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Managing Acute Uncertainty (8000 word limit)

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Life is full of uncertainty. Some uncertainty is stressful and anxiety-provoking, some is comforting and protective, and some can even be pleasurable. Various types of uncertainty also differ significantly in the amount of empirical attention researchers have paid to them. In this edited volume, chapters address well-studied types of uncertainty including causal uncertainty (i.e., not knowing why something happened; Chapters 6 and 20), self-uncertainty (i.e., a lack of clarity about one's self-concept or aspects of one's life; Chapters 7, 8, 9, 11, and 15), relational uncertainty (i.e., feeling unsure about one's connections to others or their safety in relation to others; Chapters 17 and 22), and existential uncertainty (i.e., uncertainty about the meaning of life; Chapters 12 and 23). Perhaps surprisingly, one intuitive form of uncertainty has received relatively little attention in psychological science: acute uncertainty, or not knowing a specific piece of information that might be beneficial to know.

This chapter addresses the various ways people manage acute uncertainty. We first consider situations in which acute uncertainty is aversive, namely during stressful waiting periods. People regularly wait for feedback about their academic, professional, personal, and financial prospects, and most people find these waiting periods to be unpleasantly fraught with worry and uncertainty about the future. Two theoretical models, the *uncertainty navigation model* (Sweeny & Cavanaugh, 2012) and the new and improved *emotion-motivation-obstruction (EMO) model*, guide our coverage of aversive uncertainty and provide a roadmap to the subjective experiences, health consequences, and coping efforts such situations entail.

We then turn to situations in which uncertainty is desirable. People regularly avoid information to which they have ready access, even when acquiring the information may benefit them in various ways. We outline the evidence for this type of information avoidance and consider the motivations that trigger it, the situations that make it more likely, and the strategies interventionists can use to reduce its likelihood. We close by identifying links between these two seemingly contradictory phenomena, providing a complete picture of the who, what, when, and why of acute uncertainty management.

When We Want to Know

In *The Cocker of Preston* (1716), Christopher Bullock famously noted that “‘tis impossible to be sure of any thing but Death and Taxes.” With due respect to Mr. Bullock, a third experience is nearly as assured: waiting for uncertain news. As noted above, people frequently encounter periods of not-knowing when they wish, sometimes desperately, to know how the future will unfold. For example, the authors of this chapter remember all too well their search for an academic job at the end of graduate school, a time of deep personal and professional uncertainty that entailed repeated waiting periods as they each applied to jobs, awaited invitations to interview (or to hear through the grapevine that no invitation was forthcoming), and later awaited hoped-for job offers.

Despite the ubiquity of such waiting periods, relatively little research investigated these experiences of acute uncertainty prior to the 2010s. Before that time, research on waiting largely focused on the experience of queuing, or waiting in line. Queuing typically entails uncertainty about the timeframe in which one will reach a goal (namely, the front of the line) but little to no uncertainty about how the wait will resolve. Nonetheless, these relatively benign waiting experiences proved enticing as a research topic for the fields of consumer behavior, marketing,

management and operations, retail, and even tourism, due to the age-old adage that “time is money” (of uncertain origin, appropriately). Several decades of research identified the situational factors that make queuing more or less unpleasant, what makes people more or less likely to keep waiting in line, and the various consequences of unpleasant queues for consumer behavior (e.g., Maister, 1984; Zhou & Soman, 2003). Other work went deeper, identifying the ways in which queues create mini social systems with concomitant norms, along with consequences for violating those norms (e.g., cutting in line; see Helweg-Larsen & LoMonaco, 2008 for an example with concertgoers; see also Schmitt et al., 1992).

Despite the consequences of queuing for corporations’ (and bands’) bottom line, the uncertainty that arises in those situations is typically not the type of acute uncertainty of particular interest in this chapter. Even when an overly lengthy queue has personal significance (e.g., waiting in line to be rebooked after a canceled flight, waiting in line at a food bank), the emotional heft of those experiences is not in the queue itself but rather in the uncertainty of the outcome (will I make the wedding? Will I have food for my family tonight?). Those uncertainties, like the uncertainty the authors of this chapter experienced on the job market, are what we will call *high-stakes waiting*: waiting to learn some information that will alter the course of one’s life, however small or large that change in trajectory might be.

High-Stakes Waiting in Healthcare

Much of the earliest research on high-stakes waiting focused on a particularly high-stakes context: healthcare. Specifically, a number of studies examined uncertainty in the context of breast cancer, investigating the experience of (primarily) women undergoing diagnostic testing (see Montgomery & McCrone, 2010 and Poole, 1997 for reviews). One notable finding from these studies is that many women suffer intense distress during the diagnostic phase of a breast

cancer journey, so much so that 83% of patients who had undergone a mastectomy identified the diagnostic phase as the most stressful part of the process (compared to the treatment and adaptation phases; Northouse, 1989; see also Lebel et al., 2003).

Most studies have interviewed patients either prior to a breast biopsy (typically following an abnormal mammogram) or much later, following diagnosis and even treatment; relatively few studies directly address the waiting period for diagnosis (Poole, 1997). In a rare exception, one study observed patients' experiences during the 3-day wait for biopsy results and found that women who were particularly anxious at the start of the wait reported very high levels of distress during the waiting period—so high, in fact, that their levels of distress exceeded those of typical psychiatric outpatients (Poole et al., 1999). In a pattern to which we will return later in the chapter, even patients with relatively low anxiety at baseline showed a significant rise in anxiety as the “moment of truth” approached.

A smaller research literature has examined high-stakes waiting in the context of fertility treatment. For example, one study collected surveys from women undergoing in vitro fertilization (IVF) just before an embryo transfer, in the middle of the wait for a pregnancy test, and six weeks later. Much like women awaiting breast biopsy results, these women reported considerably greater anxiety during the wait for test results compared to the period prior to the embryo transfer (Ockhuijsen et al. 2014). Another study of women undergoing IVF found a similar pattern and further showed a decrease in anxiety following a negative pregnancy test, documenting the relief that accompanies the end of uncertainty (albeit often replaced with other forms of distress; Boivin & Lancaster, 2010).

Finally, a newer area of research addresses a particular form of high-stakes waiting that a 2010 Time Magazine article termed “scanxiety,” namely the negative emotional experience that

often arises around the time of a cancer-related medical test (i.e., a scan; Derry-Vick et al., 2023). Two recent scoping reviews (i.e., a “map” of the existing research literature on a given topic) reveal a small but growing literature (57 studies in one case, Bui, Liang et al., 2021; 36 studies in the other, Derry-Vick et al., 2023) that has documented low overall levels of scanxiety but a particularly difficult period (and an understudied point in time) during the wait between the scan and results (Bui, Blinman et al. 2021, 2022; Derry-Vick et al., 2023; Mannion et al., 2023). Some patients with cancer have noted that the wait for scan results brought back unpleasant memories of the wait for their initial diagnosis (Brandzel et al., 2017).

Other Early Work on Waiting: Bracing for the Worst

Turning to psychology, our primary field of interest, one waiting-related topic received considerable empirical attention prior to 2010. As early as the 1970s, studies documented a curious pattern in outcome expectations, such that people seemed to turn from optimists into pessimists when they were relatively close to learning their outcome (e.g., becoming pessimistic in expectations of a test grade; e.g., Nisan, 1972). Several decades later, James Shepperd termed this pattern *bracing for the worst*, capturing the emotional preparation that such declines in optimism provide (Shepperd et al., 1996).

Dozens of studies followed Shepperd’s landmark paper, establishing this downward trend in expectations as robust across performance domains, personality traits, and other situational and individual characteristics (see Sweeny & Krizan, 2013 for a meta-analysis; see also Carroll et al., 2006 and Sweeny et al., 2006 for early reviews). Although people brace for a number of reasons, the dominant cause seems to be a desire to avoid or minimize disappointment in the face of bad news by closing the gap between one’s expectations and the outcome (e.g., Zeelenberg et al., 2000). This deep-dive into how people manage their expectations during waiting periods

provided initial insight into the emotionally dynamic experience of high-stakes waiting. It was limited in scope, only addressing a single cognitive and affective aspect of waiting, but it served as a launching point for the next stage of waiting research.

The Uncertainty Navigation Model

The *uncertainty navigation model* was the first comprehensive theoretical approach to understanding the experience of high-stakes waiting (Sweeny & Cavanaugh, 2012). Although the first iteration of the model focused on the context of health-related news, its theoretical reach was intended to cover all domains in which people face stressful periods of acute uncertainty.

The uncertainty navigation model had three primary goals. First, it delineated the nature of distress during high-stakes waiting, an experience that creates a combination of anxiety and repetitive thought, referred to in later iterations of the model simply as *worry* (Sweeny, 2018). Second, the model described three categories of strategies that people use in an effort to mitigate or manage this distress: consequence mitigation, reappraisal, and direct emotion management. Finally, it identified predictors of distress during such waiting periods: proximity to the news, importance of the news, controllability of the outcome, risk of an undesirable outcome, and trait-like individual differences.

In contrast to approaches to understanding stress and coping in the face of a known stressor (e.g., Carver & Connor-Smith, 2010; Carver & Scheier, 1999; Folkman & Moskowitz, 2004), the uncertainty navigation model captured processes that are unique to or heightened during periods of uncertainty. For example, where much of the earlier literature on stress and coping implicated depression as a core affective response, the uncertainty navigation model identifies anxiety as a key affective response to waiting (Boivin & Lancaster, 2010; Sweeny & Falkenstein, 2015). The model also highlighted the future-focused, rather than past- or current-

focused, nature of coping during high-stakes waiting periods with the inclusion of future-focused strategies such as preventive action, proactive coping, expectation management, and preemptive benefit finding.

