Goal Progress and Break Quality: Investigating Moderating and Mediating Factors

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ABSTRACT

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We live in a fast-paced world and are continuously striving to complete tasks and achieve our goals. As a result, we often neglect taking breaks despite their known benefits to overall performance. Goal progress and break-taking have both been studied independently, yet their interrelation remains unexplored. The current research aims to address this gap by identifying how participants react to taking a break as an interruption to an unfinished task. Namely, I aim to examine the relationship between goal (i.e., task completion) progress and perceived break quality, and more specifically identify 1) whether greater progress toward a goal leads to higher perceived break quality, 2) whether the use of external validation (such as nudges) enhances perceived break quality, 3) whether trait hedonic capacity further enhances the break experience, 4) whether feelings of deservingness mediate these effects, and 5) whether higher perceived break quality leads to increased motivation to resume working on the goal-related task after the break. Three online experiments were conducted to test these hypotheses. While the results across the three studies were not entirely consistent, several trends emerged. The data suggests a potential relationship between goal progress and perceived break quality. Some evidence supports the moderating role of trait hedonic capacity and the mediating role of deservingness. There was also some support for the proposition that higher quality breaks lead to greater motivation to resume goal-related tasks after the break. Despite not yielding all the expected results, this research lays a groundwork for future studies in this area.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Introduction

In today's fast-paced world, the importance of taking breaks cannot be overstated. In the context of this research, breaks are defined as short, informal respite activities between or during tasks. They have been shown to replenish drained cognitive resources (Meijman & Mulder, 1998; Sonnentag, 2003) and result in improvements in attention (J. Li et al., 2016; Wollseiffen et al., 2016), self-regulation (Tyler & Burns, 2008), and task performance (Wendsche et al., 2016). Adding to their value, breaks also serve to enhance positive affect and overall well-being (Kim et al., 2018; Trougakos et al., 2008).

However, the value of breaks is often neglected in the pursuit of achieving goals. We live in an era of constant hustle, and our lives have become a perpetual race against time, always pushing ourselves to achieve more while continuously setting ourselves higher performance standards (Latham & Locke, 2006; Ordóñez et al., 2009). The tendency to focus on goal achievement is further exasperated by the fact that we often get compensated (monetarily or otherwise) by how well we perform at work, at school, at home, etc. (Locke & Latham, 1990).

In this research, the primary focus is on exploring the relationship between goal progress and perceptions of break quality. Although these two areas have been extensively studied independently (e.g., Locke & Latham, 2002; Nastasi et al., 2023; Scholz et al., 2019), the expected relationship between them remains unclear. The research also hypothesizes that higher-quality breaks will yield positive downstream consequences, such as increased motivation to return to goal-related tasks after the break. Given that enhanced motivation to resume working on goal-related tasks is a desirable outcome, it becomes crucial to identify strategies and mechanisms that facilitate quality break-taking. For this reason, this study explores the potential role of external validation, such as nudging techniques (Thaler & Sunstein, 2008), as a moderator

expected to amplify perceptions of break quality. In addition to external validation, this study also examines the potential moderating role of trait hedonic capacity, an individual trait assessing one's capacity to successfully engage in hedonic activities (Bernecker & Becker, 2021). Furthermore, I plan to examine whether feelings of deservingness help explain how goal progress and the interacting factors influence perceived break quality. With these research goals in mind, the following section reviews the theories and studies that inform this work.

Theoretical Background

Goal Progress and Break Quality

There exists an abundance of research examining the effects of goal progress on subsequent behavior (e.g., Fishbach & Dhar, 2005; Jhang & Lynch, 2015; Kivetz et al., 2006) and the determinants of break-taking (Bechtold et al., 1984; Hunter & Wu, 2016; Li et al., 2020). However, an evident gap in the literature relates to the absence of empirical studies investigating the relationship between an individual's progress towards a goal and the consequent changes in the perceived quality of their breaks. This paper aims to fill this gap by exploring the intricate dynamics between goal progress and perceptions of break quality.

The literature widely acknowledges the influence of goal progress on an individual's behavior. Fishbach and Dhar (2005) posited that when individuals perceive that they are making sufficient progress towards a goal, they feel liberated to pursue other actions not relevant to the original goal. Supporting this idea, Fitzsimons and Fishbach (2010) suggest that if an individual feels they have made significant progress towards a goal, the priority given to that goal decreases. This aligns with Carver's (2003) perspective, which holds that progress towards a goal, especially when it is faster than expected, can elicit a sense of partial goal attainment, which signals to the individual that less effort is needed and results in coasting. Building on these

findings, it can be expected that progress towards a goal is likely to positively influence break-taking behavior.

