of rungs in ladders could be used as estimators of the superordinacy of constructs. It would also be important to validate these measures against external criteria, such as SM/MM and psychological wellbeing scales.

1.3.6 Applications of PCP to the Study of Difficult Events

PCP approaches have been used to assess the construing and SM of extraordinary, exceptional or difficult events before e.g., illness (Cipolletta et al., 2017; Viney & Westbrook, 1986), radicalisation (Mason et al., 2022; Winter, 2011), etc. Some of this work has included experiences of the 2014 Ebola outbreak as well as the recent COVID-19 pandemic. A brief review of this literature will be made here, as some of the methodology informs the current study.

The Ebola virus outbreak that swept through West Africa between 2014-2016 was a devastating event for the affected countries. One of such countries was Sierra Leone, where Winter (2018) interviewed 11 participants who had been significantly impacted by the illness. The participants completed open interviews as well as repertory grids to assess their construing of the experience. The data was qualitatively analysed through the lens of PCP's professional diagnostic constructs, which will be briefly described in the next paragraph. The elements chosen by Winter (2018) for the repertory grids included various aspects of the self (e.g., self now, self before the Ebola epidemic, self during the Ebola epidemic, ideal self, etc), as well as roles related to the social and political challenges the population had undergone during the years of the outbreak, such as generalised suspicions that the government, hostile regimes, or international aid organisations had spread the virus; examples of these elements were "a foreign health professional who worked with Ebola patients", "a Sierra Leone professional who worked with Ebola patients", "a person who had Ebola", etc. In addition, Ebola itself was included as an element with the aim of exploring the more abstract qualities

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perceived in it, as if it was an actual character. This particular use of elements to investigate different aspects of the Ebola outbreak importantly informed the current study design.

More recently, Winter and Reed (2021) as well as Cipolletta and Ortu (2021) have written theoretical reviews about the applicability of some of PCP's categories to the analysis of the COVID-19 pandemic. Winter and Reed (2021) provided a detailed account of PCP's diagnostic professional constructs, and how they could be applied by psychologists as a "means of construing another person's – or indeed their own – construction processes" (p. 254). Firstly, they reviewed PCP's conceptualisation and operationalisation of emotion in terms of transitions in construing (Kelly, 1955; McCoy, 1977). For example, they narrated how changes to construing induced by out of the ordinary pandemic events may result in experiencing anxiety (the awareness of one's lack of constructs for the current events), threat (awareness of imminent extensive change in one's core constructs), guilt (awareness of the displacement of the self away from one's core role structure) and shame (awareness of the displacement of the self away from others' construing of one's role). Secondly, Winter and Reed (2021) reviewed the applicability of different constructive strategies that individuals could adopt to cope with the invalidation of their core and non-core anticipations, such as constriction (i.e., the narrowing of the perceptual field to reduce incompatibilities with one's constructs), hostility (i.e., extorting validation for constructions), aggression (in the Kellian sense of actively elaborating the perceptual field in order to develop alternative constructions), etc. They concluded that the COVID-19 pandemic had provided a context in which many individuals had had to engage in reconstruing "their relationships with each other and the world, including reevaluating their superordinate and core constructs" (p. 260).

Cipolletta and Ortu (2021) also used PCP as a theoretical framework to examine various common constructions or meanings applied to the pandemic within an Italian context. Using stories anecdotally narrated by their students, patients, families and friends, as well as

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images, news and videos from social media, they described the various ways in which MM could be used as a way of reducing anxiety, such as the use of metaphors (e.g., the pandemic-like-war metaphor, the punishment-for-having-maltreated-nature metaphor), the use of conspiratorial hypotheses to explain the event, and seeing COVID as an opportunity to change.

In summary, Cipolletta and Ortu (2021) as well as Winter and Reed (2021) built on PCP's methods and professional constructs to suggest ways in which individuals may integrate or make sense of the seemingly chaotic, difficult and often contradictory events that have taken place during the COVID-19 pandemic.

1.4 The COVID-19 Pandemic and psychological wellbeing

The COVID-19 pandemic has been reported to affect the mental health of populations across the Globe. In their systematic review early in the pandemic, Xiong et al. (2020) gathered data on symptoms of psychological distress from countries in Asia (China and Nepal), Europe (Spain, Italy and Denmark), the Middle-East (Turkey and Iran) and the United States of America. Although the heterogeneity of the studies was significant, the authors reported relatively high rates of depression, anxiety, and PTSD (between 5% to 50% of the general population approximately). They found the female gender, younger people, and students (amongst others) to constitute risk factors for the development of these symptoms. An ongoing COVID-19 study by the Kaiser Family Foundation (2023) in the United States, currently shows that 32.3% of adults report significant symptoms of anxiety and depression, rising up to 49.9% for young people between the ages of 18 and 24.

In the case of the UK's general population, the earlier reports displayed a similar picture. For example, Mind's (2021) coronavirus survey results revealed that 30% of adults and 34% of young people indicated that their mental health has got "much worse" during the

pandemic. A study by The Mental Health Foundation (2021) found that, in November 2021, 33% of people in the general population reported feeling anxious or worried due to the pandemic, and that rates of suicidal thinking (over the previous two weeks) were at 12% for the general population and at 34% for young people aged 18 to 24.

It is worth noticing, however, that although these figures indicate that psychological distress symptoms have been elevated during the COVID-19 pandemic, they do not necessarily imply that the pandemic was the cause, or clarify how much it contributed. Interestingly, a recent meta-analysis (Sun et al., 2023) compared pre-pandemic rates of anxiety and depression (years 2018-2019) with rates obtained using equivalent measures during and after the pandemic (January 2020 onwards). The data came from 137 studies conducted in Asian, European, and North American countries amongst others, and found only a minimal increase (Standardised Mean Difference, $SMD = .12$) in symptoms of depression. The authors found no significant differences amongst groups, except for the female gender who showed only a slightly greater deterioration than the other groups. There was significant heterogeneity, and many of the studies were reported to contain significant risk of bias, which suggests caution in interpreting these results.

In summary, levels of psychological distress appear to have been elevated during the pandemic in the UK and in other high-income countries, although a recent study suggests they may not be significantly different from the pre-pandemic situation. The female gender and young people at university age (18 to 24) appear to be amongst the most affected groups.

1.4.1 Higher Education Students' Psychological Wellbeing

The transition to university is a significant period in the lives of many young people and can arouse both positive and negative feelings e.g., excitement, but also high levels of anxiety/stress (Burns et al., 2020). For many, this is the first time in which they face complete

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control over their choices, in relation to health issues like diet, exercise, and alcohol/drug use. In addition, Higher Education (HE) students may face financial constrictions and associated levels of distress, which in turn can impact on social functioning. Loneliness can also be a challenge exacerbated by moving away from pre-existing social and family support networks and is significantly associated to deteriorating mental health (Burns et al., 2020). In spite of these challenges, UK universities continue to sustain increasing entry levels (Kulkarni & Chima, 2021), which have negatively impacted the levels of pastoral and general staff support for students, thus exacerbating the difficulties above.

The Impact of the COVID-19 Pandemic on Higher Education Students. Despite the interest in the psychological consequences of the COVID-19 pandemic on different populations worldwide, no studies appear to have investigated the SM and MM processes of Higher Education (HE) students in relation to the event, and what repercussions these processes may have had on their psychological wellbeing. This is especially relevant given that this population consistently emerges as one of the most affected by high levels of psychological distress as shown by the studies in the preceding section (e.g., Mind, 2021; Xiong et al., 2020). In addition, young people's and students' mental health appears to have been reliably deteriorating in Western societies for the last decade approximately (Bor et al., 2014; NHS Digital, 2021; Twenge et al., 2019), and calls have been made since before the pandemic to increase our understanding of student psychological wellbeing (Barkham et al., 2019).

During the COVID-19 pandemic, studies have revealed that the population of HE students in the UK has faced particular challenges, placing significant additional strains on them. For example, for the 2020 autumn term, the Office for National Statistics (ONS) informed that 29% of HE students reported being "dissatisfied or very dissatisfied" with their academic experience, and that 53% felt equally about their social experience (ONS, 2020). In

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comparison to the general population, HE students also reported lower levels of life satisfaction, and higher levels of anxiety and loneliness; more than half of the students indicated that their well-being and mental health had declined (ONS, 2020). The most recent update of this survey (ONS, 2022) showed comparable results. Chen and Lucock (2022) obtained similar findings on a sample of N=1,173 students from a northern university in England, conducted between June and July 2020. The authors found that 53.40% and 51.50% of students were above the clinical cut-offs for depression and anxiety respectively, with females more affected than males. In addition, Chen and Lucock (2022) found low levels of resilience that were ascribable to the isolation, deterioration of personal relationships and financial anxiety associated to the pandemic restrictions. The authors called for longer-term monitoring of these trends within the population of HE students in the UK.

Similarly, Catling et al. (2022) compared HE students' scores in depression and anxiety between 2020 and 2021, using a sample of N=434 (n= 216 for 2020; n=218 for 2021). Their results indicated that both types of symptoms increased significantly from one year to the next, with the proportion of students meeting criteria for clinical depression rising from 30% to 44%.

In short, HE student psychological wellbeing seems to have been highly compromised during the COVID-19 pandemic. There is a need to develop our understanding of how (and whether) this population have made sense of the difficult personal and relational environments they have had to navigate during this event, and whether this SM has helped them gain an integrated sense of the world around them with its associated positive effects on psychological wellbeing.

1.5 Systematic Literature Review

A systematic literature review was undertaken to establish what is currently known about this topic and identify relevant gaps in the area. The initial question was formulated as: How have Higher Education students made sense or meaning of the COVID-19 pandemic and how is this SM influencing their psychological wellbeing?

1.5.1 Systematic Search Strategy

After consultation amongst members of the research team, teachers and librarians, Scopus, PsycArticles and Pubmed were chosen as databases to be consulted. No period limitations were introduced. The search planning strategy recommended by the University Learning Resource Centre Team was followed. This was based on extracting the research question's main concepts to develop the search terms; these are displayed in Table 1.

An initial search using the four terms on titles, keywords and abstracts, returned very few studies (n = 197). After trying different combinations of the four terms, it was concluded that the exclusion of the first one i.e., HE students, allowed an acceptable initial quantity of studies that could be screened (n = 1433). Thus, the literature review was opened to the broader question of: "How have individuals made sense or meaning of the COVID-19 pandemic and how is this SM influencing their psychological wellbeing?" It was decided that care would be placed on adapting the information gained under this more general search to inform the current research with HE students.

The inclusion and exclusion criteria that were used for the screening and eligibility assessment of the articles are displayed in Table 2. Studies were included without geographical or date restrictions. Articles written in Spanish (the Principal Investigator's native language) were considered, but none were relevant; hence, only articles written in English were included.

Table 1*Search Terms.*

Concept 1	Concept 2	Concept 3	Concept 4
University students	SM / MM	COVID pandemic	Psychological wellbeing
student*	“sense ma*”	COVID*	“mental health”
OR	OR	OR	OR
pupil*	sense-ma*	coronavirus	“mental wellbeing”
AND	OR	OR	OR
“higher education”	sensema*	pandemic*	well-being
OR	OR	OR	OR
universit*	“meaning ma*”	lockdown*	wellbeing
OR	OR	OR	OR
graduate	meaning-ma*	quarantine*	resilience
OR	OR		OR
undergraduate	“psycholog* integrat*”		depression
	OR		OR
	“superord* construct*”		anxiety
	OR		OR
	religio*		stress
	OR		OR
	“personal construct”		trauma

Table 2*Inclusion and Exclusion Criteria for Selecting Studies.*

Inclusion criteria	Exclusion criteria
Studies involving general population or HE students	Not in English
Include a MM or SM model	Not psychology research
Look at how participants have made sense of the COVID-19 pandemic, qualitatively or quantitatively	Psychometric studies
Look at the relationship between this SM and psychological wellbeing	Theoretical reviews with no sample
	Focus on public health / policy
	Opinion / editorials / correspondence

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From the initial quantity of studies identified ($n = 1433$), 404 were removed by an automated duplicate finding tool, i.e., Mendeley. The remaining 1029 records' titles and abstracts were screened following the inclusion/exclusion criteria, removing a further 886. The remaining 143 records were retrieved and closely assessed for eligibility, resulting in 22 articles for full-text review, of which a further 14 were removed for the following reasons: five were eliminated due to their target populations being misaligned with the literature review's inclusion criteria; two were removed due to belonging to non-psychological fields of research (social work and sociology); six were excluded due to being purely theoretical discussions without a sample, and a further one for adopting a hermeneutic epistemological stance which could not be assimilated by the critical realist focus of this project. After these exclusions, 8 articles were deemed appropriate to be included in the final synthesis. One additional article of more recent publication was included during the final stages of the project. Consequently, a total of 9 articles were finally selected for synthesis. This selection process is schematised in the PRISMA flow chart in APPENDIX 1.

1.5.2 Quality Appraisal

In order to evaluate the quality of the reviewed studies, the Quality Appraisal for Diverse Studies (QuADS; Harrison et al., 2021) tool was used. This tool is a refinement of the previous Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh et al., 2012), which was originally developed for psychological literature reviews that included studies with mixed research designs. Harrison et al. (2021) developed the new version following feedback and critiques of the first version's limitations, e.g., lack of clarity in relation to scoring, lack of examples to guide interpretation of the criteria, biasing the assessment of quality in favour of quantitative research, etc. Although the authors portrayed the new tool (QuADS) as requiring further evaluation and refinement, they generally concluded that it had good inter-rater ($\kappa = .65$), face and content validity (Chauhan et al.,

2020; Harrison et al., 2021). The main limitation in the process of developing the QuADS was the low response rate from researchers who had used the original tool (n = 3 out of 101 identified investigators), which meant that many areas needing refinement or change may not have been identified.

Although the new tool included a scoring system to help evaluate quality (0 to 3 points for each domain), Harrison et al. (2021) were clear in indicating that its purpose was to stimulate discussion amongst research teams and to provide a framework “to explore the extent to which each quality criterion is met” (p. 16). They also clarified that there was no evidence to classify any given score as “indicative of high or low quality” (p. 16), and that therefore any suggested quality cut-off score would be arbitrary.

In summary, the QuADS tool was selected due to its suitability to assess groups of studies that have heterogeneous designs. APPENDIX 2 displays the results of its application to the studies included in this review, as well as the system's criteria.

Once this process was completed, the weakest area emerging amongst the studies was stakeholder involvement, a domain of which all studies but one took only very indirect consideration (i.e., reviewing previous research with the same population), but never carrying out direct stakeholder involvement in research design or execution. In addition, some of the studies did not describe their recruitment procedures in sufficient detail, e.g., by not indicating the type of sampling procedure followed (convenience, snowball, etc.). Despite these weaknesses, study quality was generally high, with all papers scoring highly in most domains (see APPENDIX 2).

1.5.3 Characteristics of the Selected Studies

Designs. Of the nine selected papers, five had cross-sectional designs; three combined PCP methods and Thematic Content Analysis (TCA), with one of these three also including a

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cross-sectional element to its design; the last of the studies had TCA only as its main methodology. The studies included samples taken from the general population ($n = 7$) and the student population ($n = 2$) of various countries. The two studies with students as participants were cross-sectional in their design.

Countries. Of the seven studies with general population samples, three were from the United States; one from the United States and Italy; one from Italy exclusively; one from the United Kingdom; finally, one large international study included participants from Asian countries (Bangladesh, China, India and Malaysia), European countries (Bulgaria, Germany, Italy, Israel, The Netherlands, Romania, Switzerland and the United Kingdom), and North and South American countries (Brazil, Puerto Rico, and the United States). The two remaining studies were participated by HE students from China and Poland respectively.

Samples. The samples ranged from 116 to 2,380 participants; with one exception, they were all studies based on online surveys. The total number of participants for these studies was 7,698, of which 4,402 (57.18%) were from the United States, 1,036 (13.45%) were from China, and 473 (6.14%) were from Italy. A proportion of 80.48% were from developed Western countries, while 16.95% were from Asian countries and 2.57% from the Latin American region. Participants identifying as white made 82.48% of this overall sample. Females were overall the most common gender in the studies, representing 66.96% of the combined sample. Ages ranged from 17 to 76 with an average of 37.12 years across all studies; the ages in the two student-based papers ranged 17 to 57, averaging 24.30 years. Finally, only six studies asked their participants about their level of education, with 83.12% of them having post-Secondary Education.

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In summary, the included studies were mostly representative of white females with Higher Education in developed Western countries. A summary table of the nine articles can be seen in APPENDIX 3.

1.5.4 Summary of Findings

After reading the studies in full, they were grouped into two broad areas in order to organise this review: 1- cross-sectional studies (covering general population and student population), and 2- Thematic Content Analysis and PCP studies (general population only).

Cross-sectional studies. The first two studies in the review (Milman et al., 2020a; Milman et al., 2020b) looked at how Core Belief Violation (CBV) and MM processes were related to psychological wellbeing during the first COVID wave (March to May 2020), with the second study focusing more on the relationships of these processes to the adherence to social isolation policies. The authors recruited N=2,380 and N=408 US adults respectively, who completed an online survey. They administered the Core Beliefs Inventory (Cann et al., 2010) to obtain a measure of Global Meaning (in terms of Park's 2010 MM model), the Integration of Stressful Life Experiences Scale (Holland et al., 2010) for measuring meaning made during the pandemic, as well as the brief Patient Health Questionnaire-4 (Kroenke et al., 2009) and the Coronavirus Anxiety Scale (CAS; Lee, 2020) to measure psychological wellbeing.

Milman et al. (2020a) examined whether CBV and disrupted MM mediated the symptoms of anxiety and depression caused by pandemic stressors like infection, death, unemployment, etc. They found that CVB and MM explained a greater proportion of the variance of mental health symptoms (36-48%) than did the pandemic stressors by themselves (13-20%). When the influence of CBV and MM was removed from the multiple regression

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model, exposure to COVID deaths no longer predicted levels of distress, which the authors saw as highlighting the importance of these psychological processes.

In their other study, Milman et al. (2020b) examined the role of social isolation in reducing COVID anxiety through increases in MM and reductions in CBV (i.e., invalidation of Global Meaning). They found that participants who reported engaging in social forms of transmission reduction, e.g., isolation, cessation of travel, etc, also reported reduced COVID anxiety. They found that this reduction was partially mediated by increased MM and reduced CBV. In other words, clinically significant anxiety about COVID was reduced by the psychological activity of MM and reduction of CBV, but also by the socially negotiated behaviour of “participating in transmission mitigation measures recommended by authorities” (p. 9), which according to the authors could foster “a sense of solidarity” (p. 9) in line with the predictions of Terror Management Theory (Greenberg et al., 2015). Therefore, social isolation appeared to have the effect of reducing rather than increasing pandemic anxiety despite its *a priori* stressful nature. Interestingly, Milman et al. (2020b) found that non-social forms of transmission reduction, e.g., hand washing, avoidance of touching one’s face, etc, were positively associated with COVID anxiety, a result that the authors highlighted as contrary to expectation.

Breen et al. (2022) sought to replicate the two studies above using a United Kingdom treatment seeking sample (N=183), who completed an online survey administering similar measures (see APPENDIX 3 for details). A proportion of 91% of the sample had had an immediate family member loss due to COVID-19. They observed that disrupted MM mediated all clinical outcomes, including functional impairment, grief, anxiety, depression and trauma symptoms, explaining 40-60% of their variance. The authors concluded that these results converged with a large body of previous evidence documenting how the capacity to find meaning in bereavement is related to improved grief outcomes. They also highlighted

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that extensive international research supported “the cross-cultural relevance of core symptoms of pandemic grief and their health and mental health correlates” (p. 9).

There were two cross-sectional studies that focused on the HE student population. The first one was conducted by Huang et al. (2022) with N=900 post-graduate medical students during the COVID-19 pandemic in China. The aim was to investigate whether the students' level of depression and sense of meaning in life (MIL) mediated the relationship between the students' family function and life satisfaction. As the authors expected, correlational as well as path analysis showed a positive association between family function and life satisfaction, which was mediated by the students' MIL and depression levels. The second of the student-based cross-sectional studies (Krok et al., 2022) aimed at investigating the role of religiosity and COVID risk perception in the psychological wellbeing of N=316 Polish young adults, through the mediation of MM and perceived stress. Psychological wellbeing was operationalised via measures of life satisfaction and positive affect. They found that the relationship between COVID risk perception and subjective wellbeing was mediated by both MM and perceived stress, while the relationship between religiosity and subjective wellbeing was mediated by MM only. Krok et al. (2022) interpreted this as highlighting the importance of MM “to predict life satisfaction and happiness in emerging adults during the COVID-19 pandemic” (p. 10).