The uncertainty navigation model generated numerous studies and research questions addressing stressful waiting periods. These studies provided broad and novel insight into the experience of high-stakes waiting, including associations between psychological distress and decrements in subjective health outcomes (Howell & Sweeny, 2016, 2020), the ineffectiveness of many strategies people spontaneously use to manage feelings of uncertainty and the consequences of waiting experiences on responses to good and bad news (Sweeny et al., 2016), the role of social support during uncertain waiting periods (Dooley et al., 2018, 2019, 2023), and individual differences in waiting experiences (Sweeny & Andrews, 2014; Sweeny et al., 2015).

This array of findings began to paint a more complete picture of the experience of acute uncertainty. However, despite its utility as an initial theoretical effort to bring together the various elements of a high-stakes waiting period, the uncertainty navigation model was not designed to reveal why acute uncertainty is so persistently and pervasively distressing. Instead, the model provided an important outline of when people are most likely to suffer during waiting periods and the set of coping strategies that people are most likely to use in response. It did not provide insight into why those coping strategies are particularly useful during waiting periods, nor the particular function they serve beyond reducing distress. It also identified a set of predictors of worry without articulating the mechanisms through which those situational and individual characteristics influence the waiting experience. In short, a need remained for a “2.0” theoretical approach to understanding high-stakes waiting periods. To that end, the authors of this chapter propose a novel theoretical model that provides insights into worry and waiting, but

also extends to other emotional and coping experiences: *the emotion-motivation-obstruction (EMO) model*.¹

The Emotion-Obstruction-Motivation (EMO) Model

The (EMO) model brings together research on the action readiness theory of emotions (Frijda, 1986; Zeelenberg et al., 2008), and the literature on coping processes (e.g., Folkman & Moskowitz, 2004) to propose a novel theoretical account of the relationship between emotions, coping, and well-being (Figure 1). The primary emotional pathways in the model are based on action-readiness theory, also known as the feeling-is-for-doing approach. The action-readiness model extends the traditional focus on emotions' valence to suggest that specific emotions serve specific motivational purposes; that is, different emotions motivate different behaviors. For instance, although they are both negative emotions associated with experiencing an undesired outcome, regret and disappointment are distinct in that they inspire different subsequent behaviors. Feeling regret motivates people to pursue opportunities to rectify personal errors by returning to situations like the one that caused the undesired outcome. By contrast, disappointment motivates people to avoid the same situations in the future (Zeelenberg et al., 1998). In the EMO model, we adopt this action-based understanding of emotions and propose that situations (broadly defined) lead to discrete emotional states, which in turn generate discrete motivations and behaviors.

The EMO model then builds on action-readiness theory in several ways. First, the EMO model posits that action relevant to an emotion's concomitant motivation both satisfies that motivation (the solid path from "action enacted" to "motivation satisfaction" in Figure 1) and alters the emotion-generating situation, thus downregulating the emotion (i.e., the solid path from

¹The model was first articulated in a funded grant proposal to the National Science Foundation (PIs: Sweeny and Howell).

“action enacted” to “situation”). The pathway just described, represented by the solid lines in Figure 1, represents the typical and evolutionarily adaptive process following emotion generation. However, people often cannot engage in emotion-motivated behaviors for one reason or another. The EMO model suggests that an inability to realize an emotion’s action tendency is an *obstruction* to that motivational tendency (the dotted path from “motivation” to “action obstructed”). We predict that when people cannot satisfy their emotion-relevant motivation, they will experience greater deterioration of their health and well-being (the dotted path from “action obstructed” to “negative effects on health and well-being”).

So, what can a person do when they hit an emotion-motivational roadblock? We propose two routes that people take in these situations to resolve the tension created by an unsatisfied motivation. First, they can attempt to *downregulate* the emotion (the dashed path from “action obstructed” to “emotion”). Alternatively, they can attempt to *redirect* the motivation (the dashed path from “action obstructed” to “motivation satisfaction”).

The EMO Model of Waiting

Although we argue that the EMO model applies to all emotional states (presuming that all discrete emotions have a concomitant motivational state), initial tests of the model have focused on the context of high-stakes waiting. Essential to our updated approach to waiting is an intrapsychic response at the center of this experience: worry. Although researchers debate the precise definition of worry (see McCaul & Mullens, 2003), we embrace a quasi-emotional understanding of worry that pairs the aversive emotional experience of anxiety with the tendency toward perseverative, unpleasant thoughts about the future (McCaul et al., 2021).

Perhaps unsurprisingly, most research on worry has focused on its unpleasant qualities and consequences. Numerous studies link the tendency to worry to poor psychological and

physical health, and worry is implicated in the clinical psychology literature in psychopathology (e.g., Borkovec & Hu, 1990; Borkovec et al., 1993; Segerstrom et al., 1999; for a review, see Watkins, 2008). However, below psychopathological thresholds, worry is a typical experience for people that serves an important motivational purpose: It motivates people to prevent specific undesirable future outcomes (hereafter referred to as *prevention motivation*). Substantial evidence from health psychology research supports worry's motivational effects, suggesting that people who worry more about a given health outcome are more likely to engage in preventive health behavior (e.g., seatbelt use, Sutton & Eiser, 1990; safe sex practices, van der Pligt et al., 1993; vaccination, Brewer et al., 2004; Cuite et al., 2000; cancer screening, Hay et al., 2006; Portnoy et al., 2015; McCaul et al., 1996; skin protection, Kiviniemi & Ellis, 2014; Mermelstein et al., 1999).

McCaul and Mullins (2003) elucidated a three-step process by which worry motivates prevention. First, worry serves as a cue that an emerging situation requires attention. Second, worry keeps the situation at the center of one's attention via the repetitive, negative, perseverative thoughts that are intrinsic to worry. Finally, the very fact that worry is highly unpleasant motivates people to take action to reduce or eliminate it (e.g., Frijda et al., 1989). In sum, worry motivates people in uncertain situations to take action to avoid negative future outcomes.

Unfortunately, worry cannot always serve its full motivational function; in some contexts, the motivational process of worry is thwarted. High-stakes waiting is one such context. When awaiting news (e.g., a grade on an important exam), the time to exert control over the worry-causing outcome (e.g., one's performance on the exam) has passed. Thus, although uncertainty about one's outcome prompts rising worry, which in turn prompts prevention

motivation (e.g., avoiding a poor grade on the exam), preventive action is obstructed by the constraints of the situation. Put another way, a lack of personal control obstructs the action that worry motivates. The EMO model is thus well-suited to provide theoretical guidance to understand the distress that the acute uncertainty of high-stakes waiting provokes.

Applying the EMO model to waiting expands beyond the prediction of the uncertainty navigation model in two notable ways. First, it moves beyond thinking primarily about the uncertainty inherent in waiting to include the lack of control that is fundamental to most high-stakes waiting periods (Howell et al., 2023). Second, it accounts for when and why people use the various strategies outlined in the uncertainty navigation model. Finally, it makes clear predictions about when health and well-being are most likely to suffer as a result of worry, namely when prevention motivation is obstructed.

Figure 2 depicts the EMO model in the context of worry. At the heart of this framework is the pseudo-emotion of worry. On the far left is the circumstance that typically provokes worry, namely *threatening uncertainty*. That is, uncertainty about the future is a necessary but insufficient condition to provoke worry—the possibility of threat must be salient. For example, healthy individuals are persistently uncertain about whether they will develop cancer in their lifetime, but most people do not worry about developing cancer until the possibility becomes salient (e.g., following an abnormal mammogram or colonoscopy). As the intensity of this threatening uncertainty increases, worry rises. Increased worry, in turn, increases the motivation to prevent a bad outcome. In most cases, this prevention motivation would lead to exercising control over the future to enact prevention efforts (e.g., undergoing regular screenings, adopting a healthy lifestyle). If prevention is successfully enacted, the threat is mitigated and worry subsides for the moment (the solid path).

However, in the context of awaiting news, a lack of control obstructs the prevention motivation (the dotted arrow labeled “lack of control”); during the wait, one typically cannot change their outcome. Because the motivational function of worry is obstructed, it creates a metaphorical build-up that spills over and disrupts functioning. That is, persistent anxiety and perseverative negative thought lead to the negative consequences of worry: a fog of negative emotionality descends, psychological well-being declines, and sleep and health are disrupted (e.g., Howell & Sweeny, 2016).

To address this undesirable build-up, when prevention is obstructed during a high-stakes waiting period, people should adopt strategies aimed at (1) downregulating worry (thus downregulating the concomitant prevention motivation), and/or (2) redirecting the prevention motivation to achieve a sense of motivation satisfaction via an alternative route (dashed upward-pointing arrows).

Downregulating Worry. People can downregulate unpleasant emotional experiences in a variety of ways (see Webb et al., 2012), but the uncertainty navigation model outlines several coping strategies that should serve the function of downregulating worry in the context of high-stakes waiting. First, people can attempt to reduce the salience of threatening uncertainty by attempting to suppress relevant thoughts and emotions (suppression) or by distracting themselves from thoughts about the stressor (distraction; Lebel et al., 2003; Lowe et al., 2003; Rankin et al., 2019; Stanton & Snider, 1993). Second, people can attempt to reappraise the severity of the threatening uncertainty by preemptively finding the silver lining in the feared bad outcome (preemptive benefit finding; Rankin et al., 2019; Rankin & Sweeny, 2022) or downplaying the personal relevance of feedback (psychological distancing; Sweeny & Cavanaugh, 2012). Third,

people can reappraise the likelihood of the threat by embracing hope and optimism (positive expectation management; Sweeny et al., 2006).

