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Correlates of Cognitive Load in Surrogates Decision Makers of the Critically Ill

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Abstract

Surrogate decision makers of the critically ill experience intense emotions and transient states of decision fatigue. These factors may increase the cognitive load experienced by electronic decision aids. This cross-sectional study explored the associations of emotion regulation (expressive suppression and cognitive reappraisal) and decision fatigue with cognitive load (intrinsic and extraneous) among a sample of 97 surrogate decision makers of the critically ill. After completing subjective measures of emotion regulation and decision fatigue, participants were exposed to an electronic decision aid and completed a subjective measurement of cognitive load. Multiple regression analyses indicated that decision fatigue predicted intrinsic cognitive load and expressive suppression predicted extraneous cognitive load. Emotion regulation and decision fatigue represent modifiable determinants of cognitive load among surrogate decision makers exposed to electronic decision aids.

Keywords

Decision Support; Cognitive Load; Decision Making; Caregivers; Emotion Regulation

Surrogate decision makers (SDMs) of critically ill patients report intense emotional and cognitive burdens associated with their role (Wendler & Rid, 2011). For example, SDMs experience many negative emotions, such as anxiety, depression, and stress, as well as symptoms of decision fatigue (Hickman, Pignatiello, & Tahir, 2018; Wendler & Rid, 2011). Evidence from the psychological literature suggests that emotion regulation and decision fatigue may compromise working memory, an essential cognitive function necessary for learning and information acquisition. (Chen, Castro-Alonso, Paas, & Sweller, 2018; Maranges, Schmeichel, & Baumeister, 2017). Working memory is subject to varying degrees of cognitive load, the burden imposed on memory by processing information. Elevated or diminished levels of cognitive load may result in processing defects that impair learning (Leppink, Gog, Paas, & Sweller, 2015). When SDMs must regulate intense emotion and experience symptoms of decision fatigue, they may experience impairments in working memory that can increase the cognitive load of decision aids used to support those in the SDM role. Thus, cognitive load may influence the efficacy of decision aids. Currently, the

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associations of emotion regulation and decision fatigue with cognitive load have not been explored.

Emotion Regulation, Decision Making, and Information Processing Among Surrogate Decision Makers of the Critically Ill

In the intensive care unit (ICU), SDMs are commonly approached by critical care clinicians to make complex treatment and end-of-life care decisions for critically ill patients with cognitive impairment (Wendler & Rid, 2011). Three decades of research consistently indicate that individuals in the SDM role require extensive informational and emotional support (Jacob et al., 2016; Nelson, Kinjo, Meier, Ahmad, & Morrison, 2005). White (2011) states that attributes related to the SDM, clinical team, and care process must be optimized to effectively meet the informational and emotional needs of SDMs. Generally, decision aids designed to optimize these attributes have focused on altering clinician and care-delivery factors. However, past decision aids have inconsistently met the emotional and informational needs for SDMs of the critically ill. Notably, those who have implemented decision aids for SDMs of the critically ill have not accounted for SDM-related factors that may influence a decision aid's efficacy (Pignatiello, Hickman, & Hetland, 2018). For example, White (2011) specifies emotion regulation, decision making, and information comprehension as significant SDM-related factors that can be enhanced to improve the efficacy of decision aids for SDMs of the critically ill. However, the relationships between emotion regulation, decision making, and information comprehension have not been explored.

According to Gross (1998), *emotion regulation* is the habitual process of manipulating the perception or expression of an emotional experience. According to Gross & John (2003), emotion regulation can occur before (antecedent-focused) or after (response-focused) the emotional response. Two commonly studied emotion regulation strategies are cognitive reappraisal and expressive suppression. *Cognitive reappraisal* is an antecedent-focused regulatory strategy that involves changing the interpretation of an experience to alter its emotional impact. *Expressive suppression*, a response-focused regulatory strategy, involves inhibiting an emotional response. SDMs experience feelings of anxiety, depression, and stress (Hickman & Douglas, 2010; Wendler & Rid, 2011). Evidence from psychological research suggests the strategies one uses to regulate emotions can influence decision-making behaviors (Heilman, Crişan, Houser, Miclea, & Miu, 2010; Phelps, Lempert, & Sokol-Hessner, 2014).