Summary of cross-sectional studies. The studies above provided correlational evidence that generally supports the idea that increases in MM activity and reductions in challenged Global Meaning (including MIL and religious beliefs) predict improved anxiety and depression outcomes, reduced grief symptoms, family function and general life satisfaction. The strength of the associations ranged from weak to strong depending on the measures; for example, MM and life satisfaction correlated weakly ($r = .31$; Krok et al., 2022), while disrupted MM and grief correlated strongly ($r = -.74$; Breen et al., 2022).

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Although certain specific behaviours (e.g., self-isolation) and stressors (e.g., infections) had a direct relationship to distress, the mediation of MM and reduced challenges to Global Meaning explained a greater proportion of this phenomenon's variance.

These conclusions were limited by several factors in the studies. First, the correlational designs did not allow for the study of causation, and many of the relationships may work bidirectionally e.g., depression can cause low MIL, but the opposite may be true as well. Second, inattentiveness, low motivation and other problems may have affected the quality and reliability of participant responses as data collection was mostly online. Nonetheless, the only study within the selection that was carried out face to face (with Polish participants; Krok et al., 2022) showed results that were comparable with those of the US, UK and Chinese populations in the other studies. The apparent cross-cultural validity of the results was one of the strengths in this part of the review.

Thematic Content Analysis and PCP studies. The four studies in this part of the review took a more content focused approach to examine how different people have made sense of the COVID-19 pandemic. Cipolletta et al. (2022) used PCP and TCA as theoretical frameworks to explore the narratives of participants' worst experiences during the COVID-19 pandemic in adults in the US (N=741) and Italy (N=357). They included a correlational element to the study design in that they also examined the association of these narratives with peritraumatic distress symptoms. Some of the themes found in the narratives provided a good fit with PCP's transitions in construing (Kelly, 1955) i.e., anxiety, threat, guilt and constriction, and others were more idiosyncratic to participants. Overall, the most frequent themes (>20% frequency) concerned threat, constriction, stress and loss. US participants' narratives of their worst experiences were mostly related to personal life threats, while Italian participants indicated perceiving more threat to their ways of seeing the world; the former of these themes was the best predictor of peritraumatic stress symptoms. Consequently, these

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symptoms were significantly higher in the US sample, but also in participants identifying as female across samples. Older age was also significantly associated to higher peritraumatic distress.

Tomaino et al. (2021) used a similar PCP/TCA methodology to explore how the general Italian adult population (N=116) had coped with the imposed restrictions, what they felt they had learned from their experiences, and what their plans and hopes for the future were. The online survey with these questions was run from May to June 2020. Five broad themes with corresponding subthemes resulted from the analysis: difficulties (subthemes: work and school disruptions, health concerns, relational stress, etc), emotions (subthemes: uncertainty/confusion, worry, sadness, etc), coping with lockdown measures (subthemes: via activities, via mindset, etc), going back to normal (subthemes: looking forward to certain activities, going back to relationships, etc), and change (subthemes: awareness of the existentially important things such as relationships, appreciation of life, etc). The different subthemes were analysed using Kelly's professional diagnostic constructs (Kelly, 1955), with threat, hostility and aggression as the most frequent ones. The authors theorised that responses to the pandemic could be broadly conceptualised as fluctuating within a bipolar dimension of stillness (absence of change and responding to this with hostility, in the Kellian sense of extorting evidence for the anticipation that things were still as before COVID hit) vs dynamism (generating change through aggressive elaboration of new perspectives and actions).

The third of the studies in this category (Winter et al., 2021), using the same combination of PCP and TCA, carried out an analysis of the meaning made of difficult personal experiences of the pandemic by N=728 US adults from the general population. The participants' average scores on measures of PTSD were above the clinical cut-offs by almost one standard deviation. As in the studies above, the authors used the Kellian lens of

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transitions in construing as an overarching analytic tool. The identified themes were: anxiety (e.g., not knowing if one had been infected), threat (e.g., concerns about one's own death), loss of role (e.g., feeling unable to help), sadness (e.g., lack of connection to others), contempt (e.g., amongst people who held conflicting views; "mask wearers vs conspiracy nuts," p. 11), and stress (e.g., exposure to traumatic information). Recommendations were made in regard to interventions for each at social and individual levels. For example, following a relationship rupture (a frequent adverse event for students during the pandemic, as informed by Chen & Lucock, 2022), becoming more aware of the SOCs that have underlain one's and others' actions can help bring a sense of understanding and relational healing (Winter et al., 2021), as individuals may become able to "see" each other's construction processes and engage in what Kelly (1955) termed "sociality".

The last of the articles that used TCA methodology (Todorova et al., 2021) focused on exploring the commonalities in the meanings given to the pandemic by N=1,685 adult participants from 15 different countries (4 in Asia, 8 in Europe, and 3 from North and South America). This study was the central part of the online survey already described above in the Tomaino et al. (2021) study (of which that paper specifically focused on the Italian part). After the process of coding via TCA, Todorova et al. (2021) identified the following overarching themes: the presence or absence of others (e.g., looking forward to reconnecting), rediscovering oneself (e.g., personal growth), the meaning of daily life (e.g., increased appreciation of daily life), and rethinking societal values (e.g., losing freedoms, vaccine mandates, consumerism, etc). The rupture of connections and the need to reconnect with others was the most frequent theme in all 15 countries. The study included n=308 students across the 15 countries. This cohort frequently referred to "exhaustion due to the transitions and attention needed in the new situation of learning" (p. 846), mentioning remote lectures and studying in solitude.

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The authors concluded that, during the data collection period (May to June 2020, i.e., first wave), participants appeared to give meaning to the pandemic by reframing it in a positive light, e.g., it helped them clarify their values, experience personal growth, provided a greater appreciation of life, etc.

Summary of TCA and PCP studies. In terms of the Kellian transitions in construing, threat, anxiety, constriction, sadness, hostility and loss (including loss of role) were frequent themes, including mutual contempt due to differing socio-political views on aspects of the event. When threats were related to personal life, as opposed to threats to one's world view, participants tended to report the most peritraumatic stress symptoms.

As most of the studies were conducted during the first wave (April to September 2020), which would have included lockdown periods in many countries, many themes appeared to reflect a psychological dynamic between "stuckness" (lack of change and ensuing hostility towards this situation) vs. activity (generating behavioural or psychological alternatives through active elaboration of new actions and perspectives i.e., Kellian aggression).

Disruptions to relationships and longing to reconnect emerged as one of the most important and frequent themes across countries. This also showed in students' accounts of the pandemic, which referred to solitude due to teaching being remotely delivered.

Reframing the pandemic in a positive light (as opportunities to grow, appreciate life, etc) appeared to have been one of the ways in which meaning was made of the pandemic.

1.5.5 Overall Summary

Correlational evidence generally supported the notion that MM was related to improvements in various measures of psychological wellbeing. In addition, mediation studies

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showed that MM processes explained the greatest proportion of the variance in psychological distress.

Themes of threat and anxiety, amongst others, were prevalent in the studied samples; threats to personal life had a stronger association to peritraumatic distress symptoms than other forms of threat. In relation to the lockdowns, there was a tension between hostility towards the unchanging situation (in the sense of extorting validation for the construction that things had not really changed) and the desire to come up with new possibilities for one's life. Construing the COVID-19 pandemic as an opportunity for growth was an important way in which people made meaning out of the events.

The most frequent theme internationally and amongst the student population was relational in content, i.e., disruptions to relationships and longing to reconnect. Themes of contempt arising from conflicting socio-political views/conspiracy theories also emerged.

1.5.6 Limitations of the Systematic Literature Review

There were some limitations to this literature review that need to be considered. First, the use of PsychArticles reduced the number of searched journals, narrowing the scope of the initial results. Second, the review was not pre-registered in a database such as PROSPERO, which possibly increased the risk of review duplication and decreased the transparency of decision making. Third, the search terms did not include common expressions such as “made sense” or “made meaning,” potentially limiting the quantity of identified papers. Finally, one study was added to the review at a later stage due to the research team's knowledge of its existence, and not out of a systematic search process.

1.6 Rationale and Aims of the Study

As seen in the introduction and literature review sections, there is a considerable body of knowledge in relation to general aspects of MM processes and how these processes are

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linked to improved psychological wellbeing. Although the initial results of the literature search returned a high volume of cross-sectional studies (e.g., correlating levels of depression with coping skills such as distraction, etc), there was a generalised dearth of studies that included measures of SM or MM processes, and none focused on HE students in the UK.

Following Park's (2010) recommendation that MM research should explore methods that are alternative to self-report measures, and given PCP's previous application to the study of pandemics (Winter, 2018), the use of repertory grids and ladders provided one of these alternatives, while also allowing the exploration of HE students' construing of the COVID-19 pandemic. PCP-based studies of the event had so far used TCA to investigate the thematic content of people's constructions of events. However, there had been no investigation of how these meanings and constructions were structurally connected to one another in order to provide a global sense of SM or integration. Furthermore, there had only been a small amount of evidence of the influence that the aforementioned meanings and constructions had on psychological wellbeing (Cipolletta et al., 2022).

In contrast to TCA, PCP instruments like repertory grids and ladders are able to capture structural quantitative aspects of meaning (in addition to content-focused qualitative aspects), hence allowing for the study of how these meanings are integrated. Nonetheless, as seen in previous sections, one novel challenge here was testing whether grid and ladder measures such as construct subjective importance or number of rungs could be used to estimate the integrative capacity of constructs, that is, their superordinate nature.

Hence, this study aimed to cover four gaps in the literature about the SM/MM of the COVID-19 pandemic:

- 1- Focusing on the United Kingdom's HE student population.

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- 2- Investigating methods for identifying constructs with integrative capacity (i.e., SOCs) within repertory grids and ladders.
- 3- Investigating the content and other properties of the SOCs with which students were construing the COVID-19 pandemic, and whether these properties led to experiencing the event as integrated i.e., making sense.
- 4- Testing if this sense of integration is related to psychological wellbeing.

In addition, the study also sought to further explore HE students' construing of different key aspects of the pandemic, e.g., the conflicting socio-political views, relational issues, etc.

1.7 Research Questions

Given the PCP methodology to be used, this study therefore focused on the following overall research question: "how are HE students using SOCs to integrate or make sense of the COVID-19 pandemic and how does this influence their psychological wellbeing?" This general question was divided into three main research questions (RQs) and some subordinate exploratory measures or hypotheses:

Research Question 1: What sense have HE students made of relevant aspects of the pandemic? This was a necessarily broad and exploratory question, given that the aspects of the pandemic to be explored needed to be first co-developed with a group of student experts by experience (EBEs). These aspects would be represented by a range of elements in the repertory grid (as in Winter, 2018), as well as potentially some provided constructs that could be ladderred. The following were measurable aspects of the construing of the COVID-19 pandemic which could be extracted from these two PCP tools:

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RQ1 Measure 1: number of similarities/differences seen between the current self and each of the repertory grid elements; this would provide an indication of how students generally identified in relation to the pandemic social roles and socio-political stances.

RQ1 Measure 2: what elements are more likely to generate the most and least important constructs for participants? This would provide suggestions as to what issues may have been more and less important for students in their construing of the pandemic.

RQ1 Measure 3: are content frequencies in the top ladder constructs equally distributed, or are some types of content more frequent than others? This would allow an exploration of the types of content found in SOCs.

Research Question 2: Do repertory grid measures (construct integration and subjective importance) and ladder measures (number of rungs) serve to identify SOCs? To address this RQ, the following specific hypotheses were made (referred to the model of correlations shown in Figure 3):

RQ2 Hypothesis 1: The number of rungs in a ladder will correlate negatively with the integration of the initial construct (side 1 in Figure 3). In other words, less integrated (more concrete) constructs will require a higher number of rungs to reach the point at which the individual cannot come up with any more meanings during laddering.

RQ2 Hypothesis 2: The laddering of the most important construct (as subjectively valued by the individual) will generate a smaller number of rungs than the laddering of the least important construct (side 2 in Figure 3). This is because constructs that are seen as more important tend to be more superordinate and therefore closer to the point

at which individuals cannot generate any more rungs during the completion of a ladder.

RQ2 Hypothesis 3: The subjective importance given to constructs will be positively correlated with construct integration (side 3 in Figure 3). In other words, more integrated (more abstract) constructs will feel more important for the individual.

Research Question 3: How are the measures in RQ2 related to independent measures of meaning and psychological wellbeing? The specific hypotheses formulated to address this RQ were the following:

RQ3 Hypothesis 1: Construct integration will be directly associated to positive outcomes in measures of psychological wellbeing, including measures of meaning in life (MIL) and integration of stressful events. This is because higher construct integration implies a higher number of connections between constructs (i.e., superordinacy), resulting in SM and improved psychological wellbeing.

RQ3 Hypothesis 2: The level of abstraction (in terms of construct content) of the top construct on ladders will be directly related to positive outcomes in measures of meaning and psychological wellbeing as above. This is because more abstract content (e.g., moral or existential construing) tends to be superordinate and thus subsume or connect more constructs together, resulting in better psychological wellbeing.

RQ3 Hypothesis 3: The number of rungs in ladders will be positively related to positive outcomes in measures of meaning and of psychological wellbeing. The rationale is that individuals who generate more rungs when laddering a construct will have a higher awareness of their SOC's and will thus display more integrated construing, resulting in better psychological wellbeing.

2 Method

2.1 Design

This study followed a non-experimental cross-sectional correlational design. The main interest was in systematically observing the levels of concurrence of several factors as outlined in the research hypotheses. Although correlational designs do not allow for the identification of causal effects, relationships between factors as well as their directions can be ascertained, in order to inform the research questions (Coolican, 2009). The study used semi-structured interviews (repertory grid and laddering) as well as standard questionnaires collected at one point in time; the results were analysed using correlational and *ex post facto* comparative statistical methods as required.

2.2 Participants

All students from the University of Hertfordshire aged 18 or older were eligible to participate, regardless of school or level of study (undergraduate, Master's Degree or Doctoral).

2.2.1 Power Calculations

The statistical power was set at .80. This meant that to significantly detect a correlation of $r = .3$ (medium effect size) at $\alpha = .05$, a sample size of $N=85$ would be required (Cohen, 1992). To detect a medium effect size in a comparison of independent means at $\alpha=.05$, a sample size of $N=64$ would be required (Cohen, 1992).

2.2.2 Data Collection Planification

Because the administration of repertory grids and ladders can be a complex procedure that requires guidance by an interviewer, data collection was initially planned to be in person. However, as the available project resources would not allow for this to be done with enough participants to satisfy the power calculations above, a decision was taken to turn to online

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data collection. Previous studies have demonstrated that computerised administration of these techniques is feasible and valid, despite face to face methods being still considered the “gold standard” (Russell et al., 2004).

Online data collection has the advantages of reducing the chances of researcher intrusion, generally being less burdensome on participants and providing greater capacity to access participants who may otherwise be hard to reach (Harper & Thompson, 2012). However, as the researcher does not direct the interview, the absence of an exhaustive exploration of questions can be one of the obstacles. The chances for participant distraction and resulting unreliability of responses are also increased, although monitoring of these responses and their *ex post* exclusion has shown not to create systematic biases in collected samples (Thomas & Clifford, 2017).

2.3 Ethics

Ethics approval was requested from the Health, Science, Engineering and Technology Ethics Committee with Delegated Authority from the University of Hertfordshire. This was given on 9th June 2022 (see APPENDIX 4 for a copy of the approval letter).

Given that the data collection methods could potentially require participants to disclose personal opinions and political views, anonymity was emphasised by erasing all IP information from the Qualtrics platform, and by not requiring participants to provide their contact details. Another area of ethical concern was the burden on participants due to the length of the survey and the self-reflective effort required to generate personal constructs, especially those of a superordinate nature (R. A. Neimeyer et al., 2001). This was corrected by removing some of the initially planned instruments (e.g., the Impact of Events Scale – Revised, Weiss & Marmar, 1997), or by using their shorter versions (e.g., CORE-10, limiting the number of rungs to six for ladders, etc), as well as by introducing an economic

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compensation for the participants' time. A further area of concern was the possible distress induced in participants due to the nature and content of the survey; this was managed by including information for support services at the beginning and end of the survey.

2.4 Experts by Experience Consultation

As the elements to be used in the repertory grid needed to be meaningful for the target population, a panel of Experts by Experience (EBEs) composed of a diverse group of students from the university was created. The panel was created via snowball sampling by requesting acquaintances of the Principal Investigator to publicise the opportunity to contribute to this research amongst their own social groups. Participating EBEs were all compensated with a £15 voucher for their time.

A group of seven students agreed to provide consultation, and met with the Principal Investigator at different times for a total of five meetings between the months of February and June 2022. There were four males and three females of European, Asian and African backgrounds in the group, with ages ranging 19 to 33; four were undertaking Undergraduate level studies, one was completing a Master's Degree, and two were Doctoral level students.

An initial set of possible elements for the repertory grid was proposed by the study team, partially based on previous PCP pandemic research (Winter, 2018; Figure 4).

Figure 4

Initially proposed elements

1	2	3	4	5	6	7	8	9	10	11
SELF NOW	SELF before pandemic	SELF during lockdown	IDEAL SELF	Person who thinks everyone should get vaccinated	Person who stands with the official narratives	Person who is unsure / ambivalent	Person who does not care and skips all restrictions	Person who thinks restrictions are authoritarian	Person who thinks the pandemic is designed	CORONAVIRUS as if it were a person

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After being introduced to the research aims and methodology, the EBE consultants were presented with the initial set of elements for their perusal. They were asked about the elements' perceived relevance and representativeness of the variety of social roles and conflicting socio-political stances people may have taken in relation to the pandemic. All members of the panel seemed in agreement that conflicting views on the pandemic was a highly relevant issue that was contributing to students' interpersonal stress, and provided some personal examples for illustration. Following this process, some elements were eliminated and new ones proposed; changes were also made to their wording with the aim of clarifying their meaning. The final set of elements can be seen in Figure 5. There was generalised agreement about the significance of exploring students' constructs on the issue of vaccination.

In addition, as one of the concerns was the potential burdensomeness of the survey on participants, the EBE consultants were asked to run through a pilot version. They provided their opinion on the degree of effort required to complete the survey, as well as some recommendations and ideas to mitigate this. They also identified areas in which the online instructions were unclear and provided simpler alternatives.

2.5 Recruitment and Data Collection

The study relied on convenience sampling (Coolican, 2009). While one of the advantages of this method is its cost-effectiveness, which was required due to the project's logistical constraints, its potential to produce a non-representative final sample is high.

Recruitment commenced on July 2022 using two streams: 1- students who accessed the study survey directly via an internet link and, initially, had no compensation for their participation, and 2- students who accessed the study via the SONA Psychology Research Participation System in exchange for 1.5 academic credits.

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Advertising for the first of the recruitment streams initially relied on online posting of flyers on the university's official social media accounts, i.e., Twitter and Instagram, as well as on Facebook and Microsoft Team's student groups. As the number of participants remained low, a compensation voucher of £25 was offered from September 2022 for each individual participant, with a limit of 40 vouchers. Despite this measure, recruitment remained low. In order to better publicise the study, 250 printed leaflets (APPENDIX 5) were distributed between October-December 2022 in several communal areas of the University campuses, i.e., food/drink/social areas, as well as the main reception. This resulted in a rapid increase in participation, which included a small number of fraudulent responses, i.e., individuals who attempted to complete the study more than once. To prevent this type of activity, a modification of the protocol was introduced in late October 2022 by which students were required to provide their university email address (thus losing their anonymity) if they wanted to claim the voucher. In this way, 47 valid responses were collected through this recruitment stream before all vouchers had been granted, closing in early December 2022. All the protocol modifications described above obtained approval by the University of Hertfordshire's Ethics Committee.

Although the second recruitment stream also had an initially slow response rate, it saw increased participation from November 2022, reaching a total of 54 valid responses by the closing date of 31/12/2022. A request was made to the Ethics Committee to extend their approval period to include this date (see APPENDIX 4).

2.5.1 Sample Descriptives

The final sample was 64% female and 31% male, with 5% identifying as belonging to other genders. Age ranged from 18 to 53 years, with an average of 24.35; a proportion of 69.70% of the sample was between 18 and 24 years old. Undergraduate students made 62% of the sample, while Master's Degree and Doctoral students made 34% and 4% respectively.

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The largest ethnicity group was white people (44.55%), followed by Asian people (29.70%) and black individuals (12.87%). In terms of religion, people declaring no religion, Christians and Muslims were predominantly represented with proportions of 29.70%, 28.71% and 26.73%.