Although research demonstrates that people use all of these coping strategies when awaiting uncertain news (e.g., Sweeny & Andrews, 2014; Sweeny et al., 2016), the best available evidence suggests that these strategies do little to reduce worry (Sweeny et al., 2016) or to mitigate the deleterious downstream consequences of worry for physical and psychological well-being (Sweeny & Howell, 2016). To date, research has failed to answer exactly why these strategies do not work. However, considering them in the context of the EMO model, we can provide a novel explanation: They do not always effectively downregulate worry. Studies are underway to test whether these strategies can, if deployed effectively, reduce worry during high-stakes waiting periods and in turn its pernicious effects on well-being.

Prevention Redirection. In most high-stakes waiting periods, preventive action is obstructed to some extent—the exam is completed, the interview is over, the biopsy has been conducted. In these cases, people cannot directly exert control in an effort to prevent the feared outcome. However, people can exert various forms of secondary control (Rothbaum et al., 1982), thus redirecting their motivation toward preventing various consequences of a bad outcome in lieu of preventing the outcome itself.

The uncertainty navigation model points to three ways people might redirect their prevention motivation. First, they can take action to mitigate consequences that would occur in the case of bad news (preparative action). Second, they can spend time psychologically preparing to cope with bad news (proactive coping). For instance, some patients report using the waiting period following a diagnostic test to prepare for bad news (Poole et al., 1999; Montgomery & McCrone, 2010), and evidence suggests that longer waiting periods might benefit patients who

ultimately face a dire diagnosis because the time allows patients to prepare (Harcourt, 2010).

Third, as discussed earlier, they can attempt to prevent the shock of disappointment and unpleasant surprise by lowering their expectations and assuming the worst (bracing for the worst; Sweeny et al., 2006; Sweeny & Krizan, 2013).

When We Want to Know: Pulling it All Together

Any good theory should be able to explain existing findings as well or better than previous or competing theories. We argue that applying the EMO model to high-stakes waiting compellingly fits prior findings on waiting experiences and thus makes coherent a literature that is dispersed across many decades and several fields.

The uncertainty navigation model, though generative, was limited to explaining simple links between worry and coping strategies. In contrast, the EMO model provides a comprehensive framework for understanding various waiting dynamics. For example, why do health and sleep suffer during waiting periods, particularly when worry is high? The EMO model argues that when worry is intense and control is low or nonexistent, health and sleep will suffer because of the obstruction of worry's preventive motivation. Why might coping strategies be ineffective, even when directed at waiting distress? For many people, these coping strategies may not successfully downregulate their worry or redirect their prevention motivation. Why do people worry more and engage more in coping efforts at the start and end of the wait? Threatening uncertainty is most salient at these points. Why are engaging distractions (e.g., flow states, or states of complete absorption in an activity) effective for reducing distress during waiting periods (Rankin et al., 2019; Sweeny et al., 2020)? Flow experiences reduce the salience of threatening uncertainty. Finally, why do some people (e.g., defensive pessimists, those intolerant of uncertainty, those high in neuroticism) have a harder time waiting (Sweeny &

Andrews, 2014; Sweeny et al., 2015)? Although the EMO model does not explicitly address individual differences, we suspect that people with these characteristics more readily perceive uncertainty to be threatening and have a harder time downregulating worry.

In sum, research on acute uncertainty in the context of high-stakes waiting has come a long way in less than 50 years: from early observations of bracing for the worst, through the lower-stakes focus on queuing, into the ultimate high-stakes context of healthcare, and finally to a place of theoretical cohesion and generativity. The first set of studies testing key tenets of the EMO model of waiting was published in 2023 (Howell et al., 2023); many more are in the pipeline. Suffice it to say, the study of acute uncertainty, particularly during high-stakes waiting periods in which people deeply wish to resolve that uncertainty, is alive and well.

When We Do Not Want to Know

In addition to adding “awaiting uncertain news” to Bullock’s (1716) famous statement that “‘tis impossible to be sure of any thing but Death and Taxes,” we would also observe that these things that are supposedly so certain—death and taxes—are much more uncertain than they might seem. Indeed, both can be shrouded in a cloud of uncertainty prior to their arrival. For instance, taxation is often so complicated that people can be entirely surprised by their tax bills (Austin, 2019). Most relevant to the present discussion, people rarely know *when* they are going to die. And, in fact, most people actively *do not want to know* when they will die: In one representative survey of German and, separately, Spanish adults, about 85% responded “no” to the questions, “Would you want to know today when you will die?” and “Would you want to know today what will cause you to die?” (Gigerenzer & Garcia-Retamero, 2017). This preference not to learn when one will die suggests that, in contrast to their preference to escape acute uncertainty discussed thus far, people sometimes *do not* want to know specific information.

Information Avoidance

The decision to actively and deliberately not know information has gone by many names including information avoidance (Golman et al., 2017; Sweeny et al., 2010), deliberate ignorance (Hertwig & Engel, 2016), selective exposure (as a more narrow phenomenon; Frey, 1986), and the ostrich effect—named for the myth that ostriches bury their head underground in the face of danger (Karlsson et al., 2009). In this chapter, we will use the term *information avoidance*, as it is most frequently used in psychology and, we believe, the most accurate and inclusive term.

The broader literature addressing information avoidance literature is truly interdisciplinary, stemming from a variety of fields including psychology, communication, economics, information science, and healthcare, among others. Drawing on all of these approaches, we define information avoidance as behavior directed at preventing oneself from learning available information. There is evidence that information avoidance occurs in a wide variety of domains. For instance, people will avoid information about their romantic partners (Hussain et al., 2020), their physical health (Howell et al., 2020), their financial risk (Blajer-Gołąbiewska et al., 2018), the stories they read (Maxwell, 2022), and their intergroup biases and privileges (Conway et al., 2017; Howell et al., 2013). Truly, in any domain in which people experience acute uncertainty, there are likely to be at least some people who actively avoid learning information.

Information avoidance has two key ingredients that distinguish it from simply *not knowing* information. First, information must be available. In the case of high-stakes waiting (e.g., for biopsy results), there is often no information to learn or avoid, so not knowing is not avoidance. Second, there must be specific behavior directed at avoiding information. The world is full of information that one might not know. For example, some readers might not know the

answer to these questions: Where was cream cheese invented?² How far away is the moon?³ Who won Season 42 of the reality television program Survivor?⁴ Simply not knowing available information does not constitute avoidance—instead, it might simply represent not seeking information due to apathy or disinterest. Indeed, there exists nearly boundless information that one is neither actively seeking nor actively avoiding. Thus, information avoidance is not merely the opposite of information seeking. Instead, information avoidance is a unique construct that, while orthogonal to information seeking, requires behaviorally rejecting the option to learn information. As such, models for information seeking are often ill-suited to understanding avoidance.

When we say “behavior” we do not mean to imply that avoidance requires a person to specifically to carry out an action. Indeed, avoiding information can be achieved through actions—for example, deleting an email containing one’s medical test results—and inactions—*not* opening an email containing one’s medical test results. Additionally, it might be a thoughtful, intentional decision—for example, actively choosing not to visit a specific website—or may seem more like an automatic reaction—for example, closing one’s eyes when exposed to something one does not wish to see. However, in all cases, the goal of the behavior is identical: preventing oneself from learning available information. In other words, information avoidance behavior is classified primarily by the goal at which it is directed, rather than any specific type of behavior.

Motives for Avoiding Information

² New York City (Marx, 2012)

³ On average, 384,400 km/238,855 miles (Battat et al., 2009)

⁴ Maryanne Oketch (Ross, 2022)

Broadly speaking, information avoidance serves a self-protective function (Howell et al., 2020). That is, people are motivated to avoid information to avoid the psychosocial threats that can stem from learning that information. Specifically, people will avoid information to the extent that learning that information might threaten their desired thoughts, feelings, or behaviors (Howell et al., 2020; Sweeny et al., 2010).

First, people will avoid information that will undermine their desired view of themselves or the world. For example, research suggests that people will avoid learning how attractive their peers find them, particularly to the extent that they feel learning that information might threaten their own view of their attractiveness (Howell et al., 2019). Similarly, people who have egalitarian self-views will avoid receiving feedback that they believe will indicate they are racist, but are open to feedback from an identical source if they believe it will confirm that they are egalitarian (Howell et al., 2013).

Second, people avoid information if they believe learning that information will make them do something they would rather not do. For example, people will avoid receiving feedback about their risk for a disease if learning that risk might obligate them to undergo invasive follow-up testing (e.g., a cervical swab) compared to less-invasive follow-up testing (e.g., a cheek swab) or if the treatment for the disease has unpleasant side-effects compared to no side effects (Howell & Shepperd, 2012a).

Third, people will avoid information if they believe learning that information will cause undesired emotions, including a reduction in positive emotions or an increase in negative emotions. For instance, people often avoid information that could ruin surprises such as avoiding learning the end of stories, movies, and books (i.e., spoilers; Maxwell, 2022) or avoiding learning the sex of their child prior to their child's birth (Shipp et al., 2004). Similarly, people

report that concern about experiencing negative emotions prompts them to avoid doctors (Persoskie et al., 2014; Taber, Leyva, et al., 2015) and health risk information/diagnoses (Cutler & Hodgson, 2003; Orom et al., 2023; van der Steenstraten et al., 1994).

