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Meaning in life and depression in serious head injury: Examining potential differences in coherence, purpose, and mattering

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Abstract

People with serious head injuries describe psychological distress and existential disruptions, often struggling to find meaning in their lives post-injury. Understanding the differential associations of the three facets of the tripartite model of meaning – coherence, purpose, and mattering – among people with serious head injury may thus benefit and guide intervention and treatment. Using data from the Midlife in the United States national survey, we assessed differences in coherence, purpose, and mattering between people with serious head injury and case matched controls. Differences in depression were also assessed, as was whether meaning mediated the relationship between group and depression. Independent samples *t*-tests found that people with serious head injury reported less coherence and greater depression than controls, but no differences were found for purpose or mattering. Coherence further mediated the relationship between group and depression. These findings suggest that targeting coherence may support clinical interventions and improve patient health and well-being.

Keywords

comprehension, mental health, existential psychology, self, brain injury

Introduction

People who have experienced serious head injury frequently describe feeling a disruption of their self and identity due to the many cognitive, physical, and social changes resulting from injury (Thomas et al., 2014; Whiffin et al., 2019). This in turn can lead to existential distress and depression as these individuals reflect upon the contrast between their sense of self before and after the injury (Hinkebein and Stucky, 2007; Negru-Subtirica et al., 2016; Villa et al., 2021). These self-reconciliatory processes weigh heavily upon those with head injury and are frequently discussed in qualitative reports, highlighted by accounts of struggles with understanding and finding meaning and purpose in life (Jumisko et al., 2005; Snell et al., 2017; Tasker, 2003). Importantly, lacking meaning in life undermines mental and physical health, predicting poorer quality of life and less well-being, greater depression and anxiety, and has been

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Data Availability Statement included at the end of the article

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identified as a key component in other conditions such as chronic pain, disability, and PTSD; it is therefore possible that deficits in meaning in life play a role in serious head injury as well (Boring et al., 2022; Guthrie et al., 2022; Kleftaras and Psarra, 2012; Maffly-Kipp et al., 2022; Reed et al., 2025). Further understanding the role of meaning in persons with history of head injury may thus benefit treatment and intervention.

Despite the consistent findings for existential narratives across qualitative reviews of studies in persons with head injury, the quantitative literature on meaning in life among people with head injury remains limited. Furthermore, self-reported descriptions of meaning often lack nuance that limits clear assessment of the potential clinical implications for these existential concerns. Specifically, meaning in life is more currently conceptualized as comprising three distinct but related facets: coherence, purpose, and mattering (Costin and Vignoles, 2020; George and Park, 2016; Martela and Steger, 2016). Coherence (also referred to as comprehension) involves understanding the world and feeling as though one's life makes sense, whereas purpose is indicated by having life goals that one is actively working toward, and finally mattering (also referred to as significance) is the sense that one's own life is important to the lives of others and to the world in general. All three facets have been implicated to various degrees within a range of psychological and physical outcomes, and exploring these facets would provide further insight into differences in meaning in life among people who have experienced serious head injury.

The current study compared levels of meaning in life between people with a history of serious head injury and case matched controls. Using data from Wave 2 of the Midlife in the United States National survey (MIDUS), we assessed differences in coherence, purpose and mattering using measures encompassing the tripartite model of meaning in life (Ryff et al., 2017). We hypothesized that people with a history of serious head injury would report lower levels of each facet of meaning than their healthy case matched controls and that meaning would mediate depression levels.

Method

Participants

Data were extracted from Wave 2 (2004–2005) of the MIDUS, an ongoing longitudinal study assessing health variables across adulthood, collected using surveys and questionnaires (telephoned and mailed) at which time consent was obtained (Ryff et al., 2017). Use of this accessible dataset was deemed exempt by the Kent State University Institutional Review Board (#2092). Within this total sample ($N=4963$), 146 reported experiencing a serious head injury. To identify healthy case matched controls, we selected those remaining participants with no history of serious head injury nor any other health conditions (out of a potential 30) to control for the potential impact that those conditions might have on meaning in life, resulting in a sample of $N=888$. From these, we then case matched controls on sex and age (± 3 years), for an equal matched sample of 146 and a final sample of 292 participants. Participant demographics can be found in Table 1.