In order to assess the representativeness of the sample, data from the 2021/22 university census was obtained (EDI Office, 2022). During that academic year, there were 31,942 students at the university. The table in APPENDIX 6 shows a detailed comparison of the sample with the said census. Although females, 18 to 24-year-olds, white people, and those who declare no religion were overrepresented in the collected sample by margins of around 10-15%, the data appeared to be sufficiently representative of the student population at the university. A clear exception to this was the overrepresentation of students from the School of Life and Medical Sciences (59.41%), an effect of having used the SONA system for recruitment.

2.6 Measures

2.6.1 PCP semi-structured interviews

Repertory Grid. As described earlier, the repertory grid technique or “rep grid” serves to elicit some of the idiosyncratic constructs through which people understand different elements of the world (Fransella et al., 2004). In the case of the present study, elements were developed in consultation with the EBE panel (see section above), and were related to people’s social roles during the COVID-19 pandemic. The online survey guided participants to elicit their constructs following the dyadic comparisons method (Landfield, 1971) described in the introduction section. In order to control for elicitation method effects on rep grid measures, the order and presentation of the comparisons was standardised (Feixas et al., 2004; G. J. Neimeyer et al., 2005). The resulting fixed protocol of comparisons and final repertory grid used in the study can be seen in Figure 5.

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Lastly, participants were asked to rate the elements on each of the constructs using a seven-point Likert scale, in which one and seven indicated the left and right extremes of the construct respectively, and four indicated the middle point.

Measures Extracted from Repertory Grids. Once grids were completed, the following measures were calculated from each:

Construct Intensity. The intensity measure (Bannister, 1960) is based on the correlations between constructs and is conceptualised to be an indicator of the amount of connections or linkages amongst them (Herrán-Alonso et al., 2020; Kovářová & Filip, 2015). In this way, low intensity indicates low construct integration (and thus high differentiation) and *vice versa*.

Construct intensity was calculated using the R-based OpenRepGrid programme (Heckmann, 2016). OpenRepGrid calculates intensity by summing the squared Pearson correlations (R^2) of each individual construct with all other constructs, and dividing this by the number of constructs minus one. A Total Intensity score can also be obtained by averaging the individual intensities of all constructs in the grid. This measure would help address aspects of RQ2 and RQ3.

Construct Subjective Importance. Participants were asked to rank the 10 constructs generated in the rep grid by their order of perceived importance (R. A. Neimeyer et al., 2001). This would address part of RQ2.

Frequency of Elements from which the Most and Least Important Constructs Were Elicited. As part of the exploration of construing in RQ1, there was interest in investigating whether particular elements in the grid were systematically eliciting either the most important or the least important constructs.

Number of Differences/Similarities Seen Between the Self and Each of the Elements.

Also as part of RQ1, this measure was derived from the dyadic comparisons procedure, during which participants were asked to indicate whether they saw more of a similarity or more of a difference between pairs of elements (see Figure 5). This choice constituted a measure to help find out about important aspects of students' constructions of the pandemic i.e., what elements/roles they saw themselves more similar or different to.

Laddering Technique. As seen in the introduction, laddering (Hinkle, 1965) is a semi-structured interview that elicits people's SOCs, a claim about which there is a generalised agreement amongst authors (Fransella, 2005; Hardison & Neimeyer, 2012; Korenini, 2014; Neimeyer et al., 2001). The technique consists of asking participants to choose their preferred pole of a given construct and then providing a reason for why they see that pole as preferable to the other; this provides one of the poles for a new more superordinate construct. Next, the contrasting pole is elicited, and the process is repeated until the person feels they cannot produce further constructs (Procter & Winter, 2020).

In this research, participants were asked to ladder three constructs:

- 1- "Being vaccinated vs not being vaccinated": This construct was provided to the participants rather than generated by them, and sought to explore students' constructions of vaccination, one of the most important themes in people's views of the pandemic (Todorova et al., 2021).
- 2- The grid construct valued as the most important.
- 3- The grid construct valued as the least important.

One challenge with ladders is the fact that there is no "real" end point to them other than the participant's subjective sensation that they have reached the end. As there was a need

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to limit the burden on participants, a decision was made to limit ladders to a maximum of six rungs in this study. Although the laddering literature has usually reported seven as the average number of rungs generated by individuals (Bannister & Mair, 1968; R. A. Neimeyer et al., 2001), six was considered a sufficient number of rungs based on the team's clinical experience with the technique.

Measures Extracted from Ladders. Four measures were extracted from the ladders:

Number of Ladder Rungs. The number of "ladder levels" that participants produced when completing the three ladders was counted. This measure was linked to RQ2.

Number of Choices on each pole of the "being vaccinated vs not being vaccinated" construct. This would help explore an important aspect of the students' construing of vaccination i.e., whether they systematically had a preference for one of the poles.

This measure pertained to RQ1.

Construct Content. As described in the data analysis section below, the content of the top constructs on each of the three ladders was analysed using the Classification System for Personal Constructs (CSPC; Feixas et al., 2002). This would allow the quantification of content frequencies enabling an analysis of the types of issues that SOCs are concerned with. This measure was related to the exploratory aspects of RQ1.

Content Level. The CSPC is designed following a hierarchical content arrangement of more concrete (e.g., specific interests) to more abstract (e.g., existential) content categories (see APPENDIX 9). This allows the utilisation of this hierarchy as an ordinal variable with which to test aspects of RQ3. It is important to remember that this is an inverse measure, i.e., a value of 1 signifies a higher content level than a value of 9 (see APPENDIX 9).

2.6.2 *Meaning and Psychological Wellbeing Measures*

These measures were all related to the hypotheses in RQ3. A copy of each can be found in APPENDIX 7.

The Meaning in Life Questionnaire (MLQ). The MLQ (Steger et al., 2006) is a 10 item measure of “the sense made of, and significance felt regarding, the nature of one’s being and existence” (p. 81). It is composed of two subscales: 1- Presence of Meaning, which quantifies how much a person feels their life has meaning, and 2- Search for Meaning, which measures the efforts that the individual makes to find this meaning and/or understanding. The internal reliability of both subscales has been found to be strong, with Cronbach’s alpha values of $\alpha=.81$ and $\alpha=.92$ respectively (Steger et al., 2006). The external reliability values are also adequate, with one-month test-retest values of $r=.70$ for Presence of Meaning and $r=.73$ for the Search for Meaning subscale. Higher scores indicate higher meaning in life (MIL). The MLQ does not have cut-off scores, and there are no available norms. The Presence of Meaning subscale has been associated with constructs indicative of wellbeing such as positive emotions, extraversion, or agreeableness, while the Search for Meaning has been significantly correlated with a relatively opposite set of constructs, e.g., neuroticism, depression, or fear (Steger et al., 2006).

In the current study, Cronbach’s alpha values were $\alpha=.89$ for the Presence of Meaning subscale, $\alpha=.83$ for the Search for Meaning subscale, and $\alpha=.74$ for the Total MLQ. An Exploratory Factor Analysis (EFA) with maximum likelihood extraction and promax rotation was carried out in order to test the instrument’s factorial structure (N.B. all EFAs carried out and reported below used this methodology). A Parallel Analysis (PA; Horn, 1965) with 500 replications was carried out on the EFA’s results advising the retention of two factors, which replicated the MLQ’s original factorial structure (Steger et al., 2006).

The Integration of Stressful Life Experiences Scale (ISLES). The ISLES (Holland et al., 2010) is a 16-item measure of the extent to which the respondent has integrated the memories of a stressful life event into a coherent life story that creates a feeling of purpose. It is made of two subscales i.e., Footing in the World, “the extent to which a participant felt oriented or disoriented in the world following a stressful life event” (p. 338), and Comprehensibility, “the degree to which one had made sense of or found a way to comprehend a stressful life event” (p. 338). Good Cronbach’s α internal consistency values are reported for each of the subscales and the total score ($\alpha=.80$ to $.94$). Moderate test-retest values ($r=.48$ to $.59$) have been found in a 3-month interval, which the authors have argued is theoretically expected as the process of integration takes place gradually over time. Higher scores in the ISLES indicate higher integration of events. As with the MLQ, there are no cut-off scores or norms available for this measure.

The Cronbach’s alpha internal reliability value in this study was $\alpha=.89$ for the Footing in the World subscale, $\alpha=.75$ for the Comprehensibility subscale, and $\alpha=.91$ for the total score. The PA performed as part of the EFA advised a one factor solution, contrary to the two-factor structure reported by Holland et al. (2010). Thus, the ISLES was treated as a one-factor instrument in this study, using the total score only.

In its original form, the ISLES requires the participant to complete the questionnaire regarding “the most stressful life event [they] experienced in the past two years” (see APPENDIX 7). For the purposes of the current study, the text was adapted to “... with regard to the most stressful life event you experienced during the COVID-19 pandemic.”

The Clinical Outcomes in Routine Evaluation 10 (CORE-10). The CORE-10 (Barkham et al., 2013) assesses general clinical state using ten items. These were selected from the original and longer CORE-OM (Evans et al., 2002) that contained four subscales:

subjective wellbeing, problems/symptoms, general functioning, and risk. Six of the ten items in the CORE-10 belong to the problems/symptoms subscale, three to general functioning and one to the risk subscale. The CORE-10's convergent validity with the original measure is $r = .92$, and its internal consistency has been reported to be $\alpha = .90$ (Barkham et al., 2013).

Higher scores indicate higher psychological distress. Barkham et al. (2013) reported the cut-off score to be 11 for significant general psychological distress and 13 for clinical depression.

The Cronbach's alpha value for the CORE-10 in this study was $\alpha = .87$. A one-factor structure solution was obtained by the EFA as recommended by the PA.

The Coronavirus Anxiety Scale (CAS). The CAS (Lee, 2020) is a 5-item screen measure that assesses dysfunctional anxiety related to the COVID-19 pandemic. It has shown valid psychometric properties ($\alpha = .93$) and a consistent factorial structure (Lee, 2020). The cut-off score for significant coronavirus anxiety is equal or greater than nine.

In the current research, the Cronbach's alpha value was $\alpha = .88$ for the CAS, and a one-factor solution was found by the EFA/PA.

2.7 Procedure

Once students accessed the Qualtrics survey and accepted to take part after reading the participant information sheet (APPENDIX 8), they were asked to complete a demographic information page. Following this, they were guided to complete the repertory grid, commencing by assigning people known to them to the roles described in the elements (Figure 5). The next part would take them through the element comparisons shown in Figure 5 in order to generate the constructs on which, subsequently, the elements would be rated. Finally, the constructs were ranked for subjective importance.

The next part of the survey guided participants through the three ladders. First, the ladder with the provided construct regarding vaccination was administered. The two

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remaining ladders (most and least important constructs) were administered in random order, with some participants laddering their most important construct first and others doing this in the second place. This feature of the survey sought to control for possible confounds arising from the order of ladder presentation, e.g., participants may be more tired during the third ladder and give less reliable or careless responses (Thomas & Clifford, 2017).

Lastly, participants would complete the meaning and psychological wellbeing questionnaires i.e., MLQ, ISLES, CORE-10, and CAS.

At the end of the survey, participants were able to leave comments and feedback via a free text box. Twenty-five people used this feature, whose verbatim feedback can be seen in APPENDIX 12. Those who also left an email address were contacted by the Principal Investigator responding to their queries.

2.8 Data analysis

2.8.1 Grid Pre-processing

Before intensity and other structural measures could be calculated, the collected repertory grids required an alignment of the direction of construct scores (Bell, 2010; Fransella et al., 2004; Mackay, 1992). This is because, during the administration of a repertory grid, direction of scoring is arbitrarily assigned to each of the constructs, which has been shown to have a significant effect on the values of structural measures like intensity (Mackay, 1992). Several methods have been proposed in order to ensure consistency in this regard. In this study, we aligned the construct scores using the ratings given to the ideal self as a reference point, as recommended by Mackay (1992). The process was carried out using the OpenRepGrid programme (Heckmann, 2016).

The intensity value could not be calculated for 19 grids, due to there being constructs that had no score variability within their row, i.e., all scores were the same number.

2.8.2 *Content Analysis*

The content of the top construct from each of the three ladders was analysed using the Classification System for Personal Constructs (CSPC; Feixas et al., 2002; Neimeyer et al., 2001). This is a system for coding the content of personal constructs predicated on the notion of a hierarchical order of content types, ranging from concrete content at the lower level (e.g., specific interests) to highly abstract content (e.g., existential) at the highest level. The original CSPC by Feixas et al. (2002) consisted of six categories with the following top to bottom hierarchical order: moral, emotional, relational, personal, intellectual/operational and values/interests. As these categories were observed to only consist of dispositional or personality-type constructs, they were supplemented with two additional categories by Neimeyer et al. (2001): existential (which they situated above 'moral'), and concrete descriptors (situated below 'values/interests'). Finally, one more category was added by Compañ et al. (2011) in their study of the construing of fibromyalgia: physical health. The authors did not indicate what level this category occupied within the hierarchy of content abstraction, hence it was decided that it would be located at the bottom, as equivalent in concreteness to the 'concrete descriptors' category. See APPENDIX 9 for a table displaying all the categories of the CSPC in hierarchical order.

The CSPC has reported good interrater reliability using the kappa coefficient (Cohen, 1960) across studies, with independent coding values ranging from $\kappa=.70$ to $\kappa=.89$, while values after a discussion of coding differences have ranged from $\kappa=.91$ to $\kappa=.99$ (Gutiérrez-García, 2019).

In order to ensure appropriate application of the CSPC, the Principal Investigator initially carried out a consultation with Dr Guillem Feixas, one of the system's creators. Following, the process of coding was undertaken independently by the Principal Investigator and an additional coder external to the University of Hertfordshire, who had experience of

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working in mental health services and familiarity with the PCP approach. The additional coder received 2 hours and 45 minutes of specific training on the CSPC. In this way, $n=303$ constructs were independently processed by both coders, resulting in an initial 71.62% agreement on the categories; the Cohen's kappa value corresponding to this percentage was $\kappa=.66$, indicating "substantial agreement" according to Landis and Koch's (1977) classification. This was followed by a meeting to discuss the disagreements, which resulted in a subsequent agreement proportion of 95.71% and a kappa value of $\kappa=.95$, indicating "almost perfect" accordance. Seven constructs were classified as invalid by both coders, thus the final sample of consisted of $n=296$ codes (see APPENDIX 10).

2.8.3 Normality Checks and Statistical Methods Used

The programme used for data analysis was SPSS 24. Initially, the collected data was checked for normality by examining the differences between means and medians, the kurtosis and skewness statistics (see APPENDIX 10 for these descriptives), as well as by visual exploration of histograms (Coolican, 2009). All interval level variables satisfied the criteria for normality, with two exceptions: the number of ladder rungs, and the CAS.

Parametric and non-parametric analyses were used accordingly. For group comparisons, the Wilcoxon, Mann-Whitney tests, and t-tests were used as needed (Coolican, 2009). Associations were tested with the Pearson correlation coefficient when parametric analyses or biserial correlations were appropriate, and with Kendall's Tau for the non-parametric analyses. Kendall's Tau was used instead of the more habitual Spearman's Rho due to its superior robustness. The Chi-square statistic (χ^2) was also used as an additional measure of association when required. Given that SPSS does not feature the possibility of *post hoc* testing for χ^2 , this was carried out with the aid of an Excel spreadsheet.

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Significance testing was two-tailed where no hypotheses had been made. One-tailed significance was only considered if the significance was in the hypothesised direction. Only the latter will be indicated in the text; where nothing is indicated, assume two-tailed testing was done.

Due to the number of statistical tests to be conducted, consideration was given regarding the use of the Bonferroni correction in order to decrease the chance of false positive results, i.e., type 1 errors. This method has however been criticised for being overconservative (Streiner & Norman, 2011). Several authors have argued that multiple tests can be run without such correction if hypotheses have been pre-formulated (Perneger, 1998), and recommended that researchers should simply describe “what was done and why” (Perneger, 1998; p. 1237).

All demographic groups and categories were independently examined for each of the analyses; when differences were found, they are reported.

3 Results

3.1 Research Question 1

Measure 1. In relation to whom the students saw themselves as similar or different to, the findings are presented in Table 3. Chi-square analyses showed that, although the students mostly saw themselves as similar to the elements “Self in a future pandemic” and “A person who thinks everyone should get vaccinated”, they nonetheless predominantly construed themselves as different to most of the elements, including “Self at worst moment during the pandemic”, “A person who thinks the pandemic is planned”, etc. There were two elements that the students did not construe as especially different or similar to themselves ($p > .05$). These were “A person who always stands with the official government messages” (51.50% chose a similarity) and “A person who is unsure or has mixed feelings about most issues related to the pandemic” (56.40% chose a similarity).

Table 3

Frequency of Choices for Similarities or Differences Between the Current Self and the Grid

Elements

	Current Self		χ^2	p
	seen as mostly...	Proportion of sample		
Self in a future pandemic	Similar	69.30%	15.059	<.001**
APW thinks everyone should be vaccinated	Similar	64.64%	7.218	<.01**
Coronavirus as if it were a person	Different	84.84%	44.446	<.001**
Self at the worst moment during the pandemic	Different	78.78%	29.950	<.001**
APW thinks the pandemic is planned	Different	76.77%	25.752	<.001**
Self before the pandemic	Different	71.71%	16.644	<.001**
APW thinks restrictions were authoritarian	Different	67.67%	10.782	<.01**

Note: *= $p < .05$; **= $p < .01$; APW = “A person who”

Measure 2. In regards to whether some elements tended to generate the most and least important constructs more frequently than other elements, Chi-square analyses showed

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an effect for both the most important constructs ($\chi^2(9, 101) = 25.634, p = .002$) and the least important constructs ($\chi^2(9, 101) = 18.901, p = .026$). The *post hoc* analyses (Table 4) showed that the most important constructs primarily came from elements that concerned a possible future pandemic, the pre-pandemic self, and COVID itself.

Equally, the remaining *post hoc* tests in Table 4 showed that elements related to whether government restrictions were authoritarian or whether the pandemic was a planned event tended to elicit the least important constructs for students. For simplicity, Table 4 presents the highest frequencies only; for a complete table of frequencies see APPENDIX 11.

Table 4

Elements From Which the Most and Least Important Constructs Tended to Be Elicited

Most Important Construct	Observed n	Expected n	Residuals	χ^2	Sig.
Self in a future pandemic	19	10.1	8.9	79.210	<.001**
Self before the pandemic	18	10.1	7.9	62.410	<.001**
Coronavirus as if it were a person	13	10.1	2.9	8.410	<.01**
Least Important Construct					
APW thinks restrictions were authoritarian	18	10.1	7.9	62.410	<.001**
APW thinks the pandemic is planned	16	10.1	5.9	34.810	<.001**

Note: *= $p < .05$; **= $p < .01$; APW = "A person who"

Measure 3. As for the content frequencies of the three ladders, the results are detailed next. In relation to ladder 1 (concerned with being/not being vaccinated), a proportion of 86.90% of the sample chose "being vaccinated" over "not being vaccinated" as the option they preferred to describe themselves, which was a significant deviation from the 50% chance for each option ($\chi^2(1, 99) = 53.828, p < .001$).

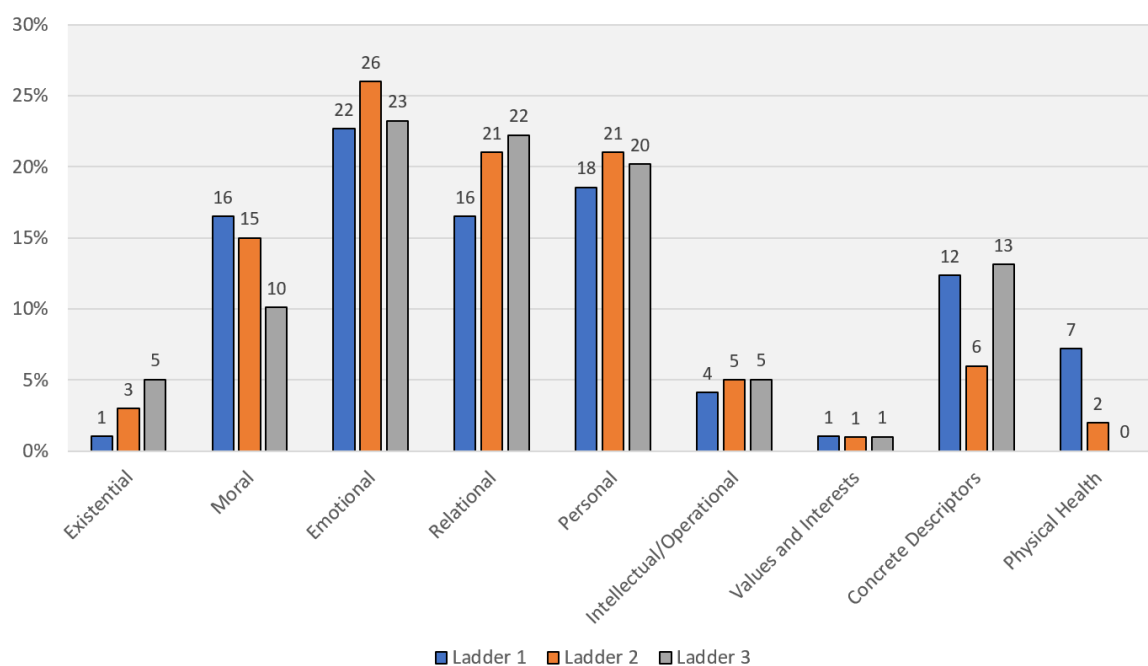
The Chi-square analyses indicated that some content categories were significantly more frequent than others in ladder one ($\chi^2(8, 97) = 45.052, p < .001$), ladder two ($\chi^2(8, 100)$

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= 67.220, $p < .001$), and ladder 3 ($\chi^2(7, 99) = 41.040, p < .001$). Figure 6 shows the percentages and frequencies for each category and each ladder. Table 5 displays the *post hoc* comparisons indicating which content categories significantly deviated from the hypothesis of equal frequencies.