Most research and theorizing has focused on individual predictors of information avoidance (see Foust & Taber, 2023; Golman et al., 2017; Howell et al., 2020; Sweeny et al., 2010). Nevertheless, the social circumstances surrounding information avoidance are receiving increasing empirical attention. Research broadly suggests that, for example, people's social networks and the social norms of their close others influence their information avoidance decisions (Howell et al., 2014; Qu et al., 2023). Further, avoidance is often stigmatized if it is perceived as harmful to others (Heck & Meyer, 2019).

Relevant to the personal motives for avoidance discussed prior, an emerging body of research suggests that people will avoid information that might change how others think about them or behave toward them. For instance, people will avoid receiving medical feedback if they worry a diagnosis might result in social stigma (Hann et al., 2017; Lipsey & Shepperd, 2019a; Price et al., 2019). Similarly, people will avoid information if they believe it will change how powerful others such as insurance companies (Lipsey & Shepperd, 2019b, 2019a) and employers (Hoffman et al., 2023) treat them, especially if they expect that they will experience harm at the hands of those powerful audiences. While more research is needed to understand interpersonal and social influences on avoidance, it is clear that avoidance decisions are often made with social consequences in mind.

Coping With Threat and Information Avoidance

Although there is clear evidence that people are more likely to avoid learning information in situations that threaten their affect, cognitions, and behaviors, people do not always avoid

information in these circumstances. Indeed, in every study cited thus far, some people want and often choose to learn the relevant information. Research into the individual differences that affect avoidance suggests an overarching concept that predicts lower avoidance: perceived threat-management resources (Howell et al., 2014).

When a person feels like they can cope with information, even if it is bad news, they are less likely to avoid that information (Hua & Howell, 2022). These perceptions of resources are derived from a variety of personal and interpersonal factors. For example, people who report less social support, or who recently experienced social exclusion, are more likely to avoid information about their health (Howell et al., 2014; Howell & Shepperd, 2017). Similarly, individual differences in factors such as optimism, self-esteem, and spontaneous self-affirmation—all of which serve a protective function against psychological threats—are associated with lower levels of information avoidance (Ferrer et al., 2014; Howell & Shepperd, 2016; Taber et al., 2014). In one study, when people were prompted to focus on their coping resources prior to making their decision to learn or avoid feedback about a health risk, they were subsequently less likely to avoid that feedback (Hua & Howell, 2022).

Reducing Problematic Information Avoidance

Information avoidance can be essential in protecting oneself from psychological threats, and it makes quite a bit of sense in many cases. For example, avoiding narrative spoilers can help prolong a person's enjoyment of a story (B. K. Johnson & Rosenbaum, 2018; Levine et al., 2016; Maxwell, 2022), whereas avoiding information about a romantic partner's prior relationship might prevent uncontrolled negative affect for which there no recourse (Hussain et al., 2020). Nevertheless, there are times when avoiding information might undermine physical health (Foust & Taber, 2023; Howell et al., 2020), financial well-being (Blajer-Gołębiewska et al., 2018), and

performance attainment (Reb & Connolly, 2009). For instance, despite the fact that knowing one's HIV status can help prevent transmission of the sometimes-deadly disease and can improve the likelihood of personal survival (Prabhu et al., 2019), people will sometimes avoid testing for HIV or avoid learning their results in order to protect themselves from psychosocial threats (Price et al., 2019).

Several lines of research have examined strategies for reducing avoidance. Most have focused on the domain of health information avoidance, given the obvious problematic consequences of delayed diagnosis and misunderstanding of risk. These interventions fall into three broad categories of interventions that aim to (1) make people more rational, (2) reduce the threat of information, or (3) emphasize/enhance the utility of information.

First, researchers have aimed to reduce problematic information avoidance by promoting rational decision-making. The logic underlying these types of interventions is that people are often making the decision to learn or avoid information as a gut reaction (Howell et al., 2016), focused myopically on the immediate affective, cognitive, and behavioral consequences of information avoidance (Howell & Shepperd, 2013; Reb & Connolly, 2009). Thus, these interventionists assume, and show, that prompting people to think more rationally about their decisions will reduce avoidance. For example, prompting people to make a pro/con list about their reasons for learning versus avoiding information can reduce avoidance (Howell & Shepperd, 2013), in part because it draws one's focus from their automatic preferences to a more rational decision (Howell et al., 2016). Similarly, focusing people on the long-term regret they might feel about avoiding information can reduce avoidance (e.g., A. E. Johnson & Howell, 2020; O'Carroll et al., 2015; Reb & Connolly, 2009; Sandberg & Conner, 2009; Zajac et al., 2017). Nevertheless, interventions aimed at prompting people to think more rationally and about

the long-term consequences of avoidance only work when information avoidance is the rationally inferior decision (Howell & Shepperd, 2013). As a result, other work has focused on reducing the threat associated with information and increasing the utility of the information.

Example work aiming to reduce the threat associated with information are several studies showing that self-affirmation—a process that bolsters people’s self-integrity against psychological threat—can reduce information avoidance (Howell & Shepperd, 2012b, 2017; Taber et al., 2014). Indeed, prompting people to affirm their values prior to providing them the opportunity to learn their risk for disease reduces avoidance of that risk feedback, even in circumstances known to prompt avoidance (e.g., social exclusion, high behavioral obligation; Howell & Shepperd, 2012b, 2017). Similarly, prompting people to think about ways they have successfully coped with bad news in the past can reduce avoidance (Hua & Howell, 2022). Researchers theorize that this is because focusing on past successful coping can put the threat in perspective and show people that they will be able to cope with it (Hua & Howell, 2022).

Other research has aimed to emphasize the utility of information as a way to reduce avoidance. Specifically, research suggests that people find health information more useful and are less likely to avoid it if they believe that it provides them with some control over their health (Barbour et al., 2012; Emanuel et al., 2015; Orom et al., 2021; Woolley & Risen, 2018). As a result, emphasizing controllable predictors of a disease (Melnik & Shepperd, 2012) or describing it as treatable (Yaniv et al., 2004) can reduce avoidance.

In sum, to reduce avoidance, interventionists have generally aimed at one of three processes: (1) making people’s decision about whether to avoid information more rational, (2) reducing the threat associated with information, or (3) increasing the perceived utility of the information.

Connections and Conclusions

Earlier, we discussed the pain that comes with uncertainty, noting the toll it takes on physical and mental well-being. The consistent finding that people avoid information might, therefore, seem antithetical to our earlier assertions. If uncertainty is so distressing, why would people ever not want information?

Theoretically, the times we do and do not want to know information are linked in several important ways. First, information avoidance can be a strategy to avoid threatening uncertainty altogether. Although many of the acute pieces of information we discussed in the context of waiting have definitive outcomes—one either passes or fails the bar exam, one does or does not get a job—information often contains some degree of ambiguity or uncertainty. For example, learning that one is at risk for a disease does not tell a person whether they will or will not get the disease, only that they are at an increased likelihood. As a result, risk feedback can actually exacerbate feelings of uncertainty and reduce feelings of control (Hong, 2020; Simonovic et al., 2023). As such, avoiding risk feedback can be a way to avoid threatening uncertainty altogether. Consistent with this idea is evidence that people avoid genome sequencing results to the extent that they believe the results will be ambiguous (Taber, Klein, et al., 2015). In other words, information avoidance can be used as a strategy to prevent a person from learning new information that will, somewhat paradoxically, serve to increase threatening uncertainty.

Second, the strategies used to manage acute uncertainty share a goal with information avoidance: they are aimed toward threat regulation. Information avoidance can be used within the context of uncertainty to provide a sense of control and downregulate worry. For example, people sometimes experience increased worry when they encounter news coverage of world events when outcomes are uncertain, such as coverage of pandemics, wars, and looming

financial recessions. As suggested by the EMO model, seeing these stories upregulates uncertainty and worry, but typically people have very little control over the situation, undermining the expression of prevention motivation. As a result, people sometimes become stuck in a loop of attempting to gain more information in an effort to reduce uncertainty, even though receiving that information exacerbates uncertainty and worry (Rettie & Daniels, 2021), a phenomenon sometimes called *doomsurfing* or *doomscrolling* (Anand et al., 2022; Ytre-Arne & Moe, 2021). In this case, avoiding information, such as avoiding social media or the news, can be an effective strategy to prevent the upregulation of both uncertainty and worry (Mannell & Meese, 2022; Schäfer et al., 2023; Ytre-Arne & Moe, 2021).

Regardless of whether people want to avoid some piece of news or find themselves desperate to learn something, the literature points to an internal information-management system that prevents exposure to psychological threats and protects well-being. This system is sensitive to perceptions of control over a threat and involves clear emotion-motivation links. Nevertheless, there are situations when the system is unable to function properly, which can lead to negative consequences for health and well-being.

So what are people to do if they find themselves with conflicting feelings about some uncertainty in their lives? Figure 3 pulls together the various lines of research presented in this chapter to provide a decision tree for uncertainty navigation. The left side of the figure depicts the current state of the field when it comes to worry and waiting; the right side of the figure depicts the current state of the field when it comes to information avoidance. When the information that could resolve uncertainty is unavailable or unreliable, one's goal is generally to manage feelings of worry that often arise in the face of intractable uncertainty. How best to manage that worry depends on the available options at the time. Can the worrisome outcome be

prevented? Then prevention is typically the best option. If prevention is not possible or would be too costly, can the blow of the worrisome outcome be softened in advance through proactive coping or expectation management? If so, preparation is a great option; if not, all that is left is to downregulate one's worry as much as possible to reduce consequences for health and well-being.