Regulating emotions can impair the cognitive processes necessary for decision making, manifesting as decision fatigue (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Cutuli, 2014; Diamond, 2013). *Decision fatigue* is a state of impaired self-control in which individuals demonstrate maladaptive decision-making behaviors (Vohs et al., 2008). Individuals experiencing decision fatigue may make impulsive decisions or simply avoid making decisions altogether (Pignatiello, Martin, & Hickman, 2018). A study by Hickman, Pignatiello, and Tahir (2018) reports that SDMs of the critically ill report symptoms of decision fatigue. Both emotion regulation and decision fatigue can be implicated in the impairment of the main cognitive process necessary for information comprehension, working memory (Baumeister, Vohs, & Tice, 2007; Hagger, Wood, Stiff, & Chatzisarantis, 2010; Jasielska et al., 2015).

Working memory, a finite cognitive process essential for information comprehension, can be modified by emotion regulation and decision making (Diamond, 2013). In laboratory studies by Baumeister et al. (1998) and Szczygieł and Maruszewski (2015), expressive suppression was associated with impaired working memory performance on anagram and digit-span tasks. Alternatively, use of cognitive reappraisal is associated with enhanced or unchanged behavioral memory performance (Cutuli, 2014). Apart from its use for information comprehension, working memory is also essential for the acquisition and organization of information necessary for decision making (Diamond, 2013; Hinson, Jameson, & Whitney, 2003). The relationship between decision fatigue and working memory has not been explored; however, laboratory studies support the conceptual linkage between the two concepts. For example, Cui et al. (2015) reports that high working memory load was associated with poorer performance on the Iowa Gambling Task, a decision-making activity. Also, engagement of working memory was associated with unstable decision-making risk preferences and choice strategies among subjects doing a computerized economic decision-making task—behaviors consistent with decision fatigue (Hickman et al., 2018; Mullette-Gillman, Leong, & Kurnianingsih, 2015). In addition to emotion regulation and decision fatigue, working memory is also susceptible to another source of burden: cognitive load.

Cognitive load represents the degree to which learning material, such as decision aids, burdens the working memory when processing information (Sweller, 1988). Working memory is susceptible to two types of cognitive load. *Intrinsic cognitive load* is the burden placed on the working memory by the complexity and elements of the information being processed; whereas, *extraneous cognitive load* is the load imposed by how the information requiring processing is presented. A central tenet of cognitive load theory contends that humans possess a finite capacity to engage their working memory systems for processing information (Sweller, van Merrienboer, & Paas, 1998). Therefore, effectively processing information is dependent on a delicate balance of both intrinsic and extraneous cognitive load. Theoretically, intrinsic cognitive load should be optimized to align with the knowledge and proficiency of the individual; whereas, extraneous cognitive load should be minimized (Chen et al., 2018; Leppink, 2017; Leppink, Paas, van Gog, van der Vleuten, & van Merriënboer, 2014). Cognitive load has established relationships with age, gender, and anxiety; however, its relationship to other factors associated with working memory, such as emotion regulation and decision fatigue, is unknown (Hwang, Hong, Cheng, Peng, & Wu, 2013; Najmi, Amir, Frosio, & Ayers, 2015; Strombach, Margittai, Gorczyca, & Kalenscher, 2016).