Figure 6

Percentages and Frequencies for Each CSPC Category in Ladders 1, 2 and 3



Note: numbers on top of bars represent frequencies.

An inspection of Figure 6 and Table 5 shows that the frequencies of emotional, relational and personal content were significantly above the equal distribution expectation in all three ladders, while existential, intellectual/operational and values/interests were significantly below. Moral content was significantly above the expectation for ladder 1 and ladder 2 (the most important construct). Concrete content tended to be present to the expected levels in ladders 1 and 3 (the least important construct) and below the expectation in ladder 2.

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Physical content was completely absent from ladder 3 and below the expected frequency in ladders 1 and 2, although slightly more present in the former.

Table 5

Chi-Square Analysis of Content Frequencies in Ladders 1, 2 and 3

Ladder 1	Observed n	Expected n	Residuals	χ^2	Sig.
Emotional	22	10.8	11.2	125.938	<.001**
Personal	18	10.8	7.2	52.160	<.001**
Moral	16	10.8	5.2	27.272	<.001**
Relational	16	10.8	5.2	27.272	<.001**
Concrete descriptors	12	10.8	1.2	1.494	0.222
Physical	7	10.8	-3.8	14.272	<.001**
Intellectual/Operational	4	10.8	-6.8	45.938	<.001**
Existential	1	10.8	-9.8	95.605	<.001**
Values and Interests	1	10.8	-9.8	95.605	<.001**
<hr/>					
Ladder 2					
Emotional	26	11.1	14.9	221.679	<.001**
Relational	21	11.1	9.9	97.790	<.001**
Personal	21	11.1	9.9	97.790	<.001**
Moral	15	11.1	3.9	15.123	<.001**
Concrete descriptors	6	11.1	-5.1	26.123	<.001**
Intellectual/Operational	5	11.1	-6.1	37.346	<.001**
Existential	3	11.1	-8.1	65.790	<.001**
Physical	2	11.1	-9.1	83.012	<.001**
Values and Interests	1	11.1	-10.1	102.235	<.001**
<hr/>					
Ladder 3					
Emotional	23	12.4	10.6	112.891	<.001**
Relational	22	12.4	9.6	92.641	<.001**
Personal	20	12.4	7.6	58.141	<.001**
Concrete descriptors	13	12.4	0.6	0.391	0.532
Moral	10	12.4	-2.4	5.641	.017*
Existential	5	12.4	-7.4	54.391	<.001**
Intellectual/Operational	5	12.4	-7.4	54.391	<.001**
Values and Interests	1	12.4	-11.4	129.391	<.001**

Note: *= $p < .05$; **= $p < .01$

3.2 Research Question 2

Hypothesis 1. In relation to hypothesis 1, a Kendall's Tau test of association was run between the initial construct's intensity value of ladders two and three and their respective number of rungs, with no association being found for either ($\tau_b = -.032$, $p > .05$ one-tailed for ladder two; $\tau_b = .041$, $p > .05$ one-tailed for ladder three). Thus, construct intensity and number of rungs were not associated, as had been hypothesised.

Hypothesis 2. In order to test this hypothesis, a Wilcoxon Signed Rank Test was performed. There was no difference ($p > .05$ one-tailed) in number of rungs between the ladder originating in the most important construct (ladder two; $\bar{x}=4.33$, $SD = 2.11$) and the ladder originating in the least important construct (ladder three; $\bar{x}=4.05$, $SD = 2.40$), thus this hypothesis was not confirmed either.

Hypothesis 3. For hypothesis 3, a Kendall's Tau correlation was performed to test the association between the subjective importance given to each construct and their individual intensity values, hypothesised to be a negative one. No significant correlation was found ($\tau_b = -.046$, $p > .05$ one-tailed).

A second way of testing hypothesis 3 was to compare the intensity values of the most and least important constructs. A t-test found no differences ($t(81) = 1.655$, $p = .051$ one-tailed) between the average intensities of the most important construct ($\bar{x} = .326$, $SD = .180$) and the least important construct ($\bar{x} = .295$, $SD = .174$). However, a comparison between the average intensity of all constructs in the grid taken together ($\bar{x} = .331$, $SD = .156$) and the least important construct was significant ($t(81) = 3.079$, $p = .001$ one-tailed), with a small effect size ($d = .217$). Conversely, the same comparison carried out with the most important construct was not significant ($p > .05$ one-tailed). Therefore, this hypothesis only received partial support.

3.3 Research Question 3

Before addressing the specific hypotheses for this research question, the differences found when testing for the instruments' clinical thresholds and for group effects will be presented.

CORE-10. The sample average CORE-10 score was 13.98 (SD = 8.72), with 60.40% of the students above the 11-point cut-off for general psychological distress. A t-test showed that this average was significantly higher than the cut-off ($t(99) = 3.418, p = .001$), although it was not higher than the clinical depression cut-off of 13 points ($t(99) = 1.124, p = .264$). An independent samples t-test showed there were no significant differences between males ($\bar{x} = 12.10, SD = 6.68$) and females ($\bar{x} = 14.33, SD = 9.47; t(93) = -1.176, p = .242$). In addition, there was a negative association between CORE-10 score and age ($\tau_b = -.247, p = .001$), that is, older participants tended to have less psychological distress.

CAS. In relation to CAS, its average score was 1.39, with 94.00% of the sample below the 9-point cut-off for significant Coronavirus anxiety. There was however, a weak but significant Kendall's Tau correlation between this type of anxiety and being a person from the global majority group ($\tau_b = .199, p = .036$), as well as a significant difference between this group's mean ($\bar{x} = 2.16, SD = 3.75$) and that of white participants ($\bar{x} = .41, SD = 1.04; z = -2.099, p = .036$) as calculated with a Mann-Whitney test. The effect size for this comparison was large ($\eta^2 = .014$).

ISLES. Similarly, there was a negative biserial correlation between the scores on the ISLES (integration of events) and being from the global majority ($r_b = -.271, p = .006$), and a medium size difference between this group's mean ($\bar{x} = 53.43, SD = 13.36$) and the mean of white participants ($\bar{x} = 60.07, SD = 9.45; t(98) = 2.791, p = .006; d = .573$) as tested by an

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independent samples t-test. A further group effect was found for age, with older participants tending to have higher event integration, i.e., ISLES scores ($\tau_b = .166$, $p = .021$).

Correlations Amongst Meaning/Psychological Wellbeing Measures. The correlations between the different measures that were used in this part of the research can be seen in Table 6. MIL as measured by the total MLQ score is related to better integration of events (ISLES), with the MLQ's subscales contributing to this correlation in opposite directions. Psychological distress (CORE-10) is negatively related to both MIL and integration of events (MLQ and ISLES), and the CAS is only negatively related to the latter. The theory-relevant trends emerging from these correlations will be accounted for in the discussion section below.

Table 6

Pearson Correlations Between Measures of Meaning and Psychological Wellbeing

	MLQ Presence of Meaning	MLQ Search for Meaning	MLQ TOTAL	ISLES TOTAL	CORE-10 TOTAL
MLQ Presence of Meaning	1				
MLQ Search for Meaning	-.083	1			
MLQ TOTAL	.731**	.620**	1		
ISLES TOTAL	.462**	-.113	.283**	1	
CORE-10 TOTAL	-.503**	.284**	-.199*	-.500**	1
CAS TOTAL (τ_b)	-.085	.078	-.030	-.220**	.260**

Note: *= $p < .05$; **= $p < .01$; MLQ: Meaning in Life Questionnaire; ISLES: Integration of Stressful Life Experiences Scale; CORE: Clinical Outcomes in Routine Evaluation; CAS: Coronavirus Anxiety Scale; τ_b : Kendall's Tau correlation was used for this measure

Hypothesis 1. In relation to the first hypothesis within RQ3, the overall construct intensity was found to be positively related to the scores on the MLQ Presence of Meaning subscale ($r(80) = .187$, $p = .046$ one-tailed) and on the ISLES ($r(79) = .260$, $p = .009$ one-

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tailed), but no other associations under this hypothesis were found (Table 7). This constituted partial support for the hypothesis that higher construct intensity would be related to improved measures of meaning and psychological wellbeing.

Table 7

Pearson Correlations Between Construct Intensity and Meaning / Psychological

Wellbeing Measures

	Intensity of all constructs	Intensity of most important construct	Intensity of least important construct
MLQ Presence of Meaning	.187*	.053	.073
MLQ Search for Meaning	-.015	-.064	-.024
MLQ TOTAL	.132	-.006	.038
ISLES TOTAL	.260*	.106	.098
CORE TOTAL	-.166	-.133	-.100
CAS TOTAL (τ_b)	.063	.021	.114

Note: * = $p < .05$ one-tailed; τ_b : Kendall's Tau correlation was used for this measure

Hypothesis 2. One-tailed testing revealed only one weak correlation in the hypothesised direction between the hierarchical content level in ladder 3 and the MLQ Search for Meaning subscale ($\tau_b = .134$, $p = .036$ one-tailed), i.e., more concrete ladder content was weakly related to increased search for MIL. This was very partial support for the hypothesis that content level would be positively related to measures of meaning and psychological wellbeing. No other significant correlations were found for this hypothesis ($p > .05$). For full results, see Table 8.

Hypothesis 3. Table 9 displays the correlations obtained for this hypothesis. The number of rungs in ladder 1 was associated to the MLQ total score ($\tau_b = .231$, $p = .001$ one-tailed), and the same variable in ladder 2 was negatively associated with the CORE-10 ($\tau_b = -.136$, $p = .038$ one-tailed). For ladder 3, the number of rungs was related to the MLQ

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Presence of Meaning subscale ($\tau_b = .153$, $p = .023$ one-tailed), the MLQ Search for Meaning subscale ($\tau_b = -.160$, $p = .019$ one-tailed), the ISLES ($\tau_b = .147$, $p = .027$ one-tailed), and the CORE-10 ($\tau_b = -.159$, $p = .019$ one-tailed). All correlations were in accordance with the hypothesis, i.e., the number of ladder rungs would be related to positive outcomes in meaning and psychological wellbeing measures.

Table 8

Kendall's Tau Correlations Between Hierarchical Content Level and Meaning / Psychological Wellbeing Measures

	Content Level Ladder 1	Content Level Ladder 2	Content Level Ladder 3
MLQ Presence of Meaning	-.033	.032	-.039
MLQ Search for Meaning	.083	-.009	.134*
MLQ TOTAL	.005	.033	.007
ISLES TOTAL	.012	-.057	-.099
CORE TOTAL	.067	-.002	.073
CAS TOTAL	.017	-.107	.022

Note: * = $p < .05$ one-tailed

Table 9

Kendall's Tau Correlations Between Number of Ladder Rungs and Meaning / Psychological Wellbeing Measures

	No. of Rungs Ladder 1	No. of Rungs Ladder 2	No. of Rungs Ladder 3
MLQ Presence of Meaning	.125	.105	.153*
MLQ Search for Meaning	.131	.062	-.160*
MLQ TOTAL	.231**	.123	.080
ISLES TOTAL	-.007	.048	.147*
CORE TOTAL	-.016	-.136*	-.159*
CAS TOTAL	.135	.071	.066

Note: * = $p < .05$ one-tailed; ** = $p < .01$ one-tailed

4 Discussion

4.1 Overview of Results in Relation to RQs and Hypotheses

4.1.1 *Research Question 1*

Measures 1 and 2. The first RQ referred to how students have construed the COVID-19 pandemic in terms of the different roles they and the people around them may have taken. Firstly, a majority of students construed themselves as different from their “self before the pandemic” (Table 3), with this element also generating some of their most important constructs (Table 4). In other words, the students generally perceived a change from their selves before COVID, with this change possibly having been a core aspect of their experience of the event.

Importantly, the students' responses also indicated that they saw their present selves as similar to their “self in a possible future pandemic”, suggesting that they did not anticipate a potential similar event would fundamentally challenge their present identities. In PCP terms, this can be interpreted as the students not experiencing a significant level of threat by their construing of a future pandemic (i.e., they did not anticipate a possible change in their core construct structures by a similar event, McCoy, 1977). Reinforcing this idea is the fact that the participants mostly construed their “self at the worst moment during the pandemic” as different to their current selves, which also suggests that challenges arising from those moments may be experienced as largely overcome. These findings might be generally interpreted as the pandemic events not having had a negative impact on the students' construing of themselves, and perhaps a greater ability to anticipate such events.

Another aspect worth commenting on in relation to the participants' construing of the COVID-19 pandemic is their apparent general support of vaccination. The students mostly saw themselves as similar to “a person who thinks everyone should get vaccinated” (Table 3), and majorly expressed a preference for “being vaccinated” (87%) to self-describe in the first

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ladder. In contrast, they did not construe themselves as especially similar or different to “a person who always stands with the official government messages” and “a person who is unsure or has mixed feelings about most issues related to the pandemic,” expressing perhaps a degree of flexibility in their construing of these elements.

The students however mostly construed the pandemic on the basis of perceived differences rather than similarities (Table 3). First, most students saw themselves as different to the qualities represented by the element “coronavirus as if it were a person,” which also generated a significant number of the most important constructs (Table 4). Therefore, the qualities embodied by the agent of the pandemic itself are likely to be core issues in students' constructions of the COVID crisis. Further examination of this data set or further research using an inductive content analysis method (Green, 2004) would allow an exploration of what these important issues might be.

Secondly, the students also mostly differentiated themselves from people “who think the pandemic is planned” and people “who think restrictions were authoritarian,” although in contrast to the previous point, these elements tended to generate a significant proportion of the least important constructs. Thus, not only did the students mostly differentiate themselves from individuals whose construing of the pandemic concerned intentional actions by others to cause the event and/or restrict civil freedoms, i.e., “conspiracies” (Todorova et al., 2021; Winter et al., 2021), but these issues are also unlikely to be important for most students.

Measure 3. In relation to the content of the laddered constructs, the first issue that merits comment is that the emotional, relational and personal content categories were the most frequently used by participants, a finding that replicated what has been consistently found in other studies using the CSPP (Dada et al., 2017; Feixas et al., 2002; R. A. Neimeyer et al., 2001). This finding could be an indication that most of the individual's social

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construing (N.B. the grid used in this study had other people as elements) takes place at middle levels of abstraction as per the CSPC i.e., emotional, relational and personal, with less construing happening at the lower (concrete) and higher (abstract) levels of content, and that this occurs even with the top ladder constructs. In other words, SOCs are likely to be majorly concerned with emotional, relational and personal issues, and perhaps not as much as initially thought with existential and moral topics (R. A. Neimeyer et al., 2001). Despite this, the ladder developed from the most important construct (ladder two) did feature a greater proportion of moral content than the ladder developed from the least important construct (ladder three; Figure 6), which is in accordance with the predictions in the literature (Hinkle, 1965; McDonagh & Adams-Webber, 1987). Ladder one also contained a significant quantity of moral content alongside the usual emotional, relational and personal content, which might be indicating that this type of considerations had an important weight in student's choices in relation to vaccination. Finally, ladder one also appeared to have a moderately higher presence of physical health content than the other ladders (Figure 6), although the χ^2 analyses (Table 5) indicated that this type of content was below the expected level in all ladders.

Summary of RQ1. Issues pertaining to changes to the sense of self or identity, as well as the characteristics of the pandemic (as represented by COVID itself) are likely to be some of the most salient topics in students' experience of the event, in contrast to issues relating to the cause/motives behind the pandemic, which appear to be less meaningful topics. In fact, most students had a preference for seeing themselves as vaccinated and displayed a somewhat inconclusive construing of the government messages, i.e., not fully endorsing or fully rejecting them. It could be that issues relating to personal and psychological wellbeing have a higher importance for students than the theories about how or why the event occurred. It would also be compatible with the finding, extensively reported by the literature of the

pandemic, that relationships were the most importantly affected element in people's lives (Cipolletta et al., 2022; Tomaino et al., 2021; Winter et al., 2021).

The laddered constructs were populated by emotional, relational and personal content in all three ladders, although ladders one and two (regarding being/not being vaccinated and the participant's most important construct) had a significant presence of moral content as well. This was congruent with previous literature using the CSPC (R. A. Neimeyer et al., 2001).

4.1.2 Research Question 2

Hypothesis 1. The first of the hypotheses within RQ2 was not confirmed by the results. We expected to find an association between constructs' intensity values and the number of ladder rungs (side 1 in Figure 3), the rationale being that constructs with lower intensity values (less related to other constructs in the grid) would require a higher number of rungs to be generated before reaching their most superordinate position.

A possible explanation for this result may come from the methodology used. As can be seen in APPENDIX 10, the mode for the number of rungs of all three ladders was six, which was also the maximum number of rungs participants had been allowed to complete in order to limit the demands placed on them by the survey (see Method section). Hence, most participants exhausted the allowed rungs, which may not have provided them with enough space to genuinely reach their most superordinate constructs. Thus, the fact that there was this reduced variation in the number of rungs may have been a reason for failing to detect the possible effect. This methodological problem affected all research questions involving either number of rungs or content hierarchy level, which unfortunately limited the conclusions that can be extracted from them.

Hypothesis 2. The second hypothesis proposed that the most important constructs would generate a smaller number of rungs when laddered than their least important counterparts (side 2 in Figure 3). The rationale was that constructs that were more important would be more superordinate and thus closer to the top of the ladder. This hypothesis was also not confirmed by the results, as the average number of rungs in ladder two was no different in comparison with ladder three.

The problem with the limitation of the number of rungs to six pointed out above also applies for this hypothesis. Thus, results may have been different if the procedure had not had this limitation.

Hypothesis 3. Partial evidence was obtained for the third and last of the hypotheses related to RQ2. This hypothesis contended that more integrated constructs (i.e., those with higher intensity, or which were more related to others) would have higher subjective importance (side 3 in Figure 3). Neither the correlational analysis, nor the direct comparison of the intensities of the most and least important constructs found this effect. Nevertheless, the least important constructs were significantly less integrated than the remaining grid constructs taken as a whole; in other words, the least integrated constructs “stood out” from the rest as a group, which is in line with the hypothesis.

Therefore, it can be said that low subjective importance in a construct may work as a relatively reliable indicator of that construct's lower integration (and thus of a subordinate position), although the same may not work with constructs that are seen as highly important. One reason for this uneven utility of subjective importance as an estimator of superordination can be found in the predominance of constructs with emotional, relational and personal content in repertory grids and ladders, as reported in this study and others (Dada et al., 2017; Feixas et al., 2002; R. A. Neimeyer et al., 2001). Following these findings, it can be

reasonably concluded that individuals tend to mostly construe events at those levels of content, perhaps owing to their fundamentally relational nature (Procter & Winter, 2020). Therefore, those constructs that are experienced as significant are also likely to belong to these types of content, which would then make choosing one of them as the most important a difficult task, given that many of them would carry a similar feeling of relevance for the individual. This however would not occur with the more concrete constructs, which would be less abundant and therefore more reliably experienced and identified as of low importance.

This hypothesis would also help explain why this study found no difference between the intensity of the constructs as a whole and the intensity of the most important constructs. It would also help explain why Neimeyer et al. (2001) found that their participants gave similarly high importance ratings to constructs in the middle and top ladder rungs.