On the other hand, if useful information is available, one decision still remains: Might the information be too much or too unpleasant to handle? If so, avoidance may be the preferable option, and managing worry once more becomes the goal. Although this decision tree is likely incomplete and certainly imperfect, it demonstrates the usefulness of the research outlined in this chapter—not only for understanding human experience but for bettering it.

References

- Anand, N., Sharma, M. K., Thakur, P. C., Mondal, I., Sahu, M., Singh, P., Kande, J. S., Ms, N., & Singh, R. (2022). Doomsurfing and doomscrolling mediate psychological distress in COVID-19 lockdown: Implications for awareness of cognitive biases. *Perspectives in Psychiatric Care*, 58(1), 170-172.
- Barbour, J. B., Rintamaki, L. S., Ramsey, J. A., & Brashers, D. E. (2012). Avoiding health information. *Journal of Health Communication*, 17(2), 212-229.
- Battat, J. B., Murphy, T., Adelberger, E. G., Gillespie, B., Hoyle, C., McMillan, R., Michelsen, E. L., Nordtvedt, K., Orin, A. E., & Stubbs, C. W. (2009). The Apache Point Observatory Lunar Laser-ranging Operation (APOLLO): Two years of millimeter-precision measurements of the Earth-Moon Range. *Publications of the Astronomical Society of the Pacific*, 121(875), 29-40.
- Blajer-Gołębiewska, A., Wach, D., & Kos, M. (2018). Financial risk information avoidance. *Economic Research*, 31(1), 521-536.
- Boivin, J., & Lancaster, L. D. (2010). Medical waiting periods: Imminence, emotions and coping. *Women's Health*, 6, 59-69.
- Borkovec, T. D., & Hu, S. (1990). The effect of worry on cardiovascular response to phobic imagery. *Behaviour Research and Therapy*, 28, 69-73.
- Borkovec, T. D., Lyonfields, J. D., Wiser, S. L., & Deihl, L. (1993). The role of worrisome thinking in the suppression of cardiovascular response to phobic imagery. *Behaviour Research and Therapy*, 31, 321-324.
- Brandzel, S., Rosenberg, D. E., Johnson, D., Bush, M., Kerlikowske, K., Onega, T., Henderson, L., Nekhlyudov, L., DeMartini, W., & Wernli, K. J. (2017). Women's experiences and

- preferences regarding breast imaging after completing breast cancer treatment. *Patient Preference and Adherence*, 11, 199-204.
- Brewer, N. T., Weinstein, N. D., Cuite, C. L., & Herrington Jr, J. E. (2004). Risk perceptions and their relation to risk behavior. *Annals of Behavioral Medicine*, 27, 125-130.
- Bui, K. T., Blinman, P., Kiely, B. E., Brown, C., & Dhillon, H. M. (2021). Experiences with scans and scanxiety in people with advanced cancer: A qualitative study. *Supportive Care in Cancer*, 29, 7441-7449.
- Bui, K. T., Kiely, B. E., Dhillon, H. M., Brown, C., Xu, K., Shafiei, M., & Blinman, P. (2022). Prevalence and severity of scanxiety in people with advanced cancers: A multicentre survey. *Supportive Care in Cancer*, 30, 511-519.
- Bui, K. T., Liang, R., Kiely, B. E., Brown, C., Dhillon, H. M., & Blinman, P. (2021). Scanxiety: A scoping review about scan-associated anxiety. *BMJ Open*, 11, e043215.
- Carroll, P., Sweeny, K., & Shepperd, J. A. (2006). Forsaking optimism. *Review of General Psychology*, 10, 56-73.
- Carver, C. S., & Connor-Smith, J. (2010). Personality and coping. *Annual Review of Psychology*, 61, 679-704.
- Carver, C. S., & Scheier, M. F. (1999). *Stress, coping, and self-regulatory processes*. New York, NY, US: Guilford Press.
- Conway, J. G., Lipsey, N. P., Pogge, G., & Ratliff, K. A. (2017). Racial prejudice predicts less desire to learn about white privilege. *Social Psychology*.
- Cuite, C. L., Brewer, N., Weinstein, N., Herrington, J., & Hayes, N. (2000). Illness-specific worry as a predictor of intentions to vaccinate against Lyme disease. *Annals of Behavioral Medicine*, 22, S12.

- Cutler, S. J., & Hodgson, L. G. (2003). To test or not to test: Interest in genetic testing for Alzheimer's disease among middle-aged adults. *American Journal of Alzheimer's Disease and Other Dementias*, 18(1), 9-20.
- Derry-Vick, H. M., Heathcote, L. C., Glesby, N., Stribling, J., Luebke, M., Epstein, A. S., & Prigerson, H. G. (2023). Scanxiety among adults with cancer: A scoping review to guide research and interventions. *Cancers*, 15, 1381.
- Dooley, M. D., Sweeny, K., Howell, J. L., & Reynolds, C. (2018). Perceptions of romantic partners' responsiveness during a period of stressful uncertainty. *Journal of Personality and Social Psychology*, 115, 677-687.
- Dooley, M. D., Wilkinson, D., & Sweeny, K. (2019). Social support during stressful waiting periods: An inductive analysis. *Qualitative Psychology (published online)*.
- Dooley, M., Sweeny, K., & Howell, J. L. (2023). Strategy specific support during uncertain waiting periods. *Journal of Social and Personal Relationships*, 40, 2400-2421.
- Emanuel, A. S., Kiviniemi, M. T., Howell, J. L., Hay, J. L., Waters, E. A., Orom, H., & Shepperd, J. A. (2015). Avoiding cancer risk information. *Social Science & Medicine*, 147, 113-120.
- Ferrer, R. A., Taber, J. M., Klein, W. M., Harris, P. R., Lewis, K. L., & Biesecker, L. G. (2014). The role of current affect, anticipated affect and spontaneous self-affirmation in decisions to receive self-threatening genetic risk information. *Cognition and Emotion*, 29, 1456-1465.
- Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology*, 45, 745-774.

- Foust, J. L., & Taber, J. M. (2023). Information avoidance: Past perspectives and future directions. *Perspectives on Psychological Science*.
- Frey, D. (1986). Recent research on selective exposure to information. *Advances in Experimental Psychology*, 19, 41-80.
- Frijda, N. H. (1986). *The emotions*. Cambridge, UK: Cambridge University Press.
- Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotion action readiness. *Journal of Personality and Social Psychology*, 57, 212-228.
- Golman, R., Hagmann, D., & Loewenstein, G. (2017). Information avoidance. *Journal of Economic Literature*, 55(1), 96-135.
- Hann, K. E., Freeman, M., Fraser, L., Waller, J., Sanderson, S. C., Rahman, B., Side, L., Gessler, S., Lanceley, A., & PROMISE Study Team. (2017). Awareness, knowledge, perceptions, and attitudes towards genetic testing for cancer risk among ethnic minority groups: A systematic review. *BMC Public Health*, 17, 1-30.
- Harcourt, D. (2010). Same-day diagnosis of symptomatic breast problems: Psychological impact and coping strategies. *Psychology, Health, & Medicine*, 4, 57-71.
- Hay, J. L., McCaul, K. D., & Magnan, R. E. (2006). Does worry about breast cancer predict screening behaviors? A meta-analysis of the prospective evidence. *Preventive Medicine*, 42, 401-408.
- Heck, P. R., & Meyer, M. N. (2019). Information avoidance in genetic health: Perceptions, norms, and preferences. *Social Cognition*, 37(3).
- Helweg-Larsen, M., & LoMonaco, B. L. (2008). Queuing among U2 fans: Reactions to social norm violations. *Journal of Applied Social Psychology*, 38(9), 2378-2393.

- Hertwig, R., & Engel, C. (2016). Homo ignorans: Deliberately choosing not to know. *Perspectives on Psychological Science*, 11(3), 359–372.
- Hoffman, W. R., Aden, J. K., Barbera, D., & Tvaryanas, A. (2023). Self-reported health care avoidance behavior in US military pilots related to fear for loss of flying status. *Military Medicine*, 188(3-4), e446-e450.
- Hong, S. J. (2020). Uncertainty in the process of communicating cancer-related genetic risk information with patients: A scoping review. *Journal of Health Communication*, 25(3), 251-270.
- Howell, J. L., & Shepperd, J. A. (2012a). Behavioral obligation and information avoidance. *Annals of Behavioral Medicine*, 45(2), 258-263.
- Howell, J. L., & Shepperd, J. A. (2012b). Reducing information avoidance through affirmation. *Psychological Science*, 23(2), 141-145.
- Howell, J. L., & Shepperd, J. A. (2013). Reducing health-information avoidance through contemplation. *Psychological Science*, 24(9), 1696-1703.
- Howell, J. L., & Shepperd, J. A. (2016). Establishing an information avoidance scale. *Psychological Assessment*, 28(12), 1695-1708.
- Howell, J. L., & Shepperd, J. A. (2017). Social exclusion, self-affirmation, and health information avoidance. *Journal of Experimental Social Psychology*, 68, 21-26.
- Howell, J. L., & Sweeny, K. (2016). Is waiting bad for subjective health? *Journal of Behavioral Medicine*, 39, 652-664.
- Howell, J. L., & Sweeny, K. (2020). Health behavior during periods of stressful uncertainty: Associations with emotions, cognitions, and expectation management. *Psychology & Health*, 35, 1163-1183.