Measures

Serious head injury. Presence of serious head injury was assessed with the question "Do you have a history of any of the following medical conditions?" with the option to select "Serious head injury" (yes or no) from a list of head/brain conditions including Parkinson's disease, stroke, and "other neurological disorders."

Coherence, mattering, and purpose. Coherence was measured using the Social Coherence subscale of a social wellbeing survey included in the MIDUS (Keyes, 1998). Participants were asked to describe the extent to which they agreed with two items scored on a scale of 1 (strongly agree) to 7 (strongly disagree; e.g. "I cannot make sense of what's going on in the world"; $\alpha=0.673$). Total score was calculated

Table 1. Healthy controls were cased matched on age and sex.

Descriptive statistics for whole and group samples			
	Full sample	Head injury	Controls
Age	54.71 (11.63)	54.71 (11.65)	54.71 (11.65)
Sex			
Male	166	83	83
Female	126	63	63
Race			
Asian	2	2	0
Black	6	0	6
Multicultural	3	1	2
Native American	3	2	1
Other	2	1	1
White	251	122	129
Missing	25	18	7
Education			
Some grade school	1	1	0
Junior high	4	3	1
Some high school	24	14	10
GED	1	1	0
High school	69	34	35
1–2 years college	64	36	28
3+ years college	11	4	7
Associates degree	24	12	12
Bachelor's degree	54	21	33
Some graduate school	6	4	2
Master's degree	17	9	8
Professional degree	17	7	10

as the sum of the reverse coded items, with higher scores indicating greater coherence (range of 2–14).

Mattering was measured using Social Contribution subscale of the same social well-being survey as coherence (Keyes, 1998). Participants were asked to describe the extent to which they agreed with three items (e.g. "I have nothing important to contribute to society"; $\alpha = 0.723$) on a scale of 1 (strongly agree) to 7 (strongly disagree). Total score was calculated as the sum of the items, with higher scores indicating greater mattering (range of 3–21).

Purpose was measured using the purpose subscale of a psychological well-being survey included in the MIDUS. Participants indicated how much they agreed with seven items (e.g. "I don't have a good sense of what it is I'm trying to accomplish in life"; $\alpha = 0.786$) on a scale of 1 (strongly agree) to 7 (strongly disagree). Scores were calculated as the sum of the items, with higher scores indicating greater purpose (range of 7–49).

Depression. Depression was assessed using the World Mental Health Organization's Composite International Diagnostic Interview Short Form (Kessler et al., 1998). Scores were calculated as the sum of "Yes" responses to seven items assessing both depressed affect (e.g. "During two weeks in the past 12 months, when you felt sad, blue or depressed, did you lose interest in most things?") and anhedonia (e.g. "During two weeks in the past 12 months, when you lost interest in most things, did you have a lot more trouble concentrating than usual?").

Table 2. Bivariate correlations of facets of meaning in life and depression.

Bivariate correlations of facets of meaning in life and depression				
	Coherence	Purpose	Mattering	Depression
Coherence	1	0.421***	0.398***	−0.275***
Purpose		1	0.514***	−0.300***
Mattering			1	−0.147*
Depression				1

***$p < .001$. *$p < .05$.

Totals ranged from 0 to 7, with higher scores indicating greater depression.

Analysis plan

Bivariate correlations were first conducted between coherence, purpose, mattering, and depression. Independent samples t-tests were then conducted for each of these variables to assess differences between those participants with a history of serious head injury and their case-matched controls. Finally, any meaning-related facets that differed between groups were then used to test for mediation between group membership and depression using Hayes Process v.4.2 Model 4. Two separate analyses were conducted to examining this possibility – one including the X by M interaction between group membership and meaning, and one without the interaction.

Results

Bivariate correlations found that coherence, purpose, and mattering were all positively associated with each other, and negatively associated with depression (Table 2). Consistent with expectations, results of the one-tailed independent samples *t*-test found that participants with a history of severe head injury ($M = 8.61$, SD = 3.24) reported significantly less coherence than healthy case matched controls ($M = 9.46$, SD = 2.92), $t(234) = -2.13$, $p = 0.017$, 95% CI (−1.65, −0.06). However, contrary to our hypotheses, there were no differences in purpose ($M = 36.36$, SD = 7.49 vs $M = 37.65$, SD = 7.23), $t(234) = -1.35$, $p = 0.090$, 95% CI (−3.18, 0.60), or mattering ($M = 14.95$, SD = 4.49 vs $M = 15.36$, SD = 3.59), $t(234) = -0.75$, $p = 0.220$, 95% CI (−1.45, 0.63). Participants with a history of severe head injury also reported greater depression than case matched controls ($M = 1.42$, SD = 2.52 vs $M = 0.38$, SD = 1.45), $t(231.24) = 4.32$, $p = 0.017$, 95% CI (0.567, 1.516).