Summary of RQ2. There was only partial support for the group of hypotheses represented in Figure 3, the aim of which was to verify possible ways of identifying SOCs in repertory grids. The analyses for two of the hypotheses were limited by a methodological problem with having limited the number of rungs participants could enter in the survey.

There was some evidence that the least important construct was less integrated than the constructs taken as a whole. This finding suggested that, within a repertory grid, a construct's low subjective importance may be a potentially valid indicator of low integration and low superordinacy, while a construct's high importance would not necessarily be.

4.1.3 Research Question 3

Hypothesis 1. The first hypothesis formulated within RQ3 stated that construct integration would be positively correlated to meaning and psychological wellbeing measures. Evidence for this hypothesis was found as a weak association of the overall construct intensity with the MLQ Presence of Meaning subscale and with the ISLES; that is, higher

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construct integration was related to higher presence of MIL and higher psychological integration of the participants' worst pandemic event. Nonetheless, a comparable result was equally expected for the remaining measures, particularly for the CORE-10. Although the results related to these instruments (Table 7) point in very similar directions as the ones that reached significance, the sample size was too small to allow a safe conclusion in relation to whether these values were aleatory or a "true" effect. However, an unpublished study by Herrán-Alonso et al. (in preparation) with a much larger sample of N=898 Spanish adults found grid intensity to be weakly related (with values around .1) to multiple measures of psychological wellbeing, including the CORE-OM amongst others, all of them consistently in the direction here hypothesised. Thus, future studies with higher power would allow for these contentions to be confirmed.

An additional observation worth discussing is the fact that no effects were obtained by the most and least important constructs taken individually (Table 7). This could be a suggestion that meaning and psychological wellbeing cannot be predicted by individual constructs regardless of their subjective importance, and that it is the overall, synergistic SM of the grid constructs as a whole that has a relationship with psychological wellbeing and meaning measures.

Hypothesis 2. This hypothesis proposed that the content hierarchy level of the top ladderred constructs would be positively associated to the measures of meaning and psychological wellbeing. That is, the more abstract (higher content level) constructs were, the more meaning and psychological wellbeing individuals would display. This effect was found only for the association with the MLQ Search for Meaning subscale, indicating the people who have more concrete content in their least important ladderred constructs show a mild tendency to be searching for MIL. This is congruent with the proposed hypothesis, given that concrete content is expected to provide less construct integration and therefore result in

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poorer adaptation, which the Search for Meaning subscale generally indicates (Steger et al., 2006). However, many other effects in the same direction were expected and were not found.

It has already been pointed out how the limitation of the number of rungs in the survey probably posed a difficulty in relation to the participants being able to reach their “true” ladder tops, which might have negatively affected this analysis as well. The result may have been different had this limitation not been present. Another possibility is that, as explained earlier (see RQ1 measure 3 and RQ2 hypothesis 3), people’s laddered constructs appear to be mostly concerned with similar types of content, i.e., emotional, relational and personal, even when constructs at the bottom and top of ladders are compared (Neimeyer et al., 2001). In light of this, the absence of this effect could be the genuine finding.

Hypothesis 3. This hypothesis proposed that the number of rungs in each ladder would positively correlate with positive outcomes in the meaning and psychological wellbeing measures. The rationale was that individuals who generate more rungs would be more aware of their SOC’s and would thus display more integration of their construing resulting in better psychological wellbeing and meaning scores.

Although most of the correlation values shown in Table 9 were in the hypothesised direction, only some of them resulted in statistically significant results, which can be understood as partial support for the hypothesis. Ladder 3 appeared to reach more significant results than ladder 2, which may be a suggestion that generating rungs when laddering from the least important, less integrated construct has a greater beneficial effect on meaning and psychological wellbeing outcomes.

An interesting result (although non-significant) was that the number of rungs in ladder 1 was positively correlated to the MLQ’s Search for Meaning subscale. This could tentatively be interpreted as a higher concern with vaccination-related issues amongst students who were

also actively searching for meaning in their lives. In addition, it could be indicating that ladder 1 may have some of its own dynamics in comparison with ladders 2 and 3, as the latter ones were related to the broader social construing of the pandemic, while the former was concerned with a more specific issue.

There are a number of limitations due to which these results should be taken with caution. On the one hand, the sample size may again be underpowering the study to detect very small effects that might be “true.” Second, the problems already pointed out with the limitations on the number of rungs that participants could complete in the survey could also be impacting the validity of these results.

Summary of RQ3. Overall grid construct integration but not constructs taken individually (regardless of their importance) was positively related to MIL and psychological integration of events. The number of rungs in ladders showed some associations with positive outcomes in meaning and psychological wellbeing measures, especially when the least important, less integrated constructs were elaborated on by means of laddering technique.

The results for this RQ suggest that many of the hypothesised effects may be quite weak in nature; in this sense, the study may have been underpowered, limiting the reach of these conclusions.

4.2 Summary of additional findings

4.2.1 *Analyses of Sample Groups*

When the data was analysed by groups, several important differences and trends emerged. Firstly, more than half of the students (60%) were above the CORE-10 clinical threshold for general psychological distress, replicating the findings by Chen and Lucock (2022). Moreover, psychological distress was negatively correlated with age in the sample, i.e., younger people tended to have higher scores on the CORE-10 and lower scores on the

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SM measure (ISLES), although these were weak associations. Interestingly, there were no significant gender differences in this measure, contrary to what is consistently reported in the literature (Cipolletta et al., 2022; Sun et al., 2023; Xiong et al., 2020). However, the findings are in line with other research indicating that levels of psychological distress amongst young people have been consistently elevated in Western countries during the last ten years approximately (Bor et al., 2014; NHS Digital, 2021; Twenge et al., 2019). In contrast, the levels of anxiety specifically related to COVID-19 were generally very low, with only 6% of the sample above the clinical threshold. This is suggestive of the COVID-19 pandemic not being a major reason for the elevated distress reported via the CORE-10, which appears to converge with recent research indicating that the psychological impact of the pandemic may have been smaller than initially thought for HE students and other groups (Sun et al., 2023).

When the different demographic groups were examined, students belonging to the global majority had significantly higher scores on the CAS (although not clinically significant), and significantly lower scores on the ISLES than white participants, with the effect sizes classifying as large and medium respectively. In other words, global majority students had higher COVID anxiety and were less able to make sense of their worst COVID experiences. Nonetheless, these same groups did not differ on their scores on general psychological distress (CORE-10), in line with previous research with students (Chen & Lucock, 2022). Interestingly, when studies have been carried out with the general adult UK population (as opposed to students), an effect of ethnicity on general psychological distress has indeed been reported (Proto & Quintana-Domeque, 2021) with adults in the global majority experiencing significantly higher distress. Further research on this issue will help clarify these findings, the clinical implications of which are discussed below.

4.2.2 Correlations Amongst the Meaning and Psychological Wellbeing Measures

The correlations presented on Table 6 showed some trends that are relevant for clinical practice. The subscales of the MLQ (Meaning in Life Questionnaire) appeared to function in opposite ways despite measuring a construct that is claimed to be unitary. For example, while the ISLES (i.e., integration of the COVID-19 pandemic event) had a moderate positive correlation with the Presence of Meaning subscale, it was nonetheless mild, negative (and non-significant) with the Search for Meaning component; in consequence, its association with the total MLQ score was in the mild range. A similar pattern can be observed for the correlations between the CORE-10 and the three MLQ scores (with the difference that the directions of the correlations are inverse due to the CORE-10 scoring inversely to the ISLES, i.e., higher scores on the CORE-10 indicate greater distress). This suggests that the MLQ subscales might be working in opposite directions, placing doubt on the validity of its composite total score. Hence, it may be clinically more useful to consider the Presence of Meaning and the Search for Meaning scores as independent scores. Indeed, the Presence of Meaning subscale appears to be related to positive aspects of psychological wellbeing (increased ISLES and decreased CORE-10 scores), while the Search for Meaning subscale follows the opposite pattern.

On a different note, the CAS (i.e., anxiety about COVID-19) was moderately and positively correlated with the CORE-10 and negatively with the ISLES, but not correlated with the MLQ, suggesting that any anxiety about covid is independent of the students' sense of MIL.

In summary, the MLQ's subscales appear to contribute to the total MLQ score in directions that are opposite, which places doubt on the usefulness of the latter. Students in psychological distress tend to (weakly) have lower MIL and (moderately) lower SM of the

COVID-19 pandemic; those with specific anxiety about COVID-19 weakly tend to report lower levels of SM of their worst experiences of the event.

4.3 Clinical Implications of the Findings

4.3.1 *Students' Construing of the COVID-19 Pandemic*

The results from the analysis of repertory grids and ladders in this study illustrate that the participant students generally are concerned with issues that pertain to personal wellbeing, their sense of self, as well as emotional and relational issues, which was in line with Cipolletta et al.'s (2022) findings that personal life threats resulted in more peritraumatic distress than threats to personal worldviews. Thus, students seemed to be less concerned or give less importance to the variety of positions that different people have expressed during the pandemic relating to its social and political consequences, including the government's official messages, theories about an alleged planification of the pandemic or of derogation of civil liberties. It could be hypothesised that in the cases when students do express concern with these topics, this is likely to be due to conflict, disagreement, contempt and sadness impacting on their relationships, as the EBE consultants reported during the early stages of the repertory grid design and as reported by Winter et al. (2021). This is useful knowledge for clinicians and wellbeing practitioners to hold in mind when working with students who may be suffering from anxiety or depression related to the COVID-19 pandemic, and it confirms the capital importance that relational support networks have for psychological wellbeing, as consistently found in other quantitative and qualitative COVID-19 related studies across international samples (Cipolletta et al., 2022; Tomaino et al., 2021; Winter et al., 2021). The awareness of the content of students' SOCs related to the pandemic events can also be used by clinicians and therapists to support clients who are in conflict with their relational networks find ways to understand each other's construction processes (promoting sociality in Kellian terms), bringing relational repair (Winter et al., 2021). However, further analysis of

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this study's data set and/or further research would be necessary to go beyond the CSPC and into more inductive qualitative analysis of these SOCs in order to facilitate this process. This is because CSPC consists of a deductive process of sorting content according to a preconceived framework, while more inductive techniques such as the "data driven approaches" described by Green (2004) have content being extracted and synthesised into categories that emerge from the participants' constructs themselves. This would allow clinicians to have a more attuned knowledge of the students' concerns in relation to the COVID-19 pandemic.

Although public health matters are not the main focus of this study, it is of relevance to this area that students majorly appeared to have favourable constructions of the emergency measures used within the United Kingdom to tackle the pandemic, such as mass vaccinations and lockdowns, as evidenced by their apparent low levels of concern with conspiratorial/intentional theories of the event, and their preference to identify with the construct pole "being vaccinated". This has also been shown by data collected by the Office for National Statistics (ONS, 2021; 2022), in which 90-92% of HE students reported having received vaccines. Further qualitative analysis of this data set, in the inductive terms described above, would allow identification of more specific themes that support these attitudes, including the possibility that some participants may have chosen this option, not necessarily because they have favourable views towards vaccination, but because they prefer its social consequences, e.g., being more easily allowed to travel, feeling less of a threat to elders, reducing conflict socially and interpersonally, etc.

4.3.2 Student's Psychological Wellbeing

As reported in the literature related to young people's mental health during and prior to the COVID-19 pandemic (Bor et al., 2014; Catling et al., 2022; Chen & Lucock, 2022; Twenge et al., 2019), the current study has found significantly elevated levels of

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psychological distress amongst the student sample, particularly amongst the younger students. Distinctively, this study did not find the commonly reported effects of gender (Sun et al., 2023) on psychological distress. This may be due to cohort particularities of the students at the University of Hertfordshire, or due to an emerging trend amongst young adults in the United Kingdom; regardless of the explanation, it is a significant clinical finding that also merits further investigation.

Although participants belonging to global majorities showed equal levels of general psychological distress to their white counterparts, they nevertheless reported significantly higher (non-clinical) levels of Coronavirus-specific anxiety and lower levels of integration or SM of their pandemic worst events. This may mean that, regardless of other stressful events in their lives, the COVID-19 pandemic may have had a specific impact on this group of students. The exceedingly high mortality rates that people from the global majority (who constitute ethnic minorities in the context of the UK) saw in the early waves of the pandemic (Wise, 2023) might be an important contributing factor to this dynamic. Hence, many of the distressing episodes that people in these groups may have experienced would potentially be related to sudden bereavements and associated experiences of personal threat (Cipolletta et al., 2022). In addition, the already mentioned studies showing that the adult global majority UK population have reliably reported higher general distress than white individuals (Proto & Quintana-Domeque, 2021) could imply that students coming from these communities have had more complex family and social environments to navigate. It would be important for university support services to be aware of this dynamic in order to effectively plan for the provision of wellbeing, counselling and clinical services.

Another clinically important finding equally relevant for the planning and delivery of wellbeing services in universities is that students' anxiety about COVID is generally very low and thus appears not to be a major contributor to the elevated psychological distress that

students are suffering from. Nonetheless, there have been recent expressions of concern by the Office of the Independent Adjudicator (Weale, 2023), who has highlighted that student complaints in England and Wales are at record high levels, and that this is related to “increasing levels of distress among students who are struggling to cope”. Studies have pointed to different possible sources of this distress, with candidates being a combination of financial and debt-related stress, social media and other social factors, as well as academic pressures and lifestyle issues (Mofatteh, 2021).

4.3.3 Clinical use of Repertory Grids and Ladders

Following Park's (2010; p. 291) recommendation to extend the assessment of SM and MM beyond self-report measures in creative ways, this study has shown how repertory grids and ladders constitute a solid and useful alternative for clinicians in order to guide clients through the exploration and elaboration of their construing of events, including those more superordinate constructions that may play a key role in integrating different meanings. Approaches based on the exploration of meaning have been shown to be especially useful in trauma (Park, 2022; Sewell, 2003), grief and bereavement (Borghi & Menichetti, 2021; R. A. Neimeyer, 2016a), and in coping with changes to one's self and worldview induced by chronic illness and other life changing events (Cipolletta et al., 2017; Viney & Westbrook, 1986).

Although this study has taken a mainly nomothetic approach (i.e., it has focused on the analysis of general effects emerging from a group of participants' data), the clinical application of repertory grids and ladders is of a mainly idiographic nature (i.e., to capture the individuality of the person's worldview as well as the structure of their personal meanings). In fact, repertory grids have been described as a semi-structured interview through which clients develop their own tool, in contrast to conventional questionnaires based on preconceived constructs (Herrán-Alonso, 2014b). Clinically, repertory grids and ladders have

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been characterised as tools that facilitate reflection/elaboration of meaning and thus an emerging awareness of previously implicit construing (Procter & Winter, 2020). This characteristic of the use of PCP tools is equivalent to the deliberate, effortful, accommodative process of elaborating new meanings termed MM by Park (2010), which can result in changes to one's existing cognitive structures. Indeed, many of the comments that participant students left after completing the survey went in this direction, for example (responses are verbatim):

- “It was useful to do the laddering! As it helped me to fully explain myself and find connections between the theories and ideas in my mind” (21-year-old male)
- “It has been helpful to reflect on my experiences and feelings and rethink how I can develop or improve my mental health.” (27-year-old female)
- “This was very interesting. Challenging to do but the first time I have been asked to think about the pandemic and realised I was not as unscathed by it as I thought.” (37-year-old female)
- “I found it interesting and relevant, very self-insightful and useful for therapy. Kind of felt like an almost therapy session.” (24-year-old male)
- “It's a very interesting topic to talk about it made me feel good In a way as I was able to know some stuff about my self such as the questions that were given it makes you think about expanding in you personal view.” (20-year-old female)

For the full list of feedback comments see APPENDIX 12.

In this way, repertory grids and ladders are methods that help clients, as active agents in their construing, gain in self-knowledge and self-awareness with potential therapeutic effects. In addition, these methods enable clinicians generate an understanding of the client's way of seeing the world including their SOCs, thus enhancing their sociality with the client

(i.e., construing of the client's construction processes). However, one important issue to consider is that, as studied by authors such as Hinkle (1965) or Mahoney (1991), core-organising principles or SOCs are usually more difficult to access and verbalise for clients, as well as more resistant to change. Therefore, clinicians should be cautious about challenging these aspects of clients' construing early during a course of therapy, as this would likely lead to the client experiencing threat, and responding to it with hostility and resistance to the change process.

The current study has suggested that a number of repertory grid and ladder measures can be used as indicators of superordination, and thus of possible SM, meaning integration and psychological wellbeing. Hence, clinicians using repertory grids can use Bannister's (1960) intensity as an indicator of SM, but also as an outcome measure of the process of construct integration and meaning reconstruction during a clinical intervention (R. A. Neimeyer, 2016a). The number of rungs generated in ladders can also be used as a tentative indication of SM of events, MIL and psychological wellbeing, especially when the initial construct is lowly integrated and/or of low subjective importance to the client. This is an important issue of which clinicians using repertory grids and ladders need to be aware.

One area for further development here is the absence of normative data for repertory grid and ladder measures, which impedes an assessment of whether scores are to be considered high or low.

4.4 Strengths and limitations

4.4.1 Quality Appraisal

In this section, the quality assessment method used for the Systematic Literature Review, i.e., the QuADS framework (Harrison et al., 2021), will be applied to the current study in order to provide an account of its areas of strength and limitation (Table 10). This

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appraisal was carried out by the Principal Investigator, which constitutes a potential for bias.

For a full description of the QuADS criteria see APPENDIX 2.

Table 10

Scores for each of the QuADS domains for the current study

1. Theoretical or conceptual underpinning to the research	2. Statement of research aim/s	3. Clear description of research setting and target population	4. The study design is appropriate to address the stated research aim/s	5. Appropriate sampling to address the research aim/s	6. Rationale for choice of data collection tool/s	7. The format and content of data collection tool is appropriate to address the stated research aim/s
2	3	3	2	2	3	3
8. Description of data collection procedure	9. Recruitment data provided	10. Justification for analytic method selected	11. The method of analysis was appropriate to answer the research aim/s	12. Evidence that the research stakeholders have been considered in research design or conduct.	13. Strengths and limitations critically discussed	
3	3	2	2	3	3	

It was felt that the coverage of relevant theoretical frameworks (criterion one) was sufficient in detail, although their application throughout the empirical part of the work tended to focus more on the PCP concepts, with the other reviewed theories applied mostly indirectly, hence the score of two. Criteria two and three were covered to a sufficiently high standard to receive maximum scores. In relation to criterion four, a score of two was given due to the possibility that adding a form of inductive content analysis would have improved the capacity of the design to answer some of the more exploratory aspects of the study with more detail, as opposed to using a deductive approach only.

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As for the sampling procedure (criterion five), a score of two was given due to having calculated the sample size on the assumption that effects would be medium in size, when the available literature suggested many “true” effects might be smaller, although it was also recognised that this power calculation was heavily influenced by the awareness of limited resources to obtain a sufficiently large sample. As already pointed out, one of the most important limitations of the study was that it was slightly underpowered, due to which many conclusions were of a tentative nature. Another limitation of the sampling procedure was that the use of the SONA platform for recruitment implied that there was an overrepresentation of students from the School, of Life and Medical Sciences (see APPENDIX 6).

The choice, format and content of data collection tools (criteria six and seven) were a strength of the study, including the involvement of the EBE panel to help co-design the structure and content of the repertory grid and survey to be administered, and thus it received three points. Criteria eight and nine also received high scores, given that a detailed account of the data collection procedure was made, including a description of the changes implemented and the reasons for them, as well as the number of contacts with potential participants (e.g., number of leaflets distributed).

The justification for the choice of statistical analysis methods (criterion 10) might have benefited from more specialised input in order to elaborate specifically on their advantages or disadvantages, e.g., choosing Kendall's Tau instead of Spearman's Rho; in the absence of this, choices were largely based on previous experience using the selected methods, and on available internet resources and manuals. The choice of grid analysis methods was better justified owing to the considerable expertise of the Principal Investigator and the rest of the team, thus a score of 2 instead of 1 was given. As for criterion 11, the inclusion of an inductive layer of analysis would have strengthened the study's capacity to answer the main question of the study. Further exploration of the hypotheses would have also

been possible if the initial ladder constructs had been coded in addition to the top ones, allowing to test whether the most and least important constructs had more abstract and concrete content respectively. Furthermore, calculating the Euclidean distances between the self and the grid elements may have allowed further clarification of the exploratory questions in RQ1. However, it is recognised that the timescale and logistical constraints of the project would have probably made many of these additions overambitious.

Criterion 12 was fully met as the inclusion of EBEs had a substantive role in the design and conceptualisation of the research questions and the data collection. Finally, it was felt that the strengths and limitations of the study (criterion 13) have been effectively covered in the current section, including the aspects discussed in the following paragraphs, which are not subsumed by the QuADS system.