- Howell, J. L., Collisson, B., Crysel, L., Garrido, C. O., Newell, S. M., Cottrell, C. A., Smith, C. T., & Shepperd, J. A. (2013). Managing the threat of impending implicit attitude feedback. *Social Psychological and Personality Science*, 4(6), 714-720
- Howell, J. L., Crosier, B. S., & Shepperd, J. A. (2014). Does lacking threat-management resources increase information avoidance? A multi-sample, multi-method investigation. *Journal of Research in Personality*, 50, 102-109.
- Howell, J. L., Lipsey, N. P., & Shepperd, J. A. (2020). Health information avoidance. *The Wiley Encyclopedia of Health Psychology*, 279-286.
- Howell, J. L., Ratliff, K. A., & Shepperd, J. A. (2016). Automatic attitudes and health information avoidance. *Health Psychology*, 35(8), 816-823.
- Howell, J. L., Sweeny, K., Hua, J., Werntz, A., Hussain, M., Hinojosa, B., Johnson, A., Lindgren, K., Meese, W., O'Shea, B., & Campbell, S. A. (2023). Uncertainty is worse when one lacks control: Physical, mental, and social well-being in China during the COVID-19 outbreak. *Emotion*, 23, 1458-1471.
- Howell, J. L., Sweeny, K., Miller, W., & Shepperd, J. A. (2019). Hot or not? How self-view threat influences avoidance of attractiveness feedback. *Self and Identity*, 18(2), 144-158.
- Hua, J., & Howell, J. L. (2022). Coping self-efficacy influences health information avoidance. *Journal of Health Psychology*, 27(3), 713-725.
- Hussain, M., Price, D. M., Gesselman, A. N., Shepperd, J. A., & Howell, J. L. (2020). Avoiding information about one's romantic partner. *Journal of Social and Personal Relationships*, 435-801.
- Johnson, A. E., & Howell, J. L. (2020). The role of anticipated affect in health risk information avoidance. *Annals of Behavioral Medicine*, 54, S562-S562.

- Johnson, B. K., & Rosenbaum, J. E. (2018). (Don't) Tell me how it ends: Spoilers, enjoyment, and involvement in television and film. *Media Psychology*, 21(4), 582-612.
- Karlsson, N., Loewenstein, G., & Seppi, D. (2009). The ostrich effect: Selective attention to information. *Journal of Risk and Uncertainty*, 38(2), 95-115.
- Kiviniemi, M. T., & Ellis, E. M. (2014). Worry about skin cancer mediates the relation of perceived cancer risk and sunscreen use. *Journal of Behavioral Medicine*, 37, 1069-1074.
- Lebel, S., Jakubovits, G., Rosberger, Z., Loiselle, C., Seguin, C., Cornaz, C., Ingram, J., August, L., & Lisbona, A. (2003). Waiting for a breast biopsy: Psychosocial consequences and coping strategies. *Journal of Psychosomatic Research*, 55, 437-443.
- Levine, W. H., Betzner, M., & Autry, K. S. (2016). The effect of spoilers on the enjoyment of short stories. *Discourse Processes*, 53(7), 513-531.
- Lipsey, N. P., & Shepperd, J. A. (2019a). Powerful audiences are linked to health information avoidance: Results from two surveys. *Social Science & Medicine*, 225, 51-59.
- Lipsey, N. P., & Shepperd, J. A. (2019b). The role of powerful audiences in health information avoidance. *Social Science & Medicine*, 220, 430-439.
- Lowe, R., Vedhara, K., Bennett, P., Brookes, E., Gale, L., Munnoch, K., Schreiber-Kounine, C., Fowler, C., Rayter, Z., Sammon, A., & Farndon, J. (2003). Emotion-related primary and secondary appraisals, adjustment, and coping: Associations in women awaiting breast disease diagnosis. *British Journal of Health Psychology*, 8, 377-391.
- Maister, D. H. (1984). *The psychology of waiting lines* (pp. 71-78). Boston: Harvard Business School.
- Mannell, K., & Meese, J. (2022). From doom-scrolling to news avoidance: Limiting news as a wellbeing strategy during COVID lockdown. *Journalism Studies*, 23(3), 302-319.

- Mannion, S., Martin, N. A., O'Connor, J., Wieland, J., & Jatoi, A. (2023). In their own words, "waiting sucks": A qualitative study of medical testing-related anxiety in patients with cancer. *American Journal of Hospice and Palliative Medicine*, 40, 468-474.
- Marx, J. A. (2012). "The days had come of curds and cream": The origins and development of cream cheese in America, 1870–1880. *Food, Culture & Society*, 15(2), 177-195.
- Maxwell, L. C. (2022). Spoilers ahead, proceed with caution: How engagement, enjoyment, and FoMO predict avoidance of spoilers. *Psychology of Popular Media*, 11(2), 163-172.
- McCaul, K. D., & Mullens, A. B. (2003). Affect, thoughts, and self-protective health behavior: The case of worry and cancer screening. In J. Suls & K. A. Wallston (Eds.), *Social psychological foundations of health and illness* (pp. 137-168). Oxford, UK: Blackwell.
- McCaul, K. D., Magnan, R. E., & Mead, M. P. (2021). Disease-specific worry. In K. Sweeny & M. L. Robbins (Eds.), *The Wiley encyclopedia of health psychology: The social bases of health behavior* (Vol. 2, pp. 97-104). Wiley.
- McCaul, K. D., Schroeder, D. M., & Reid, P. A. (1996). Breast cancer worry and screening: Some prospective data. *Health Psychology*, 15, 430-433.
- Melnyk, D., & Shepperd, J. A. (2012). Avoiding risk information about breast cancer. *Annals of Behavioral Medicine*, 44(2), 216-224.
- Mermelstein, R. J., Weeks, K., Turner, L., & Cobb, J. (1999). When tailored feedback backfires. *Cancer Research Therapy and Control*, 8, 69-79.
- Montgomery, M., & McCrone, S. H. (2010). Psychological distress associated with the diagnostic phase for suspected breast cancer: Systematic review. *Journal of Advanced Nursing*, 66, 2372-2390.

- Nisan, M. (1972). Dimension of time in relation to choice behavior and achievement orientation. *Journal of Personality and Social Psychology*, 21(2), 175-182.
- Northouse, L. L. (1989). The impact of breast cancer on patients and husbands. *Cancer Nursing*, 12, 278-284.
- O'Carroll, R. E., Chambers, J. A., Brownlee, L., Libby, G., & Steele, R. J. (2015). Anticipated regret to increase uptake of colorectal cancer screening (ARTICS): A randomised controlled trial. *Social Science & Medicine*, 142, 118-127.
- Ockhuijsen, H., van den Hoogen, A., Eijkemans, M., Macklon, N., & Boivin, J. (2014). The impact of a self-administered coping intervention on emotional well-being in women awaiting the outcome of IVF treatment: a randomized controlled trial. *Human Reproduction*, 29, 1459-1470.
- Orom, H., Schofield, E., Kiviniemi, M. T., Waters, E. A., & Hay, J. L. (2021). Agency beliefs are associated with lower health information avoidance. *Health Education Journal*, 80(3), 272-286.
- Orom, H., Stanar, S., Allard, N. C., Hay, J. L., Waters, E. A., Kiviniemi, M. T., & Lewicka, M. (2023). Reasons people avoid colorectal cancer information: A mixed-methods study. *Psychology & Health*, 1-23.
- Parsafar, P., & Davis, E. L. (2018). Fear and anxiety. In H. C. Lench (Ed.), *The function of emotions* (pp. 9-23). Springer.
- Persoskie, A., Ferrer, R. A., & Klein, W. M. (2014). Association of cancer worry and perceived risk with doctor avoidance: An analysis of information avoidance in a nationally representative US sample. *Journal of Behavioral Medicine*, 37, 977-987.

- Poole, K. (1997). The emergence of the 'waiting game': A critical examination of the psychosocial issues in diagnosing breast cancer. *Journal of Advanced Nursing*, 25, 273-281.
- Poole, K., Hood, K., Davis, B. D., Monypenny, I. J., Sweetland, H., Webster, D. J. T, Lyons, K., & Mansel, R. E. (1999). Psychological distress associated with waiting for results of diagnostic investigations for breast disease. *The Breast*, 8, 334-338.
- Portnoy, D. B., Loud, J. T., Han, P. K., Mai, P. L., & Greene, M. H. (2015). Effects of false-positive cancer screenings and cancer worry on risk-reducing surgery among BRCA1/2 carriers. *Health Psychology*, 34, 709-717.
- Prabhu, S., Harwell, J. I., & Kumarasamy, N. (2019). Advanced HIV: diagnosis, treatment, and prevention. *The Lancet HIV*, 6(8), e540-e551.
- Price, D. M., Howell, J. L., Gesselman, A. N., Finneran, S., Quinn, D. M., & Eaton, L. A. (2019). Psychological threat avoidance as a barrier to HIV testing in gay/bisexual men. *Journal of Behavioral Medicine*, 1-11.
- Qu, Y., Saffer, A. J., & Austin, L. (2023). What drives people away from COVID-19 information?: Uncovering the influences of personal networks on information avoidance. *Health Communication*, 38(2), 216-227.
- Rankin, K., & Sweeny, K. (2022). Preparing silver linings for a cloudy day: The consequences of preemptive benefit finding. *Personality & Social Psychology Bulletin*, 55, 1255-1268.
- Rankin, K., Le, D., & Sweeny, K. (2020). Preemptively finding benefit in a cancer diagnosis: A qualitative analysis. *Psychology & Health*, 35, 613-628.
- Rankin, K., Walsh, L., & Sweeny, K. (2019). A better distraction: Exploring the benefits of flow during uncertain waiting periods. *Emotion*, 19, 818-828.