Through two analyses, we then explored the mediating role of coherence between group membership and depression, along with the possible interaction between group and coherence. We found that the total effect of group membership on depression was significant, $B = 0.99$, 95% CI (0.48, 1.50), $p < 0.001$, such that people with serious head injury reported greater depression. However, the direct effect of group membership on depression controlling for the mediator of coherence was not significant, $B = 1.45$, 95% CI (−0.11, 3.01), $p = 0.068$; instead, the path from the predictor to coherence was significant, $B = -0.85$, 95% CI (−1.64, 0.06), $p = 0.035$, which in turn was significantly and negatively associated with depression, $B = -0.13$, 95% CI (−0.25, 0.01), $p = 0.036$, suggesting the fully mediating effects of coherence on depression. However, the interaction between group and coherence was not significantly predictive of depression, $B = -0.07$, 95% CI (−0.23, 0.10), $p = 0.424$.

When the model was tested with coherence mediating the relationship between group and depression without including the X by M interaction, we found that the total effect of group membership on depression was again the same, $B = 0.99$, 95% CI (0.48, 1.50), $p < 0.001$, as was the path from the predictor to coherence, $B = -0.85$, 95% CI (−1.64, −0.06), $p = 0.035$.

In this second model, the path from coherence to depression was significant, $B = -0.16$, 95% CI (−0.24, −0.08), $p < 0.001$; the direct effect of group on depression was also significant, $B = 0.85$, 95% CI (0.35, 1.35), $p = 0.001$, although less so than the total effect suggesting partial mediation by coherence.

Discussion

Experiencing a serious head injury imparts cognitive, physical, and social changes that can disrupt one's sense of self and identity, particularly for those who struggle to reconcile their pre- and post-injury self-perceptions (Agtarap et al., 2021; Dijkers, 2004; Valovich McLeod et al., 2017; Villa et al., 2021; Voormolen et al., 2019; Whiffin et al., 2019). These internal conflicts – along with the barriers that arise with the symptoms of the injury themselves – have been described by patients as impacting their sense of meaning in life, but this had not been previously examined quantitatively (Hinkebein and Stucky, 2007; Negru-Subtirica et al., 2016; Villa et al., 2021). Here we show that people with a history of serious head injury report less coherence (i.e. a comprehension of their world) than case-matched controls from the MIDUS dataset, partially supporting our hypothesis. However, neither purpose nor mattering (the other two facets of the tripartite model of meaning in life) differed between groups. Exploring further, we showed that the relationship between presence of injury and depression was mediated by coherence, such that depressive symptomology was partially explained by a lack of feeling as though one's life makes sense.

Though coherence was the only facet of meaning in life that differed between groups, this pattern is consistent with other recent findings in relation to significant life-impacting experiences. For instance, across three studies, coherence was the only facet consistently associated with acute and chronic pain outcomes (Boring et al., 2022). Other work has shown that coherence mediated the relationship between perceptions of free will and psychological recovery following the collective trauma of COVID-19 (Maffly-Kipp et al., 2022). Taken together with the current findings, it is possible that making coherent sense of one's existence in relation to life-altering events proves challenging as one grapples with why the event happened to them and how they must navigate their new reality. This may be especially salient for those with serious head injury, as cognitive, emotional, physical, and social processes can all potentially be affected, requiring understanding and self-reflection across multiple domains (Sivertsen and Normann, 2015). Indeed, patients have described wanting and needing to comprehend the ramifications of their injury and having clear routes to recovery (Snell et al., 2017). Conversely, purpose may not have differed between groups as people with serious head injury may continue to work toward their life's goals regardless or despite of any injury-related barriers; similarly, people may still believe their lives matter to others and the world regardless of or despite experiencing a traumatic event such as a serious head injury.