To our knowledge, cognitive load has not been studied among recipients of any type of decision aid. Moreover, the associations of emotion regulation and decision fatigue with cognitive load are poorly understood and relatively understudied in clinical populations. This gap in the literature is highly applicable to SDMs of the critically ill and is relevant for the advancement of decision support science. SDMs of the critically ill must routinely regulate intense negative emotions and report symptoms of decision fatigue (Hickman et al., 2018; Wendler & Rid, 2011) The underlying psychological processes associated with emotion regulation and the development of decision fatigue may contribute to the manifestation of cognitive load during exposure to decision aids. Ultimately, understanding the intricate relationships between emotion regulation, decision fatigue, and cognitive load may inform the design and delivery of supportive interventions to maximize information processing among SDMs of the critically ill, effectively meet their informational needs, and promote the making of decisions that align with the values of the patient.

Purpose

The purpose of this descriptive study was to examine the associations between emotion regulation (expressive suppression and cognitive reappraisal) and decision fatigue with cognitive load (intrinsic and extraneous), while controlling for covariates (age, gender, symptoms of anxiety, and type of electronic decision aid).

Methods

Design

This study was a secondary data analysis of a parent trial. The parent trial was a three-arm randomized controlled trial that compared the effects of two electronic decision aids to a usual care condition on decisional and psychological outcomes within a sample of SDMs of critically ill patients. To ensure balance among the three arms of the study, participants were assigned to a study condition using a minimization procedure based on three factors: SDM's gender, relationship to patient, and race. Institutional review board approval was obtained from the study site. For the present study, data were collected from December 2016 to March 2018, and the analytic sample consisted of participants who were allocated to one of the two decision aid arms. Of note, despite the present study being a secondary analysis, the authors of this manuscript participated in the data collection process for the parent trial.

Decision aids.

Participants were exposed to two electronic decision aids: the first, Information Support (IS), was a video-based intervention that shared information about communicating with healthcare providers; and the second, Interactive Virtual Decision Support for End-of-Life and Palliative Care (INVOLVE), was an avatar-based intervention that provided participants with a simulated opportunity to practice communicating with critical care clinicians. The interventions were delivered on a 10-inch electronic tablet device. Participants received a single dose of either electronic decision aid. Participants in the IS condition were exposed to a five-minute video that discussed communicating with clinicians, which was designed to resemble a passive decision support experience. Participants in the INVOLVE condition were exposed to a 10-minute module representing an active decision support experience. The INVOLVE module required users to provide responses during a simulated bedside meeting with critical care team avatars.

Sample

A convenience sample of 97 SDMs were recruited from the cardiac, medical, neuroscience, and surgical ICUs at a large, tertiary medical center in Northeast Ohio. Before approaching the SDM for informed consent, a research assistant verified that the patient: (1) had received at least 72 consecutive hours of mechanical ventilation, (2) lacked the cognitive capacity to make healthcare decisions, (3) possessed an SDM, and (4) was not expected to discharge from the ICU within the following 48 hours. Once patient criteria were verified, the research assistant confirmed that the SDM was: (1) at least 18 years old, (2) able to read and understand English, and (3) could view the electronic decision aid on a 10-inch computer screen and hear audio through standard headphones.

Measures

Emotion Regulation.

The Emotion Regulation Questionnaire (ERQ) contains 10 items with subscales measuring expressive suppression (four items) and cognitive reappraisal (six items). Each of the 10 items are scored on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The ERQ contains two subscales measuring expressive suppression (four items) and cognitive reappraisal (six items). For each subscale, the items are averaged, with higher scores indicating greater trait use of either expressive suppression or cognitive reappraisal. The ERQ possesses convergent validity with the Big Five Personality Inventory and has acceptable internal consistency among adults (Gross & John, 2003; Spaapen, Waters, Brummer, Stopa, & Bucks, 2014). In this sample, the subscales capturing expressive suppression (α = .83) and cognitive reappraisal (α = .71) demonstrated acceptable internal consistency.

Decision fatigue.