- Reb, J., & Connolly, T. (2009). Myopic regret avoidance: Feedback avoidance and learning in repeated decision making. *Organizational Behavior and Human Decision Processes*, 109(2), 182-189.
- Rettie, H., & Daniels, J. (2021). Coping and tolerance of uncertainty: Predictors and mediators of mental health during the COVID-19 pandemic. *American Psychologist*, 76(3), 427-437.
- Ross, D. (2022). *Maryanne Oketch was “an emotional wreck crying every day” after “Survivor.”* EW.Com. <https://ew.com/tv/survivor-42-maryanne-oketch-winner-finale-interview/>
- Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology*, 42, 5-37.
- Sandberg, T., & Conner, M. (2009). A mere measurement effect for anticipated regret: Impacts on cervical screening attendance. *British Journal of Social Psychology*, 48(2), 221-236.
- Schäfer, S., Aaldering, L., & Lecheler, S. (2023). “Give me a break!” Prevalence and predictors of intentional news avoidance during the COVID-19 pandemic. *Mass Communication and Society*, 26(4), 671-694.
- Schmitt, B. H., Dubé, L., & Leclerc, F. (1992). Intrusions into waiting lines: Does the queue constitute a social system? *Journal of Personality and Social Psychology*, 63(5), 806-815.
- Segerstrom, S. C., Glover, D. A., Craske, M. G., & Fahey, J. L. (1999). Worry affects the immune response to phobic fear. *Brain, Behavior, and Immunity*, 13, 80-92.
- Shepperd, J. A., Ouellette, J. A., & Fernandez, J. K. (1996). Abandoning unrealistic optimism: Performance estimates and the temporal proximity of self-relevant feedback. *Journal of Personality and Social Psychology*, 70, 844-855.

- Shipp, T. D., Shipp, D. Z., Bromley, B., Sheahan, R., Cohen, A., Lieberman, E., & Benacerraf, B. (2004). What factors are associated with parents' desire to know the sex of their unborn child? *Birth*, 31(4), 272-279.
- Simonovic, N., Taber, J. M., Scherr, C. L., Dean, M., Hua, J., Howell, J. L., Chaudhry, B. M., Wain, K. E., & Politi, M. C. (2023). Uncertainty in healthcare and health decision making: Five methodological and conceptual research recommendations from an interdisciplinary team. *Journal of Behavioral Medicine*, 46(4), 541-555.
- Stanton, A. L., & Snider, P. R. (1993). Coping with a breast cancer diagnosis: A prospective study. *Health Psychology*, 12, 16-23.
- Sutton, S. R., & Eiser, J. R. (1990). The decision to wear a seat belt: The role of cognitive factors, fear and prior behavior. *Psychology and Health*, 4, 111-123.
- Sweeny, K. (2018). On the experience of awaiting uncertain news. *Current Directions in Psychological Science*, 27, 281-285.
- Sweeny, K., & Andrews, S. E. (2014). Mapping individual differences in the experience of a waiting period. *Journal of Personality & Social Psychology*, 106, 1015-1030.
- Sweeny, K., & Falkenstein, A. (2015). Is waiting really the hardest part? Comparing the emotional experiences of awaiting and receiving bad news. *Personality and Social Psychology Bulletin*, 41, 1551-1559.
- Sweeny, K., & Falkenstein, A. (2017). Even optimists get the blues: Intra-individual consistency in the tendency to brace for the worst. *Journal of Personality*, 85, 807-816.
- Sweeny, K., & Howell, J. L. (2017). Bracing later and coping better: Benefits of mindfulness during a stressful waiting period. *Personality and Social Psychology Bulletin*, 43, 1399-1414.

- Sweeny, K., & Krizan, Z. (2013). Sobering up: A quantitative review of temporal declines in expectations. *Psychological Bulletin*, 139, 702-724.
- Sweeny, K., Andrews, S. E., Nelson, S. K., & Robbins, M. L. (2015). Waiting for a baby: Navigating uncertainty while trying to conceive. *Social Science & Medicine*, 141, 123-132.
- Sweeny, K., Carroll, P. J., & Shepperd, J. A. (2006). Thinking about the future: Is optimism always best? *Current Directions in Psychological Science*, 15, 302-306.
- Sweeny, K., Melnyk, D., Miller, W., & Shepperd, J. A. (2010). Information avoidance: Who, what, when, and why. *Review of General Psychology*, 14(4), 340-353.
- Sweeny, K., Rankin, K., Cheng, X., Hou, L., Long, F., Meng, Y., Azer, L., Zhou, R., & Zhang, W. (2020). Flow in the time of COVID-19: Findings from China. *PLoS ONE*, 15, e0242043.
- Sweeny, K., Reynolds, C., Falkenstein, A., Andrews, S. E., & Dooley, M. D. (2016). Two definitions of waiting well. *Emotion*, 16, 129-143.
- Taber, J. M., Klein, W. M., Ferrer, R. A., Han, P. K., Lewis, K. L., Biesecker, L. G., & Biesecker, B. B. (2015). Perceived ambiguity as a barrier to intentions to learn genome sequencing results. *Journal of Behavioral Medicine*, 38, 715-726.
- Taber, J. M., Klein, W. M., Ferrer, R. A., Harris, P. R., Shepperd, J. A., & Biesecker, L. G. (2014). Information avoidance tendencies, spontaneous self-affirmation, and interest in genetic sequencing feedback. *Annals of Behavioral Medicine*, 49, 616-621.
- Taber, J. M., Leyva, B., & Persoskie, A. (2015). Why do people avoid medical care? A qualitative study using national data. *Journal of General Internal Medicine*, 30, 290-297.

- van der Plight, J., Otten, W., Richard, R., & van der Velde, F.W. (1993). Perceived risk of AIDS: Unrealistic optimism and self-protective action. In J.B. Prior and G.D. Reeder (Eds.), *The social psychology of HIV infection*, (pp. 39-58). Hillsdale, NJ: Erlbaum.
- van der Steenstraten, I. M., Tibben, A., Roos, R., Van de Kamp, J., & Niermeijer, M. F. (1994). Predictive testing for Huntington disease: Nonparticipants compared with participants in the Dutch program. *American Journal of Human Genetics*, 55(4), 618-625.
- Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, 134, 163-206.
- Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: A meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological Bulletin*, 138, 775-808.
- Woolley, K., & Risen, J. L. (2018). Closing your eyes to follow your heart: Avoiding information to protect a strong intuitive preference. *Journal of Personality and Social Psychology*, 114(2), 230-245.
- Yaniv, I., Benador, D., & Sagi, M. (2004). On not wanting to know and not wanting to inform others: Choices regarding predictive genetic testing. *Risk Decision and Policy*, 9(4), 317-336.
- Ytre-Arne, B., & Moe, H. (2021). Doomscrolling, monitoring and avoiding: News use in COVID-19 pandemic lockdown. *Journalism Studies*, 22(13), 1739-1755.
- Zajac, I. T., Duncan, A., Freegard, S., Wilson, C., Flight, I., & Turnbull, D. (2017). Exploring the potential of anticipated regret as an emotional cue to improve bowel cancer screening uptake. *BioMed Research International*, 2017.

- Zeelenberg, M., Nelissen, R. M., Breugelmans, S. M., & Pieters, R. (2008). On emotion specificity in decision making: Why feeling is for doing. *Judgment and Decision Making*, 3, 18-27.
- Zeelenberg, M., van Dijk, W. W., Manstead, A. S. R., & van der Pligt, J. (2000). On bad decisions and disconfirmed expectancies: The psychology of regret and disappointment. *Cognition & Emotion*, 14, 521-541.
- Zeelenberg, M., van Dijk, W. W., Van der Pligt, J., Manstead, A. S., Van Empelen, P., & Reinderman, D. (1998). Emotional reactions to the outcomes of decisions: The role of counterfactual thought in the experience of regret and disappointment. *Organizational Behavior and Human Decision Processes*, 75, 117-141.
- Zhou, R., & Soman, D. (2003). Looking back: Exploring the psychology of queuing and the effect of the number of people behind. *Journal of Consumer Research*, 29(4), 517-530.