4.4.2 Other Strengths and Limitations

Possibly, the main limitation of the study was its cross-sectional design, which relied on correlation and comparison of groups created by selection on variables, which did not allow the elaboration of causal inferences.

Further, the conclusions the study had capacity to reach were limited by aspects of the online methodology used. Firstly, it is known that online data collection can increase the unreliability of responses due to higher participant distraction (Thomas & Clifford, 2017), and thus it is possible that the collected data was affected by this to some degree.

Second, although online laddering procedures are feasible, the “gold standard” continues to be face to face administration (Russell et al., 2004). This method allows a better monitoring of the participant’s responses, and helps avoid some of the common difficulties that can sometimes arise with ladder completion, e.g., answers that lack complexity (Russell et al., 2004), or the inconsistent “weaving around” of meanings described by Butt (1995).

Third, it has already been pointed out that the number of rungs in the laddering interviews was limited to six (see Method section) and that most participants appeared to have easily exhausted this limit. This problem restricted the analysis that could be done with this variable, which was connected to two of the RQs, and thus prevented robust conclusions from being reached.

Lastly, the decision to place the physical content category at the bottom of the content hierarchy (i.e., on level 9) was not based on evidence, but on a face value assessment that constructs concerning the physical body should be close to concrete content (level 8). A deeper exploration and consideration of this issue might have led to a different decision, which may have affected the subsequent analyses. It is recognised however that this deeper exploration may have required of a separate study.

4.5 Suggestions for further research

Areas for further investigation arising from this study are summarised next:

- The results of this study suggest that the COVID-19 pandemic does not play a significant role in the currently elevated levels of psychological distress amongst HE students. Further clarification around this would be necessary.
- Additional analysis of the current study's data set or further research would allow an inductive exploration of the constructions that students make of COVID-19 itself, given that these constructions are likely to be important in the perception of the event.
- An inductive data-driven content analysis of the students' SOC's would also be useful in informing ways in which clinicians and therapists could facilitate sociality (the constructions of others' construction processes) and thus help resolve interpersonal conflicts, improving psychological wellbeing.

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- A study of the different experiences and constructions of events during the COVID-19 pandemic by global majority HE students would be necessary in order to clarify possible reasons for the higher COVID anxiety and lower SM of their worst COVID experiences reported by these participants. This would help in targeting university's wellbeing services to populations with specific needs and circumstances.
- Inductive approaches to content analysis or other qualitative analysis of students' SOC's regarding vaccination would help clarify the reasons for the general preference of "being vaccinated," as it might be that participants chose this construct pole because of the benefits gained, e.g., social acceptability, travelling, etc, rather than because of positive attitudes towards vaccination.
- More research is needed in relation to clarifying the relationship of construct integration measures such as intensity with different measures of psychological wellbeing (Herrán-Alonso et al., in preparation).
- Normative studies of repertory grid and ladder measures are necessary in order to allow decisions in regard to whether certain values can be considered high or low, and what their clinical implications might be.

4.6 Conclusions

The results of this study have shown that 60% of the participants were above the clinical cut-off for general psychological distress. Nonetheless, COVID-specific anxiety was low suggesting that the pandemic was not a major contributor to these generalised high levels of distress. An important trend was that, in comparison with white students, participants belonging to global majorities reported higher (non-clinical) Coronavirus anxiety and lower levels of SM of their worst events during the pandemic, although the levels of general distress were not different between these two groups.

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In relation to their construing of the COVID-19 pandemic, students appeared to be mostly concerned with issues that impacted the emotional, relational and personal domains in their lives. In line with this, the SOCs that students have used to make sense of the pandemic were mainly of an emotional, relational and personal nature. Research across international samples has repeatedly highlighted the centrality of relationships (e.g., their disruption and the longing to reconnect) in people's experience of the pandemic (Cipolletta et al., 2022; Tomaino et al., 2021; Winter et al., 2021). Although concerns with conflict and contempt amongst people with different views of the causes or motives behind the event was also an important topic, it is likely that this importance is due to the relational implications of this conflict.

PCP techniques such as repertory grids and ladders are valuable tools to help individuals engage in the deliberate, effortful process of reflection necessary to have an integrated and meaningful sense of difficult experiences and hence improve psychological wellbeing. In terms of grid and ladder measures that can help identify constructs with more integrative capacity, i.e., SOCs, this study found evidence that the overall grid construct integration as measured by intensity was associated to positive outcomes in meaning and psychological wellbeing. The number of rungs generated in a ladder was also a potential predictor of these outcomes, although the effect was stronger when laddering was carried out from the least important and less integrated construct, which also seemed to be more reliably identifiable by the participants.

A series of methodological limitations related to lack of statistical power and the online data collection procedure meant that these conclusions were tentative and need to be replicated and extended in further studies.

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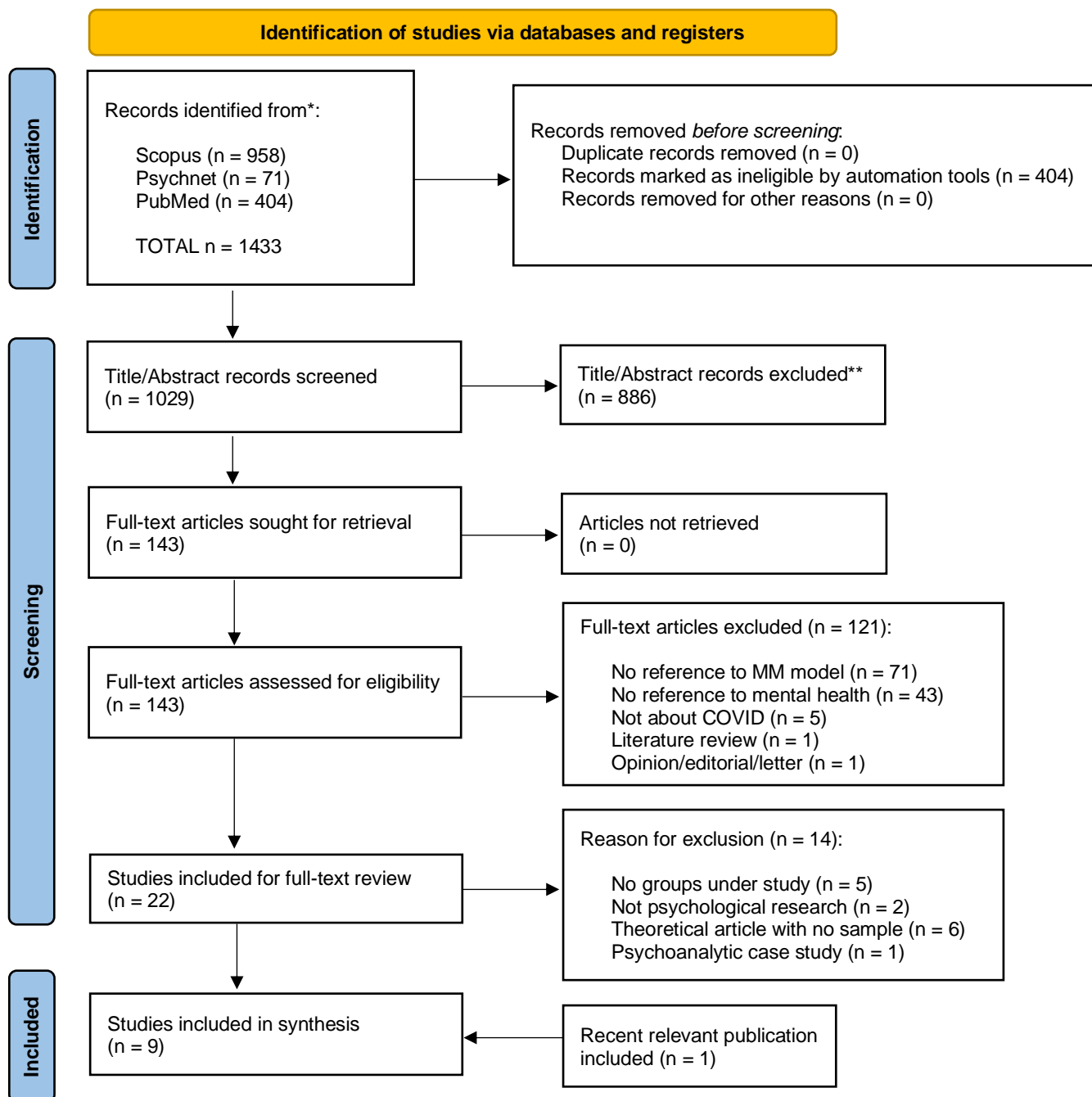
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APPENDIX 1: PRISMA Flow Chart



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APPENDIX 2: Quality Appraisal Using the QuADS Framework

See domain criteria description in the following pages. Each domain is assessed on a scale of 0 to 3 points (Harrison et al., 2021).

Study	1. Theoretical or conceptual underpinning to the research	2. Statement of research aim/s	3. Clear description of research setting and target population	4. The study design is appropriate to address the research aim/s	5. Appropriate sampling to address the research aim/s	6. Rationale for choice of data collection tool/s	7. The format and content of data collection tool is appropriate to address the stated research aim/s	8. Description of data collection procedure	9. Recruitment data provided	10. Justification for analytic method selected	11. The method of analysis was appropriate to answer the research aim/s	12. Evidence that the research stakeholders have been considered in research design or conduct.	13. Strengths and limitations critically discussed
Milman et al (2020a)	2	3	2	3	2	3	3	2	1	3	3	1	3
Milman et al (2020b)	2	3	2	3	2	3	3	2	1	3	3	2	2
Breen et al (2022)	2	2	2	3	3	3	3	2	1	2	3	1	2
Huang et al (2022)	2	3	3	3	3	3	3	2	2	1	3	1	2
Krok et al (2022)	2	3	2	3	2	3	3	2	2	2	3	1	2
Cipolletta et al (2022)	1	3	2	3	2	2	3	2	2	3	3	1	2
Tomaino et al (2021)	2	2	3	3	2	2	3	2	2	3	3	1	2
Winter et al (2021)	3	2	2	3	2	2	3	2	2	3	3	1	2
Todorova et al (2021)	2	3	3	3	2	3	3	2	2	3	3	1	2

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Criteria from Harrison et al.'s (2021) QuADS Framework

QuADS CRITERIA	0 points	1 point	2 points	3 points
1. Theoretical or conceptual underpinning to the research.	No mention at all.	General reference to broad theories or concepts that frame the study. e.g. key concepts were identified in the introduction section.	Identification of specific theories or concepts that frame the study and how these informed the work undertaken. e.g. key concepts were identified in the introduction section and applied to the study.	Explicit discussion of the theories or concepts that inform the study, with application of the theory or concept evident through the design, materials and outcomes explored. e.g. key concepts were identified in the introduction section and the application apparent in each element of the study design.
2. Statement of research aim/s.	No mention at all.	Reference to what the sought to achieve embedded within the report but no explicit aims statement.	Aims statement made but may only appear in the abstract or be lacking detail.	Explicit and detailed statement of aim/s in the main body of report.
3. Clear description of research setting and target population.	No mention at all.	General description of research area but not of the specific research environment e.g. 'in primary care.'	Description of research setting is made but is lacking detail e.g. 'in primary care practices in region [x]'.	Specific description of the research setting and target population of study e.g. 'nurses and doctors from GP practices in [x] part of [x] city in [x] country.'

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<p>4. The study design is appropriate to address the stated research aim/s.</p>	<p>No research aim/s stated or the design is entirely unsuitable e.g. a Y/N item survey for a study seeking to undertake exploratory work of lived experiences.</p>	<p>The study design can only address some aspects of the stated research aim/s e.g. use of focus groups to capture data regarding the frequency and experience of a disease.</p>	<p>The study design can address the stated research aim/s but there is a more suitable alternative that could have been used or used in addition e.g. addition of a qualitative or quantitative component could strengthen the design.</p>	<p>The study design selected appears to be the most suitable approach to attempt to answer the stated research aim/s.</p>
<p>5. Appropriate sampling to address the research aim/s.</p>	<p>No mention of the sampling approach.</p>	<p>Evidence of consideration of the sample required e.g. the sample characteristics are described and appear appropriate to address the research aim/s.</p>	<p>Evidence of consideration of sample required to address the aim. e.g. the sample characteristics are described with reference to the aim/s.</p>	<p>Detailed evidence of consideration of the sample required to address the research aim/s. e.g. sample size calculation or discussion of an iterative sampling process with reference to the research aims or the case selected for study.</p>
<p>6. Rationale for choice of data collection tool/s.</p>	<p>No mention of rationale for data collection tool used.</p>	<p>Very limited explanation for choice of data collection tool/s. e.g. based on availability of tool.</p>	<p>Basic explanation of rationale for choice of data collection tool/s. e.g. based on use in a prior similar study.</p>	<p>Detailed explanation of rationale for choice of data collection tool/s. e.g. relevance to the study aim/s, co-designed with the target population or assessments of tool quality.</p>

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<p>7. The format and content of data collection tool is appropriate to address the stated research aim/s.</p>	<p>No research aim/s stated and/or data collection tool not detailed.</p>	<p>Structure and/or content of tool/s suitable to address some aspects of the research aim/s or to address the aim/s superficially e.g. single item response that is very general or an open-response item to capture content which requires probing.</p>	<p>Structure and/or content of tool/s allow for data to be gathered broadly addressing the stated aim/s but could benefit from refinement. e.g. the framing of survey or interview questions are too broad or focused to one element of the research aim/s.</p>	<p>Structure and content of tool/s allow for detailed data to be gathered around all relevant issues required to address the stated research aim/s.</p>
<p>8. Description of data collection procedure.</p>	<p>No mention of the data collection procedure.</p>	<p>Basic and brief outline of data collection procedure e.g. 'using a questionnaire distributed to staff'.</p>	<p>States each stage of data collection procedure but with limited detail or states some stages in detail but omits others e.g. the recruitment process is mentioned but lacks important details.</p>	<p>Detailed description of each stage of the data collection procedure, including when, where and how data was gathered such that the procedure could be replicated.</p>
<p>9. Recruitment data provided.</p>	<p>No mention of recruitment data.</p>	<p>Minimal and basic recruitment data e.g. number of people invited who agreed to take part.</p>	<p>Some recruitment data but not a complete account e.g. number of people who were invited and agreed.</p>	<p>Complete data allowing for full picture of recruitment outcomes e.g. number of people approached, recruited, and who completed with attrition data explained where relevant.</p>

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<p>10. Justification for analytic method selected.</p>	<p>No mention of the rationale for the analytic method chosen.</p>	<p>Very limited justification for choice of analytic method selected. e.g. previous use by the research team.</p>	<p>Basic justification for choice of analytic method selected e.g. method used in prior similar research.</p>	<p>Detailed justification for choice of analytic method selected e.g. relevance to the study aim/s or comment around of the strengths of the method selected.</p>
<p>11. The method of analysis was appropriate to answer the research aim/s.</p>	<p>No mention at all.</p>	<p>Method of analysis can only address the research aim/s basically or broadly.</p>	<p>Method of analysis can address the research aim/s but there is a more suitable alternative that could have been used or used in addition to offer a stronger analysis.</p>	<p>Method of analysis selected is the most suitable approach to attempt answer the research aim/s in detail e.g. for qualitative interpretative phenomenological analysis might be considered preferable for experiences vs. content analysis to elicit frequency of occurrence of events.</p>
<p>12. Evidence that the research stakeholders have been considered in research design or conduct.</p>	<p>No mention at all.</p>	<p>Consideration of some the research stakeholders e.g. use of pilot study with target sample but no stakeholder involvement in planning stages of study design.</p>	<p>Evidence of stakeholder input informing the research. e.g. use of pilot study with feedback influencing the study design/conduct or reference to a project reference group established to guide the research.</p>	<p>Substantial consultation with stakeholders identifiable in planning of study design and in preliminary work e.g. consultation in the conceptualisation of the research, a project advisory group or evidence of stakeholder input informing the work.</p>

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<p>13. Strengths and limitations critically discussed.</p>	<p>No mention at all.</p>	<p>Very limited mention of strengths and limitations with omissions of many key issues. e.g. one or two strengths/limitations mentioned with limited detail.</p>	<p>Discussion of some of the key strengths and weaknesses of the study but not complete. e.g. several strengths/limitations explored but with notable omissions or lack of depth of explanation.</p>	<p>Thorough discussion of strengths and limitations of all aspects of study including design, methods, data collection tools, sample & analytic approach.</p>
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STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

APPENDIX 3: Summary of Studies from the Literature Review

Authors, title & location	Aims	Sample	Design	Key findings	Strengths & limitations
1. Milman, Lee, Neimeyer, Mathis & Jobe (2020a): Modelling pandemic depression and anxiety: The mediational role of core beliefs and meaning making. USA	To examine how core belief violation (CBV) and disrupted meaning-making (MM) mediate pandemic mental health.	Online recruitment. Data collected May 2020. N=2,380 US adults 73.3% white 49.7% female Ages 18-65 (M = 37.91) 82.6% with post-secondary education 41.7% with direct or indirect exposure to a COVID-related death.	Cross-sectional online survey. Core Beliefs Inventory (CBI) Integration of Stressful Life Experiences Scale (ISLES) Patient Health Questionnaire 4 (PHQ-4) Coronavirus Anxiety Scale 2.0 (CAS 2.0)	Demographic factors and COVID stressors accounted for 13-20% of the variance in anxiety and depression, while CVB and MM accounted for 36-48%. When CBV and MM were controlled for, exposure to COVID deaths no longer predicted mental health levels.	The cross-sectional design prevented examination of causality. US focused, although sample was large and representative of US population. PHQ4 offers a limited assessment of mental health. Online participation inattentiveness may decrease the reliability of the responses.
2. Milman, Lee & Neimeyer (2020b): Social isolation and the mitigation of coronavirus anxiety: The mediating role of meaning. USA	To examine the role of social isolation in reducing COVID anxiety via its capacity to reduce CBV and increase MM of the pandemic experience.	Online recruitment. Data collected April 2020. N=408 US adults 73.8% white	Cross-sectional online survey. CBI ISLES	Engaging in social forms of transmission mitigation was directly associated with reduced COVID anxiety, but also partially mediated by reduced CBV and greater MM.	As above. The clinical cut-offs for the CAS 2.0 were based on the original CAS, thus possibly unreliable.