Decision fatigue describes an impaired self-control state that results in impaired decision-making behaviors (Pignatiello et al., 2018). Decision fatigue was measured through the Decision Fatigue Scale (DFS) (Hickman et al., 2018). The DFS, possessing ten items, captures the subjective experience of decision fatigue over the last 24 hours. It is scored using a four-point Likert scale, with responses ranging from 0 (strongly disagree) to 3 (strongly agree). The items' responses are totaled, with higher scores indicating greater levels of decision fatigue. The Decision Fatigue Scale possesses acceptable convergent and discriminant validity with measures of anxiety and depression. It also possesses acceptable internal consistency (α = .87 and .90) within SDMs for the critically ill (Hickman et al., 2018). In this sample, the DFS demonstrated acceptable internal consistency (α = .84).

Cognitive load.

Cognitive load describes the burden imposed on the working memory through the instructional process of learning (Sweller, 1988). The Cognitive Load Scale (CLS) is eight items, possessing two four-item subscales representing intrinsic and extraneous cognitive load (Leppink & van den Heuvel, 2015). Items are measured on a 11-point Likert scale ranging from 0 (not at all the case) to 10 (completely the case). The individual subscale scores are averaged, with higher scores indicating a greater degree of cognitive load. The Cognitive Load Scale possesses acceptable discriminant validity with measures of emotion regulation, decision fatigue, and decision-making preparation. It also possesses acceptable internal consistency within SDMs for the critically ill (α = .89 and .75 for the intrinsic and extraneous subscales, respectively) (Pignatiello, Tsivitse, & Hickman, 2018). In this sample, the Cognitive Load Scale demonstrated acceptable internal consistency in this sample (α = .90 and 81 for the intrinsic and extraneous subscales, respectively).

Symptoms of anxiety.

These symptoms were measured by the anxiety subscale of the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). The subscale consists of seven items that query subjects on present feelings related to anxiety, and is scored on a four-point Likert scale. Higher scores indicate a greater degree of anxiety symptomatology. The anxiety subscale demonstrates acceptable factorial validity and concurrent validity with depressive symptomatology and general health (Bjelland, Dahl, Haug, & Neckelmann, 2002). The anxiety subscale demonstrates acceptable internal consistency within adult caregivers of palliative care patients (α = .85) (Gough & Hudson, 2009). This subscale possessed acceptable internal consistency in this sample (α = .85).

Demographics.

An investigator-derived form was used to capture pertinent patient and SDM demographic characteristics. For SDMs, data on age, gender, race, relationship to patient, education level, and income were collected. Age and gender were used as covariates. For patients, data on age, gender, ICU location, ICU length of stay, and hospital length of stay were collected.

Procedures

After obtaining the written informed consent, a research assistant conducted the baseline interview of the parent grant. Baseline data were collected through face-to-face interviews that lasted approximately 40 minutes. During the baseline interview, demographic characteristics, the Emotion Regulation Questionnaire, and Decision Fatigue Scale were administered. Subsequently, participants were exposed to a decision support resource (IS or INVOLVE). After receipt of the decision support resource, the Cognitive Load Scale was administered.

Analysis

Statistical analyses were completed using Statistical Package for the Social Sciences for Windows (SPSS, Version 24.0). Descriptive statistics were analyzed to provide a description of the sample and study variables. Next, two separate multiple linear regression analyses were conducted. Each multiple linear regression analysis regressed the independent variables: emotion regulation (expressive suppression and cognitive reappraisal), decision fatigue (decision fatigue scale total score), age, gender, symptoms of anxiety, and decision support resource (IS or INVOLVE) on the dependent variable: cognitive load (intrinsic and extraneous). The assumptions of multiple regression were tested (i.e., linearity, absence of outliers, homogeneity of variance, residual independence, and multicollinearity), and no violations were observed. An *a priori* alpha level of .05 was established to determine statistical significance.