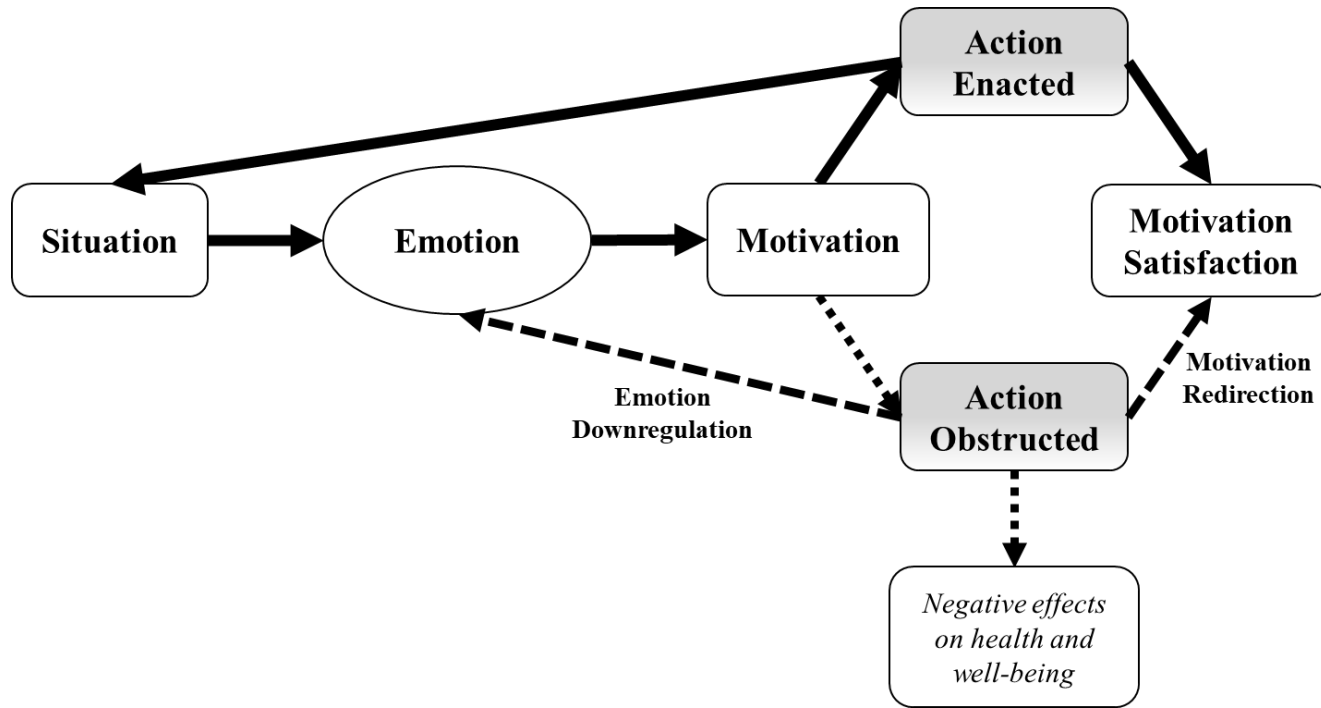


Figure 1. The emotion-motivation-obstruction (EMO) model.

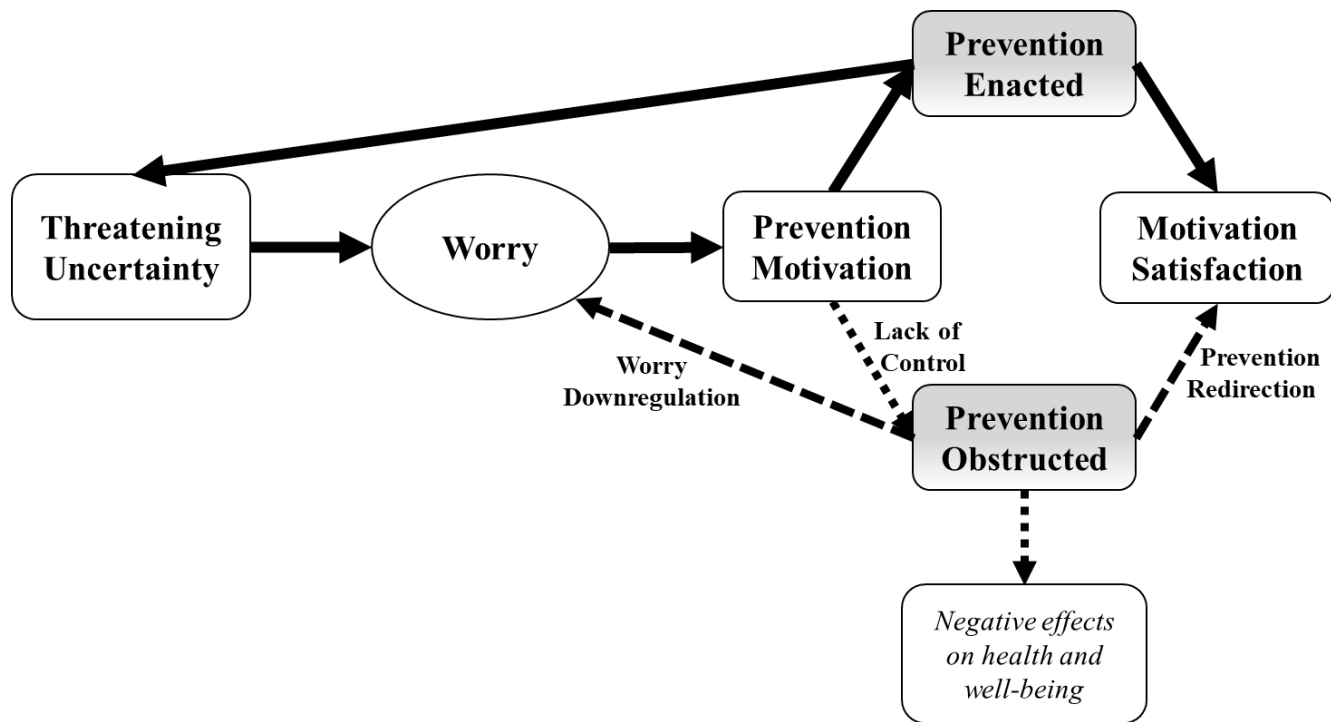


Figure 2. The EMO model of waiting.

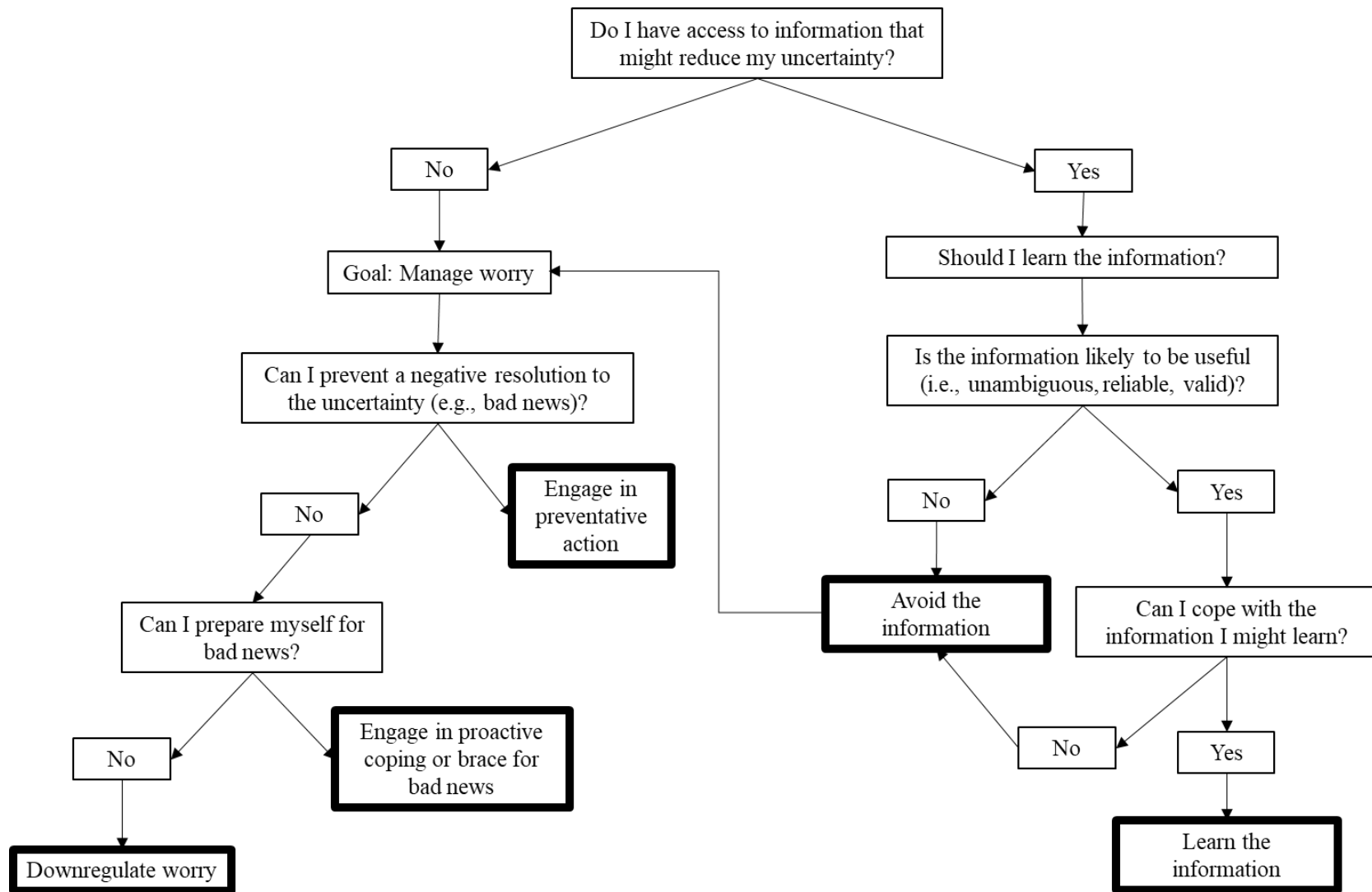


Figure 3. A decision tree for uncertainty navigation.