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		43% female	PHQ-4	Non-social	Presents a parsimonious model that suggests why social isolation may have been protective of high levels of distress.
		Ages 21-65 (\bar{x} = 37.24)	Life satisfaction question (Cheung & Lucas, 2014)	forms of transmission mitigation e.g., hand	
		86.4% with post-secondary education	CAS 2.0	washing,	
		42.1% with direct or indirect exposure to a COVID-related death.		were positively associated with	
				COVID anxiety.	
3. Breen, Lee, Mancini, Willis & Neimeyer (2022): Grief and functional impairment following COVID-19 loss in a treatment-seeking sample: the mediating role of meaning.	To replicate previous work on MM based on US community samples (Milman et al, 2020a; 2020b), using a UK treatment seeking sample.	Online recruitment. Data collected January to June 2021.	Cross-sectional online survey.	Disrupted MM mediated all clinical outcomes, explaining 40-60% of their variance.	As above.
UK		N=183 UK bereaved adult participants referred for bereavement counselling	Pandemic Grief Risk Factors inventory		Sample almost only female
		91.3% had had an immediate family member loss.	Pandemic Grief Scale	The capacity to find meaning in bereavement is related to better grief adaptation.	The authors acknowledged that "broader systemic factors that could influence the form and intensity of mourner distress deserve greater attention" (p. 9)
		Ages 18–65 (M = 47.40)	PHQ-4		
		86.3% white	PTSD Screen for DSM-V		
		91.8% female	ISLES Short Form (ISLES-SF)		
			Work and Social Adjustment Scale		
4. Huang, Zhang, Wang, Xu, Wang, Tang ... & Lu (2022): Family function and life satisfaction of postgraduate medical students during the COVID-	To investigate if the relationship between family function and life satisfaction is mediated by meaning in life (MIL) and depression among post-graduate	Online recruitment. Date of data collection not indicated.	Online cross-sectional study.	As expected, a positive impact of family function on life satisfaction was found.	Online survey with the problems associated to it (described as "various types of errors," p. 7).
			Correlational and path analysis methodology.	MIL and depression mediated the link between	

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19 pandemic: the mediating role of meaning in life and depression.	medical students during the COVID-19 pandemic.	N=900 medical students training at a hospital in China.	Family APGAR Scale	family function and life satisfaction, both sequentially and as direct individual links.	All participants from same university and same hospital.
CHINA		Ages 22 – 57 (\bar{x} = 27.0)	Chinese Meaning in Life Questionnaire (C-MLQ)		Not possible to draw causal inferences.
		49.7% female	PHQ-9		Bidirectionality of the path analysis was not tested e.g., MIL affects depression, but does the reverse also work?
			Satisfaction with Life Scale (SWLS)		
5. Krok, Zarzycka & Telka (2022): Risk perception of Covid-19, religiosity, and subjective well-being in emerging adults: The mediating role of meaning-making and perceived stress.	To investigate the role of religiosity and COVID risk perception in the subjective well-being of young people (life satisfaction and positive affect); secondly, to examine the possible mediation roles of MM and perceived stress in this association.	Face to face recruitment. Date of data collection not indicated.	Cross-sectional study.	Religiosity and COVID risk perception were found to be related to MM, but only COVID risk perception had an association with perceived stress.	Correlational study, no causality.
POLAND		N=316 Polish young adults recruited from high schools, universities, workplaces, and social groups.	Risk of Contracting COVID Scale		Affect was measured retrospectively, not in the present moment.
		Ages 17 – 24 (\bar{x} = 21.6)	Perceived Threat of COVID Scale	Only MM mediated the relationship between religiosity and life satisfaction/ positive affect.	There can be other contributing variables that are unmeasured.
		54.7% female	Religious Meaning System Questionnaire		Sample was representative of Polish young people.
		98.7% white	Meaning Making Questionnaire	Both MM and perceived stress mediated the relationship between COVID risk perception and life satisfaction/ positive affect.	
		82.9% Catholic, 6.9% Protestant, 10.1% agnostic/ atheist	Perceived Stress Scale (PSS-10)		
			SWLS		
			Positive and Negative Affect Schedule		

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<p>6. Cipolletta, Tomaino, Rivest-Beauregard, Sapkota, Brunet & Winter (2022): Narratives of the worst experiences associated with peritraumatic distress during the COVID-19 pandemic: a mixed method study in the USA and Italy.</p> <p>USA and ITALY</p>	<p>Using PCP as a theoretical framework, to explore the narratives of worst experiences during the COVID-19 pandemic in US and Italian participants, and to examine the association of these narratives with peritraumatic distress symptoms.</p>	<p>Online recruitment. Data collected April to May 2020.</p> <p>N=1098 adults (n=741 US; n=357 Italy)</p> <p>Age \bar{x} = 42.8</p> <p>75.4% female</p> <p>89.6% with post-secondary education</p>	<p>Cross-sectional online study, including an open question asking participants to describe their worst experience during the COVID crisis; analysed with Thematic Content Analysis.</p> <p>Peritraumatic Distress Inventory</p>	<p>The most frequent themes were Threat, Constriction, Stress and Loss.</p> <p>US participants' narratives of their worst experiences were mostly related to personal life-threats, while Italian participants indicated perceiving more threat to their ways of seeing the world.</p> <p>The main predictor of peritraumatic stress were perceiving personal life threats, first followed by high general levels of anxiety and then by resource deprivation.</p>	<p>Snowball sampling which means risk of collecting data with a limited cohort of the population.</p>
<p>7. Tomaino, Cipolletta, Kostova & Todorova (2021): Stories of life during the first wave of the COVID-19 pandemic in Italy: A qualitative study.</p> <p>ITALY</p>	<p>To explore how the general Italian population have coped with the imposed restrictions, what have they learned, and what their plans and hopes are for the future.</p>	<p>Online recruitment. Data collected May to June 2020.</p> <p>N=116 Italian adults</p> <p>71.9% female</p> <p>Age \bar{x} = 36.16</p> <p>68.4% with post-secondary education</p> <p>n=6 reported having mild symptoms from COVID-19 infection</p>	<p>Online survey with 20 closed and 3 open questions subjected to Thematic Content Analysis.</p> <p>Analysed transitions through a PCP framework.</p>	<p>Five broad themes were identified: difficulties, emotions, coping with lockdown measures, going back to normal, and change.</p> <p>Two major ways of coping were identified, one characterised by hostility and one by aggression in the Kellyan sense.</p>	<p>Results are limited to the very first lockdown in Italy.</p> <p>Recruitment was from researcher's direct contacts and snowball sampling, thus limiting diversity.</p>

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<p>8. Winter, Brunet, Rivest-Beauregard, Hammoud & Cipolletta (2021): Construing Worst Experiences of the COVID-19 Pandemic in the USA: A Thematic Analysis.</p>	<p>Using PCP as a theoretical framework, to carry out an in-depth analysis of the meaning made of negative personal experiences of the pandemic in the USA.</p>	<p>Online recruitment. Data collected April to May 2020. N=728 US adults Age \bar{x} = 44.40 76.8% female 80.3% white 95.5% with higher education</p>	<p>Online survey including an open-ended question asking participants to describe their worst experience during the COVID crisis so far. Analysed with Thematic Content Analysis.</p>	<p>The themes were overarched by the idea of transitions in construing. The identified themes were: anxiety, threat, loss of role, sadness, contempt, and stress. Recommendations are made for each.</p>	<p>Sample not very representative. Not having considered positive experiences in addition to negative ones.</p>
<p>USA</p>					
<p>9. Todorova, Albers, Aronson, Baban, Benyamini, Cipolletta ... & Zlatarska (2021): "What I thought was so important isn't really that important": international perspectives on making meaning during the first wave of the COVID-19 pandemic.</p>	<p>To explore the ways in which the meanings given to the pandemic may have commonalities amongst people from diverse countries and backgrounds, as well as the more specific local meanings.</p>	<p>Online recruitment. Data collected May to September 2020. N=1,685 Ages 17– over 76 (\bar{x} = 39.55) 73.6% female 18.3% students 76.2% with post-secondary education</p>	<p>Online survey including three open-ended questions asking participants about their pandemic-related difficulties, the lessons they have learnt, and what things are they looking forward to the most. Analysed with Thematic Content Analysis.</p>	<p>Themes identified: the presence or absence of others, rediscovering oneself, the meaning of daily life, and rethinking societal values. The rupture of connections was the most frequent theme. Meaning was made of the pandemic by reframing it as helping participants clarify their values, experience personal growth, and a greater appreciation of life.</p>	<p>Low motivation of respondents due to online methodology in the middle of first wave. Sampling led to higher participation of females and students. No breakdown by country provided. Limited to first wave months.</p>
<p>15 different EUROPEAN, AMERICAN and ASIAN COUNTRIES.</p>					

APPENDIX 4: Ethics Approval Notification



HEALTH, SCIENCE, ENGINEERING AND TECHNOLOGY ECDA

ETHICS APPROVAL NOTIFICATION

TO Juan Herran-Alonso
CC Prof David Winter
FROM Dr Rosemary Godbold, Health, Science, Engineering & Technology ECDA Chair
DATE 09/06/2022

Protocol number: **LMS/PGR/UH/04992**

Title of study: Students' psychological integration of difficult events during the COVID-19 pandemic and its relationship to mental wellbeing

Your application for ethics approval has been accepted and approved with the following conditions by the ECDA for your School and includes work undertaken for this study by the named additional workers below:

no additional workers named

General conditions of approval:

Ethics approval has been granted subject to the standard conditions below:

Permissions: Any necessary permissions for the use of premises/location and accessing participants for your study must be obtained in writing prior to any data collection commencing. Failure to obtain adequate permissions may be considered a breach of this protocol.

External communications: Ensure you quote the UH protocol number and the name of the approving Committee on all paperwork, including recruitment advertisements/online requests, for this study.

Invasive procedures: If your research involves invasive procedures you are required to complete and submit an EC7 Protocol Monitoring Form, and copies of your completed consent paperwork to this ECDA once your study is complete.

Submission: Students must include this Approval Notification with their submission.

Validity:

This approval is valid:

From: 01/07/2022

To: 31/10/2022

Ethics Approval Extension



HEALTH, SCIENCE, ENGINEERING AND TECHNOLOGY ECDA

ETHICS APPROVAL NOTIFICATION

TO Juan Herran-Alonso
CC Prof. David Winter
FROM Dr Rosemary Godbold, Health, Science, Engineering & Technology ECDA Vice Chair
DATE 27/10/2022

Protocol number: aLMS/PGR/UH/04992(4)

Title of study: Students' psychological integration of difficult events during the COVID-19 pandemic and its relationship to mental wellbeing

Your application to modify and extend the existing protocol as detailed below has been accepted and approved by the ECDA for your School and includes work undertaken for this study by the named additional workers below:

No additional workers named

Modification: detailed in EC2

General conditions of approval:

Ethics approval has been granted subject to the standard conditions below:

Original protocol: Any conditions relating to the original protocol approval remain and must be complied with.

Permissions: Any necessary permissions for the use of premises/location and accessing participants for your study must be obtained in writing prior to any data collection commencing. Failure to obtain adequate permissions may be considered a breach of this protocol.

External communications: Ensure you quote the UH protocol number and the name of the approving Committee on all paperwork, including recruitment advertisements/online requests, for this study.

Invasive procedures: If your research involves invasive procedures you are required to complete and submit an EC7 Protocol Monitoring Form, and copies of your completed consent paperwork to this ECDA once your study is complete.

Submission: Students must include this Approval Notification with their submission.

(continues on next page...)

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

(... ethics approval extension continued)

Validity:

This approval is valid:

From: 27/10/2022

To: 31/12/2022

Please note:

Failure to comply with the conditions of approval will be considered a breach of protocol and may result in disciplinary action which could include academic penalties.

Additional documentation requested as a condition of this approval protocol may be submitted via your supervisor to the Ethics Clerks as it becomes available. All documentation relating to this study, including the information/documents noted in the conditions above, must be available for your supervisor at the time of submitting your work so that they are able to confirm that you have complied with this protocol.

Should you amend any aspect of your research or wish to apply for an extension to your study you will need your supervisor's approval (if you are a student) and must complete and submit a further EC2 request.

Approval applies specifically to the research study/methodology and timings as detailed in your Form EC1A or as detailed in the EC2 request. In cases where the amendments to the original study are deemed to be substantial, a new Form EC1A may need to be completed prior to the study being undertaken.

Failure to report adverse circumstance/s may be considered misconduct.


Should adverse circumstances arise during this study such as physical reaction/harm, mental/emotional harm, intrusion of privacy or breach of confidentiality this must be reported to the approving Committee immediately.

APPENDIX 5: Study Advertising Material

£25 compensation for participating in research!

How are students making sense of the COVID-19 pandemic?

We try to make sense of complex events, like the COVID-19 pandemic, by finding ideas that connect their different aspects, giving us a sense of direction and meaning. This has positive effects on our wellbeing.



This research can help us improve our understanding of how students have been doing this sense-making.


I need your help!

Who can take part

- Are you a student at UH? ✓
- 18 years old or over? ✓


Then follow any of these to participate:

Twitter: @UhCovid tinyurl.com/ycksjjk6



We will send a £25 Amazon voucher to your UH email in compensation for your time 😊!
(NOTE: available for the **first 40 participants**; after that, the study will close).

Participating involves a 60 to 90 minute online questionnaire, during which you will explore your views of a variety of other people with contrasting ideas about the COVID-19 pandemic. We will also ask you about your current mental wellbeing.



University of Hertfordshire UH Ethics Committee

Title of study: Students' psychological integration of events during the COVID-19 pandemic and its relationship to mental wellbeing.
Protocol Number: LMS/PGR/UH/04992
Approving Committee: The University of Hertfordshire Health, Science, Engineering and Technology Ethics Committee with Delegated Authority.

If you have any queries concerning this document, please contact me (Juan Herran-Alonso, jh20ach@herts.ac.uk) or my supervisor (Prof David Winter, d.winter@herts.ac.uk)

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

APPENDIX 6: Sample vs Census comparison

	N	%	UH 2021-22 Census %
Gender			
Female	64	64.00%	50.90%
Male	31	31.00%	49.10%
Other	4	4.00%	0.30%
Intersex	1	1.00%	(n.i.)
Total	100		
Missing	1		
Age			
18-20	42	42.42%	32.70%
21-24	27	27.27%	22.40%
25-29	13	13.13%	19.10%
30-34	5	5.05%	12.30%
35-39	5	5.05%	
40-44	4	4.04%	
45-49	1	1.01%	13.10%
50-54	2	2.02%	
Total	99		
Missing	2		
Ethnicity			
White British	32	31.68%	31.50%
Any other White background	13	12.87%	
Black African	8	7.92%	18.90%
Black Caribbean	3	2.97%	
Any other Black background	2	1.98%	
Indian	10	9.90%	
Pakistani	8	7.92%	37.50%
Bangladeshi	10	9.90%	
Any other Asian background	1	0.99%	
Chinese	1	0.99%	1.50%
Arab	3	2.97%	(n.i.)
White and Black Caribbean	3	2.97%	
White and Asian	1	0.99%	4.40%
Any other mixed ethnic background	1	0.99%	
Any other ethnic group	5	4.95%	3.60%
Total	101		

(continues on next page...)

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

(... appendix 6 table continued)

Education Level			
Undergraduate	62	62.00%	52.59%
Post-graduate Masters	34	34.00%	47.41%
Post-graduate Doctorate	4	4.00%	
Total	100		
Missing	1		
School of Study			
School of Life and Medical Sciences	60	59.41%	(n.i.)
Physics, Engineering and Computer Science	20	19.80%	(n.i.)
Business School	10	9.90%	(n.i.)
Health and Social Work	6	5.94%	(n.i.)
Creative Arts School	2	1.98%	(n.i.)
Humanities	2	1.98%	(n.i.)
Hertfordshire Law School	1	0.99%	(n.i.)
Total	101		
Sexuality			
Straight/heterosexual	87	86.14%	83.80%
Bisexual	6	5.94%	3.00%
Gay or lesbian	6	5.94%	1.20%
Other sexual orientation	2	1.98%	2.70%
Total	101		
Religion			
No religion	30	29.70%	19.90%
Christian	29	28.71%	32.80%
Muslim	27	26.73%	22.10%
Hindu	6	5.94%	15.00%
Buddhist	3	2.97%	0.80%
Jewish	2	1.98%	0.40%
Sikh	1	0.99%	1.30%
Other religion	3	2.97%	2.40%
Total	101		

Note: UH = University of Hertfordshire; n.i. = not indicated

APPENDIX 7: Meaning and Psychological Wellbeing Measures Used

Meaning in Life Questionnaire (MLQ; Steger et al., 2006)

Please take a moment to think about what makes your life and existence feel important and significant to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

Absolutely Untrue 1	Mostly Untrue 2	Somewhat Untrue 3	Can't Say True or False 4	Somewhat True 5	Mostly True 6	Absolutely True 7
---------------------------	-----------------------	-------------------------	---------------------------------	-----------------------	---------------------	-------------------------

- ____ 1. I understand my life's meaning.
- ____ 2. I am looking for something that makes my life feel meaningful.
- ____ 3. I am always looking to find my life's purpose.
- ____ 4. My life has a clear sense of purpose.
- ____ 5. I have a good sense of what makes my life meaningful.
- ____ 6. I have discovered a satisfying life purpose.
- ____ 7. I am always searching for something that makes my life feel significant.
- ____ 8. I am seeking a purpose or mission for my life.
- ____ 9. My life has no clear purpose.
- ____ 10. I am searching for meaning in my life.

Scoring:
Item 9 is reverse scored.

Items 1, 4, 5, 6, & 9 make up the Presence of Meaning subscale
Items 2, 3, 7, 8, & 10 make up the Search for Meaning subscale

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

Integration of Stressful Life Experiences Scale (ISLES; Holland et al., 2010)

Please indicate the extent to which you agree or disagree with the following statements with regard to (the most stressful life event you experienced in the past two years). Read each statement carefully and be aware that a response of agreement or disagreement may not have the same meaning across all items.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1. Since this event, the world seems like a confusing and scary place.	1	2	3	4	5
2. I have made sense of this event.	1	2	3	4	5
3. If or when I talk about this event, I believe people see me differently.	1	2	3	4	5
4. I have difficulty integrating this event into my understanding about the world.	1	2	3	4	5
5. Since this event, I feel like I'm in a crisis of faith.	1	2	3	4	5
6. This event is incomprehensible to me.	1	2	3	4	5
7. My previous goals and hopes for the future don't make sense anymore since this event.	1	2	3	4	5
8. I am perplexed by what happened.	1	2	3	4	5
9. Since this event happened, I don't know where to go next in my life.	1	2	3	4	5
10. I would have an easier time talking about my life if I left this event out.	1	2	3	4	5
11. My beliefs and values are less clear since this event.	1	2	3	4	5
12. I don't understand myself anymore since this event.	1	2	3	4	5
13. Since this event, I have a harder time feeling like I'm part of something larger than myself.	1	2	3	4	5
14. This event has made me feel less purposeful.	1	2	3	4	5
15. I haven't been able to put the pieces of my life back together since this event.	1	2	3	4	5
16. After this event, life seems more random.	1	2	3	4	5

Note: With the exception of item 2 (which should be reverse scored), all items should be scored using the 1 (Strongly agree) to 5 (Strongly disagree) format presented above. A sum of all items can be taken to compute a total ISLES score. Likewise, items 1, 3, 5, 7, 9, 11, 12, 13, 14, 15, and 16 can be summed to compute the Footing in the World subscale, and items 2, 4, 6, 8, and 10 can be summed to compute the Comprehensibility subscale. The portion of the instructions in parentheses may be altered to make the measure applicable to different groups of interest.

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

Clinical Outcomes in Routine Evaluation 10 (CORE-10; Barkham et al., 2013)

IMPORTANT - PLEASE READ THIS FIRST

This form has 10 statements about how you have been OVER THE LAST WEEK.
Please read each statement and think how often you felt that way last week.
Then tick the box which is closest to this.

Over the last week...		Not at all	Only occasionally	Sometimes	Often	Most or all of the time	OFFICE USE ONLY
1	I have felt tense, anxious or nervous	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>
2	I have felt I have someone to turn to for support when needed	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/>
3	I have felt able to cope when things go wrong	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0	<input type="checkbox"/>
4	Talking to people has felt too much for me	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>
5	I have felt panic or terror	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>
6	I made plans to end my life	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>
7	I have had difficulty getting to sleep or staying asleep	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>
8	I have felt despairing or hopeless	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>
9	I have felt unhappy	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>
10	Unwanted images or memories have been distressing me	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/>

Total (Clinical Score*)

* Procedure: Add together the item scores, then divide by the number of questions completed to get the mean score, then multiply by 10 to get the Clinical Score.

Quick method for the CORE-10 (if all items completed): Add together the item scores to get the Clinical Score.

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

Coronavirus Anxiety Scale (CAS; Lee, 2020)

CAS						
How often have you experienced the following activities over <u>the last 2 weeks</u> ?		<i>Not at all</i>	<i>Rare, less than a day or two</i>	<i>Several days</i>	<i>More than 7 days</i>	<i>Nearly every day over the last 2 weeks</i>
1.	I felt dizzy, lightheaded, or faint, when I read or listened to news about the coronavirus.	0	1	2	3	4
2.	I had trouble falling or staying asleep because I was thinking about the coronavirus.	0	1	2	3	4
3.	I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus.	0	1	2	3	4
4.	I lost interest in eating when I thought about or was exposed to information about the coronavirus.	0	1	2	3	4
5.	I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus.	0	1	2	3	4
Column Totals		_____ +	_____ +	_____ +	_____ +	_____ +
				Total Score _____		

APPENDIX 8: Participant Information Sheet

UNIVERSITY OF HERTFORDSHIRE

**ETHICS COMMITTEE FOR STUDIES INVOLVING THE USE OF HUMAN PARTICIPANTS
(‘ETHICS COMMITTEE’)**

FORM EC6: PARTICIPANT INFORMATION SHEET

1 Title of study

Students’ psychological integration of difficult events during the COVID-19 pandemic and its relationship to mental wellbeing.

2 Introduction

Who am I?

You are being invited to take part in a study. Before you decide whether to do so, it is important that you understand the study that is being undertaken and what your involvement will include. Please take the time to read the following information carefully and discuss it with others if you wish. Do not hesitate to ask us anything that is not clear or for any further information you would like to help you make your decision. Please do take your time to decide whether or not you wish to take part. The University’s regulation, UPR RE01, ‘Studies Involving the Use of Human Participants’ can be accessed via this link:

<https://www.herts.ac.uk/about-us/governance/university-policies-and-regulations-uprs/uprs>

(after accessing this website, scroll down to Letter S where you will find the regulation)

Thank you for reading this.