Results

Sample Characteristics

Participant (SDM) characteristics (Table 1) were similar to prior studies of this population (Daly et al., 2010; Hickman et al., 2018). Participants' mean age in the IS group was 56 years (*SD* = 13.1), and mean age of those in the INVOLVE group was 52 years (*SD* =13.54). The majority of the participants identified as female (72%) and White (75%). The majority of this sample were employed (56%) and reported an annual household income greater than $50,000. Of the 97 total participants, 47 were allocated to the IS group, and 50 were allocated to INVOLVE.

Patient Characteristics

A brief description of the patients' characteristics is necessary to provide context for the experience captured by the SDMs who volunteered to participate in the study. In this secondary analysis, the majority of patients were male (53%) and White (75%). The majority of patients were cared for in the neurological ICU (32%), followed by the medical (30%), surgical (27%), and cardiac ICUs, respectively. Because these patients were intended to represent the chronically critically ill (as intended by the parent study), they experienced prolonged ICU (*M* = 14 days; *SD* = 8.7) and hospital (*M* = 20 days; *SD* = 9.7) lengths of stay.

Influence of Emotion Regulation and Decision Fatigue on Cognitive Load

Two multiple linear regression analyses were used to test if emotion regulation and decision fatigue possessed predictive associations with intrinsic and extraneous cognitive load, while controlling for age, gender, symptoms of anxiety, and type of decision support resource. The results of the first regression indicated that the seven predictors explained 26% of the observed variance in intrinsic cognitive load ($F(7,89) = 4.56$, $p < .001$, $R^2 = .26$) (Table 2). It was found that decision fatigue ($\beta = .27$, $t(89) = 2.80$, $p = .006$), as well as the covariates age ($\beta = .25$, $t(89) = 2.67$, $p = .009$) and anxiety ($\beta = .20$, $t(89) = 2.08$, $p = .040$), demonstrated significant predictive associations with intrinsic cognitive load. Expressive suppression ($\beta = .13$, $t(89) = 1.32$ $p = .19$) and cognitive reappraisal ($\beta = .05$, $t(89) = 0.55$, $p = .584$) were not significant predictors of intrinsic cognitive load.

In the second regression model (Table 3), the seven predictors explained 26% of the observed variance in extraneous cognitive load ($F(7,89) = 4.40$, $p < .001$, $R^2 = .26$). It was found that expressive suppression ($\beta = .23$, $t(89) = 2.31$, $p = .023$), as well as the covariates age ($\beta = .27$, $t(89) = 2.89$, $p = .005$) and decision support resources ($\beta = .34$, $t(89) = 3.52$, $p = .001$), were significant predictors of extraneous cognitive load. Decision fatigue ($\beta = .13$, $t(89) = 1.31$, $p = .193$) and cognitive reappraisal ($\beta = -.09$, $t(89) = -0.91$, $p = .367$) were not significant predictors of extraneous cognitive load.

Discussion

To our knowledge, this was the first study to examine the relationships between emotion regulation, decision fatigue, and cognitive load among a sample of SDMs for the critically ill. We found that decision fatigue, age, and anxiety were significant predictors of intrinsic cognitive load; and expressive suppression, age, and type of decision aid received were significant predictors of extraneous cognitive load. Evaluation of empirical and theoretical evidence may inform these findings.

Evidence from psychological research suggests that decision fatigue results from the depletion of an internal cognitive resource necessary for self-control (Vohs et al., 2008). Recent evidence suggests cognitive load may represent the depletion of working memory from a similar internal resource (Chen et al., 2018; Maranges et al., 2017). In light of this, we hypothesize that individuals with higher levels of decision fatigue may have been in a depleted state, leaving less cognitive resources available for working memory function. This depletion may explain the association of decision fatigue with increased intrinsic cognitive load.