Our findings also showed that coherence mediated the relationship between group and depression, suggesting that struggling to make sense of one's world following psychological changes related to head injury potentially contributes to suffering, sadness, and hopelessness. Previous qualitative work has shown that older adults with depression who strove to find meaning in their lives through understanding themselves and their condition had a better sense of identity and were better able to manage the symptoms of their depression (Holm et al., 2013; Polacsek et al., 2022). Being able to accept and comprehend the circumstances of one's injury and integrate this into a meaningful existence moving forward may thus act as a resilience factor against negative outcomes such as depression. However, that no interaction between group membership and coherence was found suggests that having coherence is an integral part of depressive experiences regardless of history of injury.

The current study has potential for informing clinical intervention and practice for supporting the well-being of those who have

suffered serious head injury, suggesting the need to target coherence and making sense of one's life as part of treatment to benefit mental and physical health. For instance, meaning-making has shown to mediate the relationship between cognitive behavioral therapy and anxiety and depression, while reviews of narrative storytelling among people with traumatic brain injury have also uncovered themes of the value of learning about and understanding one's self (Candlish et al., 2023; D'Cruz et al., 2020; Marco et al., 2021). Acceptance and commitment therapy, which targets identity building and understanding one's emotions, has also recently provided evidence supporting benefits for psychological distress (Whiting et al., 2020). Specifically addressing coherence and assisting people with serious head injury make sense of their lives and themselves may thus further benefit and increase the efficacy of interventions such as cognitive behavioral therapy and narrative therapy.

There were a few limitations to this study. First, the sample was predominantly white and may not generalize to all people; future studies will assess this relationship among more heterogenous samples. Second, while the items present within the MIDUS used to assess the facets of meaning are analogous to their existential conceptualizations, more recent measures have been developed that more clearly address these constructs (Costin and Vignoles, 2020). For instance, coherence involves making sense of one's life experiences, and of the world in general; the assessment used here targeted an understanding of the world, but not necessarily relative to one's personal narratives. As such, the current findings may not fully document the impact that serious brain injury has on an individual's understanding of their experiences in life. Similarly, mattering could address one's significance in the grand scheme of life without directly impacting the lives of others, which is not assessed within the measure used here; as such people could potentially feel less significant within the universe overall following injury without their sense of mattering to others being impacted. Indeed, as the concept of meaning in life evolves, others suggest the potential of other dimensions beyond the tripartite model such as recognizing one's positive impact on others (Costin and Vignoles, 2020; George and Park, 2016; Martela and Steger, 2016, 2023). While previous studies have used these MIDUS items in support of and in conjunction with current meaning in life measures in other conditions such as chronic pain, future work should explore the relationships found here with these more current assessments, particularly exploring coherence as it pertains to the experience of serious head injury (Boring et al., 2022). The study was also limited in that the specific severity of the injury was not clear, as participants were only asked if they had a history of "serious" head injury. Other studies using MIDUS data have discussed the potential limitations of this approach (Gavett et al., 2013; Kumar et al., 2022). Though the current study provides basis for further exploration of the role of meaning – and specifically coherence – within this group, assessing differences based on injury severity may provide further insight into clinical treatment and benefits. Assessing the relationship between the extent of any functional disability impacted by the injury and the various facets of meaning and depression may further clarify the mechanisms by which differences in meaning may arise.

Suffering a serious head injury impacts multiple aspects of one's mental and physical health, which can create existential distress relating to the self and one's meaning in life. The current findings show that these injuries may be particularly impactful on coherence and comprehension of one's life, more so than purpose or mattering, as people try to understand and reconcile the circumstances of their injury. This in turn may impact other aspects of health and well-being, including depression. Clinical interventions targeting coherence may thus benefit people with serious head injury in multiple domains.

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Ethical considerations

This study was approved and deemed exempt by the Kent State University IRB - #2092.

Consent to participate

The data used here are from a publicly available dataset, and participants were not interacted with for this manuscript; as such, no consent was obtained.

Consent for publication

Consent for publication is not applicable to this article as it does not contain any identifiable data.

Author contributions

Both authors were involved in study conception. BB conducted analyses and wrote the first draft, and both authors edited and wrote the final manuscript.

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Declaration of conflicting interests

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Data availability statement

The data used here are from the Midlife in the United States national survey, a publicly available dataset.

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