3 What is the purpose of this study?

Research suggests that being able to make sense of difficult and chaotic times such as the COVID-19 pandemic is an important aspect of psychological wellbeing. It helps people gain a sense of understanding of the events, allowing them to have a more meaningful, less contradictory and more “integrated” view of the world around them, which alleviates distress.

The present study will serve to find ways to better understand how HE students have been using their ideas and perceptions of the COVID-19 pandemic in order to gain this sense of psychological integration. This will help mental health professionals develop better ways of supporting this aspect of student wellbeing.

4 Do I have to take part?

Participation is completely voluntary. If you do decide to take part after reading this information, your consent to participate will be implied. Agreeing to join the study does not mean that you have to complete it. You are free to withdraw at any stage without giving a reason.

5 Are there any age or other restrictions that may prevent me from participating?

Only students from the University of Hertfordshire can take part, including all courses and levels of study.

6 How long will my part in the study take?

If you decide to take part in this study, you will be involved in it for 45-60 minutes depending on how much thought you give to your answers.

7 What will happen to me if I take part?

You will be asked to complete various online questionnaires. You can complete them in your own time and in an environment of your choice. The questionnaires will first ask you about aspects of yourself and other people in relation to the COVID-19 pandemic, and then about how you are feeling at the moment.

8 What are the possible disadvantages, risks or side effects of taking part?

The study will ask you to think about how you see people who may have similar and/or different opinions about the COVID-19 pandemic than yourself. It will also guide you to think about what personal ideas and values may be core to your own views of the pandemic. Some people may find that this process requires effort and can cause some discomfort. If you experience any distress from the questionnaires, you may find the following resources/services helpful for support:

- The Samaritans: 116 123. A free 24/7 helpline for anybody experiencing distress.
- NHS Direct – Tel: 111 option 2 (anytime)
- If you would prefer to text, support is available from SHOUT, the 24/7 UK text service for people in crisis, on 85258. You can find out more about their service on their website <https://giveusashout.org/>
- Your GP can signpost you to additional services if you experience emotional distress.
- For emergencies, please dial 999 immediately.

You may wish to save these now in the event that you withdraw from the survey before the end.

9 What are the possible benefits of taking part?

If you have accessed the study through the SONA system you will obtain 2 research credits after completing the survey.

If you have accessed via an internet link, you will be able to claim a £25 voucher in compensation for your generous time by providing us with your University of Hertfordshire email, to which we will send the voucher.

Your contribution to this study has the potential to help mental health professionals improve psychological support for students. At the end of the research, you will have the opportunity to request a lay summary of the research results by email.

10 How will my taking part in this study be kept confidential?

If you do not claim the £25 voucher, your responses to the survey will remain anonymous. However, we will ask you to voluntarily provide non-identifiable demographic information like age, gender, or ethnicity. We collect this information to make sure we are including participants from all backgrounds in the research.

If you claim the £25 compensation voucher, you will be required to provide your UH email so the voucher can be sent to you securely. This email will only be accessible by the Principal Investigator. Once the voucher has been received by you, your survey response will be fully anonymised (it will not be personally identifiable). All the data provided will be stored electronically in a password and VPN-protected environment. The data will be destroyed under secure conditions after 5 years, in line with good practice of data storage.

12 What will happen to the data collected within this study?

The data will be anonymised prior to storage. The data will be stored electronically in a password-protected environment for 5 years, after which time it will be destroyed under secure conditions;

A report for the project will be submitted as coursework as part fulfilment of the requirements for the Doctorate in Clinical Psychology at the University of Hertfordshire. The findings of this project will be disseminated to a range of audiences (e.g., academics, clinicians, the public), through journal articles, presentations, talks and other relevant media. The thesis will also be made publicly available on ROAR (Registry of Open Access Repositories), a database containing publications and theses which can be accessed for free by anyone. You will be given the opportunity to request a lay summary report by leaving your email address.

13 Will the data be required for use in further studies?

The anonymised data may be re-used or subjected to further analysis as part of a future ethically-approved study.

14 Who has reviewed this study?

This study has been reviewed by the University of Hertfordshire Health, Science, Engineering and Technology Ethics Committee with Delegated Authority. The UH protocol number is LMS/PGR/UH/04992.

15 Factors that might put others at risk

Please note that if, during the study, any circumstances such as unlawful activity become apparent that might or had put others at risk, the University may refer the matter to the appropriate authorities and, under such circumstances, you will be withdrawn from the study.

16 Who can I contact if I have any questions?

I am a Trainee Clinical Psychologist at the University of Hertfordshire Doctoral Training programme (DClinPsy). I am conducting this research as part of these studies. If you would like further information or would like to discuss any details personally, please get in touch with me at jh20ach@herts.ac.uk, or at the following address:

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

Juan Herran-Alonso
Trainee Clinical Psychologist
Department of Psychology, Sport, and Geography
University of Hertfordshire
College Lane
HATFIELD
Hertfordshire
AL10 9AB

You can also get in touch with my supervisor at d.winter@herts.ac.uk, or at the following address:

Prof. David Winter
Department of Psychology, Sport, and Geography
University of Hertfordshire
College Lane
HATFIELD
Hertfordshire
AL10 9AB

Although we hope it is not the case, if you have any complaints or concerns about any aspect of the way you have been approached or treated during the course of this study, please write to the University's Secretary and Registrar at the following address:

Secretary and Registrar
University of Hertfordshire
College Lane
Hatfield
Herts
AL10 9AB

Thank you very much for reading this information and giving consideration to taking part in this study.

APPENDIX 9: Classification System for Personal Constructs (CSPC)

Top to bottom hierarchical order i.e., more abstract to more concrete content.

CONTENT LEVEL	CATEGORY	CONSTRUCT EXAMPLE	CATEGORY ADDED BY
1	EXISTENTIAL	Purposeful vs purposeless	Neimeyer et al. (2001)
2	MORAL	Altruist vs egoist	Feixas et al. (2002)
3	EMOTIONAL	Visceral vs rational	
4	RELATIONAL	Extroverted vs introverted	
5	PERSONAL	Strong vs weak	
6	INTELLECTUAL / OPERATIONAL	Capable vs incapable	
7	VALUES AND INTERESTS	Likes sports vs does not like sports	Neimeyer et al. (2001)
8	CONCRETE DESCRIPTORS	Professor vs student	
9	PHYSICAL HEALTH	In pain vs without pain	Compañ et al. (2011)

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

APPENDIX 10: Descriptives of Ordinal/Interval Variables

	N	Mean	SE of Mean	Median	Mode	Std. Deviation	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis	Range	Minimum	Maximum
Age	99	24.35	0.78	21.00	20	7.80	1.86	0.24	3.08	0.48	35	18	53
No. of rungs ladder 1	101	4.69	0.18	6.00	6	1.84	-1.17	0.24	0.13	0.48	6	0	6
No. of rungs ladder 2	101	4.33	0.21	6.00	6	2.11	-0.86	0.24	-0.70	0.48	6	0	6
No. of rungs ladder 3	101	4.05	0.24	6.00	6	2.40	-0.72	0.24	-1.15	0.48	6	0	6
Content code number ladder 1	97	4.57	0.23	4.00	3	2.22	0.70	0.24	-0.63	0.49	8	1	9
Content code number ladder 2	100	4.03	0.18	4.00	3	1.77	0.87	0.24	0.68	0.48	8	1	9
Content code number ladder 3	99	4.27	0.19	4.00	3	1.91	0.58	0.24	-0.23	0.48	7	1	8
Intensity of all constructs	82	0.33	0.02	0.31	0.09	0.16	1.05	0.27	1.35	0.53	0.76	0.09	0.86
Intensity most important construct	82	0.33	0.02	0.32	0.02	0.18	0.65	0.27	0.79	0.53	0.85	0.02	0.87
Intensity least important construct	82	0.30	0.02	0.26	0.04	0.17	0.96	0.27	0.66	0.53	0.83	0.04	0.87
Intensity construct 1	82	0.28	0.02	0.25	0.03	0.18	0.80	0.27	0.16	0.53	0.83	0.03	0.86
Intensity construct 2	82	0.29	0.02	0.26	0.01	0.18	0.90	0.27	0.73	0.53	0.89	0.01	0.91
Intensity construct 3	82	0.35	0.02	0.34	0.03	0.19	0.58	0.27	0.09	0.53	0.86	0.03	0.89
Intensity construct 4	82	0.35	0.02	0.34	0.07	0.19	0.65	0.27	-0.19	0.53	0.83	0.07	0.90
Intensity construct 5	82	0.34	0.02	0.31	0.04	0.18	0.77	0.27	0.38	0.53	0.83	0.04	0.87
Intensity construct 6	82	0.34	0.02	0.31	0.04	0.18	0.34	0.27	-0.85	0.53	0.70	0.04	0.74
Intensity construct 7	82	0.34	0.02	0.32	0.04	0.20	0.46	0.27	-0.38	0.53	0.83	0.04	0.87
Intensity construct 8	82	0.33	0.02	0.28	0.04	0.19	0.73	0.27	0.20	0.53	0.84	0.04	0.87
Intensity construct 9	82	0.31	0.02	0.27	0.08	0.19	1.00	0.27	0.71	0.53	0.81	0.08	0.88
Intensity construct 10	82	0.31	0.02	0.29	0.02	0.17	0.75	0.27	0.36	0.53	0.80	0.02	0.82

(continues on next page...)

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

(... appendix 10 table continued)

	N	Mean	SE of Mean	Median	Mode	Std. Deviation	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis	Range	Minimum	Maximum
MLQ item 1	101	4.43	0.17	5.00	5	1.69	-0.53	0.24	-0.39	0.48	6	1	7
MLQ item 2	101	5.07	0.14	5.00	6	1.37	-0.67	0.24	0.00	0.48	6	1	7
MLQ item 3	101	4.81	0.16	5.00	6	1.60	-0.74	0.24	-0.07	0.48	6	1	7
MLQ item 4	101	4.42	0.17	5.00	5	1.76	-0.50	0.24	-0.69	0.48	6	1	7
MLQ item 5	101	4.80	0.17	5.00	5	1.67	-0.83	0.24	-0.02	0.48	6	1	7
MLQ item 6	101	4.37	0.18	5.00	5	1.83	-0.44	0.24	-0.70	0.48	6	1	7
MLQ item 7	101	4.71	0.17	5.00	5	1.66	-0.59	0.24	-0.32	0.48	6	1	7
MLQ item 8	101	4.50	0.17	5.00	6	1.72	-0.50	0.24	-0.53	0.48	6	1	7
MLQ item 9	101	5.02	0.19	5.00	7	1.86	-0.66	0.24	-0.61	0.48	6	1	7
MLQ item 10	101	4.25	0.18	5.00	5	1.84	-0.40	0.24	-0.85	0.48	6	1	7
MLQ Presence of Meaning	101	23.03	0.73	24.00	26	7.33	-0.65	0.24	-0.10	0.48	30	5	35
MLQ Search for Meaning	101	23.35	0.64	24.00	28	6.38	-0.54	0.24	-0.06	0.48	30	5	35
MLQ Total	101	46.38	0.93	46.00	39	9.31	-0.60	0.24	1.52	0.48	55	10	65
ISLES item 1	100	2.77	0.12	3.00	2	1.18	0.42	0.24	-0.67	0.48	4	1	5
ISLES item 2	100	3.71	0.10	4.00	4	0.96	-0.87	0.24	0.94	0.48	4	1	5
ISLES item 3	100	3.15	0.11	3.00	3	1.09	-0.21	0.24	-0.51	0.48	4	1	5
ISLES item 4	100	3.53	0.12	4.00	4	1.17	-0.29	0.24	-1.03	0.48	4	1	5
ISLES item 5	100	3.80	0.12	4.00	5	1.17	-0.68	0.24	-0.51	0.48	4	1	5
ISLES item 6	100	3.60	0.11	4.00	4	1.12	-0.43	0.24	-0.57	0.48	4	1	5

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STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

(... appendix 10 table continued)

	N	Mean	SE of Mean	Median	Mode	Std. Deviation	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis	Range	Minimum	Maximum
ISLES item 7	100	3.76	0.12	4.00	5	1.24	-0.76	0.24	-0.40	0.48	4	1	5
ISLES item 8	100	3.13	0.13	3.00	2	1.26	0.12	0.24	-1.11	0.48	4	1	5
ISLES item 9	100	3.85	0.11	4.00	4	1.10	-0.98	0.24	0.41	0.48	4	1	5
ISLES item 10	100	3.38	0.12	3.00	3	1.16	-0.08	0.24	-0.97	0.48	4	1	5
ISLES item 11	100	3.81	0.11	4.00	4	1.10	-0.83	0.24	0.04	0.48	4	1	5
ISLES item 12	100	3.84	0.12	4.00	5	1.20	-0.86	0.24	-0.30	0.48	4	1	5
ISLES item 13	100	3.49	0.13	4.00	4	1.27	-0.45	0.24	-0.89	0.48	4	1	5
ISLES item 14	100	3.72	0.12	4.00	5	1.22	-0.61	0.24	-0.67	0.48	4	1	5
ISLES item 15	100	3.77	0.12	4.00	4	1.17	-0.62	0.24	-0.85	0.48	4	1	5
ISLES item 16	100	3.04	0.12	3.00	3	1.17	0.07	0.24	-0.83	0.48	4	1	5
ISLES Footing in the World	100	39.00	0.90	40.00	43	8.99	-0.56	0.24	0.17	0.48	44	11	55
ISLES Comprehensibility	100	17.35	0.40	17.00	15	4.03	0.01	0.24	-0.10	0.48	20	5	25
ISLES Total	100	56.35	1.22	58.00	62	12.21	-0.45	0.24	0.27	0.48	64	16	80
CORE-10 item 1	100	2.00	0.12	2.00	2	1.22	-0.03	0.24	-0.83	0.48	4	0	4
CORE-10 item 2	100	1.73	0.14	2.00	1	1.35	0.26	0.24	-1.16	0.48	4	0	4
CORE-10 item 3	100	1.51	0.11	1.00	1	1.14	0.56	0.24	-0.37	0.48	4	0	4
CORE-10 item 4	100	1.46	0.13	1.00	0	1.29	0.49	0.24	-0.73	0.48	4	0	4
CORE-10 item 5	100	1.17	0.13	1.00	0	1.30	0.76	0.24	-0.59	0.48	4	0	4
CORE-10 item 6	100	0.53	0.11	0.00	0	1.10	1.92	0.24	2.41	0.48	4	0	4
CORE-10 item 7	100	1.68	0.15	1.00	0	1.50	0.38	0.24	-1.27	0.48	4	0	4

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STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

(... appendix 10 table continued)

	N	Mean	SE of Mean	Median	Mode	Std. Deviation	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis	Range	Minimum	Maximum
CORE-10 item 7	100	1.68	0.15	1.00	0	1.50	0.38	0.24	-1.27	0.48	4	0	4
CORE-10 item 8	100	1.17	0.13	1.00	0	1.26	0.73	0.24	-0.66	0.48	4	0	4
CORE-10 item 9	100	1.62	0.12	2.00	1	1.22	0.36	0.24	-0.73	0.48	4	0	4
CORE-10 item 10	100	1.11	0.13	1.00	0	1.35	1.01	0.24	-0.23	0.48	4	0	4
CORE Total	100	13.98	0.87	13.00	7	8.72	0.75	0.24	-0.11	0.48	36	0	36
CAS item 1	100	0.25	0.06	0.00	0	0.59	2.55	0.24	6.33	0.48	3	0	3
CAS item 2	100	0.33	0.08	0.00	0	0.82	2.61	0.24	6.31	0.48	4	0	4
CAS item 3	100	0.26	0.06	0.00	0	0.65	2.69	0.24	6.92	0.48	3	0	3
CAS item 4	100	0.29	0.08	0.00	0	0.78	2.67	0.24	5.91	0.48	3	0	3
CAS item 5	100	0.26	0.08	0.00	0	0.77	3.25	0.24	10.14	0.48	4	0	4
CAS Total	100	1.39	0.30	0.00	0	3.01	2.34	0.24	4.41	0.48	12	0	12

Note: SE = Standard Error

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APPENDIX 11: Additional Tables

Table 1*Frequency of Elicitation of the Most and Least Important Constructs from Each of the Elements*

Most Important Construct	Observed N	Expected N	Residual	χ^2	Sig.
Self in a future pandemic	19	10.1	8.9	79.210	<.001**
Self before the pandemic	18	10.1	7.9	62.410	<.001**
Coronavirus as if it were a person	13	10.1	2.9	8.410	<.01**
Self at the worst moment during the pandemic	12	10.1	1.9	3.610	0.057
APW thinks everyone should be vaccinated	11	10.1	0.9	0.810	0.368
APW always stands with the government narratives	7	10.1	-3.1	9.610	<.01**
APW thinks restrictions were authoritarian	6	10.1	-4.1	16.810	<.001**
APW thinks the pandemic is planned	5	10.1	-5.1	26.010	<.001**
A person very badly affected by the pandemic	5	10.1	-5.1	26.010	<.001**
APW is unsure or has mixed feelings about pandemic	5	10.1	-5.1	26.010	<.001**
Least Important Construct					
APW thinks restrictions were authoritarian	18	10.1	7.9	62.410	<.001**
APW thinks the pandemic is planned	16	10.1	5.9	34.810	<.001**
A person very badly affected by the pandemic	12	10.1	1.9	3.610	0.057
Coronavirus as if it were a person	12	10.1	1.9	3.610	0.057
APW is unsure or has mixed feelings about pandemic	11	10.1	0.9	0.810	0.368
APW thinks everyone should be vaccinated	10	10.1	-0.1	0.010	0.920
Self before the pandemic	6	10.1	-4.1	16.810	<.001**
Self in a future pandemic	6	10.1	-4.1	16.810	<.001**
Self at the worst moment during the pandemic	5	10.1	-5.1	26.010	<.001**
APW always stands with the government narratives	5	10.1	-5.1	26.010	<.001**

Note: **= $p < .01$; APW = "A person who"

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APPENDIX 12: Verbatim Feedback Left by Participants

Age	Gender	Comments
31	Woman	Found it interesting, made me realise how much value I place on freedom
21	Woman	Dont use too many repeated questions
21	Man	Some of the questions were too similar
28	Man	A little too long, but enjoyed the multiple choice questions.
26	Woman	It made me think about what I never thought about that person and helped me better understand my present self.
23	Man	Amazing research topic. Best of luck buddy!
20	Man	None
25	Man	This survey seems like a good idea
28	Woman	It's was a different experience, but time consuming one. I have invested my time and understanding into it hopefully I'll get my voucher 😊. Thank you and cheers
18	Woman	The part asking about my mental health
24	Woman	Good
20	Man	Fix the current pairing concept, its a bit scattered; also applies for the opposing theme- it can bring people into a loop and therefore produces no useful/meaningful data
25	Woman	In the character pairing, it may have been helpful to have a reminder of the instructions throughout :)
21	Man	It was useful to do the laddering! As it helped me to fully explain myself and find connections between the theories and ideas in my mind
22	Non-binary	The first part where you had to name people felt a bit strange/ uncomfortable. Often wondered what the purpose of the questions were.

STUDENTS' SENSE-MAKING OF THE COVID-19 PANDEMIC

20	Woman	It's a very interesting topic to talk about it made me feel good In a way as I was able to know some staff about my self such as the questions that were given it makes you think about expanding in you personal view.
24	Man	I found it interesting and relevant, very self-insightful and useful for therapy. Kind of felt like an almost therapy session.
27	Woman	It has been helpful to reflect on my experiences and feelings and rethink how I can develop or improve my mental health.
22	Woman	Really interesting survey :)
37	Woman	laddering exercise was very interesting
21	Woman	It was all very interesting
19	Woman	Hello, i am a first year psychology student. Thus, this was my first time in research participation. I tried to asnwer as much honest and accurate as I could. I hope my responses are useful for your reserach. Thank you, best of luck :)
34	Woman	This survey was useful for students like me who are interested to study more about covid.
19	Woman	N/A
37	Woman	This was very interesting. Challenging to do but the first time I have been asked to think about the pandemic and realised I was not as unscathed by it as I thought.

APPENDIX 13: Acronym Guide

MAIN CONCEPTS:

CBV = Core Belief Violation

HE = Higher Education

MIL = Meaning In Life

MM = Meaning-Making

PCP = Personal Construct Psychology

PTSD = Post-Traumatic Stress Disorder

RQ = Research Question

SM = Sense-Making

TCA = Thematic Content Analysis

MAIN INSTRUMENTS USED:

CAS = Coronavirus Anxiety Scale

CORE = Clinical Outcomes in Routine Evaluation

ISLES = Integration of Stressful Life Events Scale

MLQ = Meaning in Life Questionnaire