Unlike decision fatigue, use of expressive suppression was associated with higher levels of extraneous cognitive load. This finding is consistent with prior psychological literature reporting associations between suppressing emotion and working memory (Szczygieł & Maruszewski, 2015). Additionally, Baumeister and colleagues (1998) report similar findings where individuals who were instructed to suppress their emotional responses to a video performed worse on tasks demanding working memory than those who were allowed to express their emotions. Furthermore, our findings are consistent with Chen et al.'s (2018) work, which hypothesizes that working memory is dependent on a finite cognitive resource which can be depleted. Our findings suggest use of expressive suppression may have depleted a portion of the internal resources necessary for working memory function, resulting in increases in extraneous cognitive load. Notably, decision fatigue was associated with increases in intrinsic cognitive load, but not extraneous cognitive load; whereas expressive suppression was associated with extraneous cognitive load, but not intrinsic cognitive load. We hypothesize this is related to how decision fatigue and expressive suppression were measured. Decision fatigue was measured as a state, whereas expressive suppression was measured as a trait. In previous psychological studies, the active use of expressive suppression was attributed to the development of impaired cognitive states similar to decision fatigue (Baumeister et al. 1998). Thus, if cognitive load were measured during an active state of expressive suppression, it is possible that similar to decision fatigue—a state-level variable—expressive suppression may have been a significant predictor to intrinsic cognitive load.

Individuals exposed to the INVOLVE avatar-based decision support resource reported higher levels of extraneous cognitive load. This is consistent with theoretical evidence from Mayer and Moreno (2003), who claim that cognitive load varies by the degree to which the auditory and visual working memory systems are engaged. INVOLVE required participants to interact with simulated critical care clinicians in a hypothetical bedside situation. By contrast, the IS video-based intervention did not require any sort of interaction by its users. This may also explain why receiving INVOLVE was associated with extraneous, but not intrinsic cognitive load: IS and INVOLVE had similar content and intervention components; however, INVOLVE was designed in such a way that required greater cognitive processing of its users because it demanded active participation and interaction. While theoretical evidence suggests that extraneous cognitive load needs to be lowered, higher levels of extraneous cognitive load may be acceptable if balanced with an optimum level of intrinsic cognitive load (Leppink et al., 2014). Determining the amount of cognitive load one should experience from electronic decision support resources is not within the scope of this study; however, it prompts the need for future comparison of cognitive load levels with outcomes related to decision making.

Increased age was associated with increases in both intrinsic and extraneous cognitive load. This finding is consistent with prior evidence that links increased age to declines in working memory function (Archer, Lee, Qiu, & Chen, 2018). Also, Van Gerven, Paas, Van Merriënboer, & Schmidt (2002) reported how older adults' problem-solving performance improved when instructed to use a learning style that decreased cognitive load. Our results and prior evidence suggest that consideration of age should be a relevant covariate for the evaluation of cognitive load. Adhering to recommendations from Leppink et al. (2014), we contend that in the design of electronic decision support for older adults, diligent attention should be devoted to the optimization of intrinsic cognitive load and the overall reduction of extraneous cognitive load.

This study possessed several limitations to its internal and external validity. For example, data were collected at a single time point, which limited our ability to infer causal relationships among the study variables. Also, expressive suppression and cognitive reappraisal were measured as a dispositional attribute, rather than dynamic, attribute of the SDM. This limits our ability to truly infer whether or not the situational role of being an SDM influenced the degree to which the SDMs employed emotion regulation strategies in this context. Also, the constructed regression models explained only 26% of the observed variance in intrinsic and extraneous cognitive load. To improve upon this limitation, more work is needed to understand the precursors of cognitive load within SDMs of the critically ill. For example, other feasible predictors that could explain cognitive load which were not included in this study could be the SDMs' education level or symptoms of physical fatigue —concepts that are established predictors of working memory (Patrick et al., 2017; Souza-Talarico, Caramelli, Nitrini, & Chaves, 2007)

This study was also limited in its external validity. Specifically, the majority of our sample were White, female, and reported an annual household income equivalent to Ohio's median household income (median Ohio household income in 2016 = $52,334) (U.S. Census Bureau, 2016). While the homogeneity of our sample's gender, racial, and socioeconomic characteristics limits the generalizability of our findings, our sample's demographic characteristics are consistent with other populations of SDMs for the critically ill. To further enhance self-regulatory and cognitive load research, we recommend similar investigations in more diverse samples.

Despite the limitations of this study, the findings contribute to nursing, educational, and psychological science and provide several directions for future research. This study was one of the first to evaluate predictors of cognitive load among recipients of electronic decision support resources. Furthermore, this study reports how distinct cognitive load components (i.e., intrinsic and extraneous load) are related by impairments in self-control states and by particular emotion regulation techniques. These findings advance nursing theory focused on the description of barriers and facilitators of effective shared decision making within the ICU (Kon, Davidson, Morrison, Danis, & White, 2016). We recommend future research evaluate how variances in self-control states and active states of emotion regulation relate to both intrinsic and extraneous cognitive load. We also recommend exploration of how cognitive load differs when applied to other multimedia healthcare resources. We recommend exploration of the relationship between cognitive load and decision-making outcomes, which may inform the design and tailoring of future decision support resources. However, cognitive load theory is not only relevant to the design and provision of decision support resources—it also may possess relevance to the 50% of Americans who manage a chronic disease (Ryan & Sawin, 2009). The exploration of unique cognitive factors that influence chronic disease self-management is a national research priority and may serve to expand self-management theory (National Institute of Nursing Research, 2016). Therefore, clinicians and educators may benefit from the application of cognitive load theory to the design and evaluation of educational and behavioral interventions across their respective practice domains. To this end, cognitive load theory represents a potentially relevant, yet highly understudied framework among nursing scientists.

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Table 1

Participant Surrogate Decision Maker Characteristics

	IS	INVOLVE
Variables	***n*(%)**	***n*(%)**
Gender		
Female	34 (72)	36 (72)
Male	13 (28)	14 (28)
Race/Ethnicity		
White	36 (77)	37 (74)
Non-White	11 (23)	13 (26)
Relationship to Patient		
Spouse	19 (40)	19 (38)
Adult Child	13 (28)	19 (38)
Sibling	7 (15)	5 (10)
Power of Attorney	3 (6)	3 (6)
Other	7 (11)	4 (8)
Education		
High School or Less	20 (43)	11 (22)
1-4 Years of College	23 (49)	26 (52)
Graduate Studies	4 (8)	13 (26)
Annual Household Income		
Less than $50,000	29 (62)	14 (28)
More than $50,000	18 (38)	36 (72)

Table 2

Summary of Regression Model for Predictors of Intrinsic Cognitive Load (N = 97)

Predictors	***b***	***SE***	***β***	***p***
Decision fatigue	0.16	0.06	.27	.006
Expressive suppression	0.24	0.18	.13	.190
Cognitive reappraisal	0.13	0.23	.05	.584
Age	0.05	0.02	.25	.009
Gender (0 = male; 1 = female)	−1.14	0.58	−.19	.052
Decision support resource (0 = IS; 1 = INVOLVE)	0.67	0.50	.13	.185
Anxiety	0.11	0.05	.20	.040

Note. $F(7,89) = 4.56$, $p < .001$, $R^2 = .26$, Power = .98.

Table 3

Summary of Regression Model for Predictors of Extraneous Cognitive Load (N = 97)

Predictors	***b***	***SE***	***β***	***p***
Decision fatigue	0.04	0.03	.13	.193
Expressive suppression	0.25	0.11	.23	.023
Cognitive reappraisal	−0.12	0.13	−.09	.367
Age	0.03	0.01	.27	.005
Gender (0 = male; 1 = female)	−0.18	0.34	−.05	.589
Decision support resource (0 = IS; 1 = INVOLVE)	1.05	0.30	.34	.001
Anxiety	0.02	0.03	.07	.502

Note. $F(7,89) = 4.40$, $p < .001$, $R^2 = .26$, Power = .99.