Break-taking behavior and the quality of the breaks have been mostly studied in the context of occupational recovery and burnout (e.g., Bennett et al., 2020; Hunter & Wu, 2016; Kim et al., 2018; Leroy et al., 2020). In this literature, break quality is defined along various dimensions (Scholz et al., 2019). In the context of this study, I conceptualize perceptions of break quality along two dimensions. The first dimension concerns the measure of enjoyment derived from the break. As breaks essentially serve to help people recover from taxing and effortful goal pursuit (Bennett et al., 2020), they are often viewed a hedonic, relaxing and pleasant activities that aim to generate an enjoyable experience (Sonnentag & Fritz, 2007; Trougakos et al., 2008). Echoing Hunter and Wu's (2016) assertion, a break should embody three core characteristics: it should be less effortful, be preferred by the individual, and be unrelated to the work at hand. In this study, the measure of perceived break enjoyment is established by soliciting responses regarding the extent of enjoyment and the overall quality of the break.

The second dimension of perceived break quality relates to the absence of intrusive thoughts during the break episode. Intrusive thoughts, those related to work or other tasks, impede the break experience by hindering the hedonic benefits of a break (Masicampo & Baumeister, 2007). Past research has found that a reduction in work-related rumination and intrusive thoughts during breaks indicates effective recovery from work (e.g., Bernecker & Becker, 2021; Querstret et al., 2016). Thus, in my studies, I include a self-reported measure of intrusive thoughts which gauges the extent to which goal-related and/or other general thoughts disturb the break experience.

The effect of goal progress, or even the mere perception of it, extends beyond instigating

goal disengagement (Fishbach & Dhar, 2005); it also triggers shifts in psychological and emotional states. As individuals make strides towards their goals or even plan for progress on an unfinished goal, a sense of relief typically ensues, accompanied by a reduction in the stress and anxiety associated with the task at hand (Martin et al., 2003). This can also alleviate intrusive thoughts regarding the unfinished goal (Masicampo & Baumeister, 2011). Goal progress is also shown to be associated with an increase in positive affect and a decrease in negative affect (Henkel & Hinsz, 2004). The positive emotional effects of goal progress can be further explained by the activation of the brain's reward system that goal progress initiates, leading to the release of dopamine, a neurotransmitter associated with sensations of pleasure and satisfaction (Baldo & Kelley, 2007; Wise, 2004). In line with these findings, a high level of progress towards a goal is expected to enhance the perceived enjoyment of breaks and diminish intrusive thoughts during those breaks. Formally, I hypothesize:

H1a: High (vs. low) goal progress leads to high (vs. low) perceived break enjoyment.

H1b: High (vs. low) goal progress leads to low (vs. high) levels of intrusive thoughts during the break.

This paper also aims to examine a range of factors that influence and explain the relationship between goal progress and perceived break quality. A review of the current literature on these factors is set to follow in the subsequent sections.

The Moderating Role of External Validation

Considering that the quality of breaks taken during states of low goal progress is expected to be poor compared to those taken in states of high goal progress, it becomes vital to identify interventions that could potentially aid individuals in a state of low progress to experience higher-quality breaks. For this purpose, this paper tests external validation as a potential

moderator. External validation, herein, refers to as an external factor that validates or justifies the action of taking a break. This concept aligns with the field of choice architecture, a well-studied area, and is commonly referred to as “nudging”, a term that was popularized by the bestseller "Nudge" by Richard Thaler and Cass Sunstein (Thaler & Sunstein, 2008), in which they define a “nudge” as an intervention that predictably alters an individual’s behavior. Blasche et al. (2021), while discussing rest-break behavior in work environments, expressed the need for future research to examine the use of nudging techniques to promote break-taking.

The existing body of research outlines various types of nudging techniques (Cadario & Chandon, 2020; Münscher et al., 2016). In this study, external validation is provided using two different nudging techniques, both of which have been adapted from Münscher et al.'s (2016) taxonomy. The first technique I employ is social nudging (Münscher et al. 2016). This approach involves providing descriptive norms about common behaviors or injunctive norms about socially approved or accepted behaviors (Cialdini et al., 1990). An example of its application might involve sharing information about a product's popularity to influence customer behavior. In this research (Study 1), I will manipulate external validation by providing information about others taking the break with the aim of potentially enhancing the individual's break experience.

The second nudging technique leverages the provision of factual information to guide individuals towards a certain behavior (Münscher et al. 2016). This approach is often exemplified in the packaging of food items, which display benefits or nutritional information to influence consumers' purchasing decisions. In this research (Study 2), I will manipulate external validation by offering participants factual information highlighting the benefits of break-taking with the intent of enhancing individuals' break experiences.

For individuals in a state of low goal progress, it is anticipated that offering external

validation could improve their break experience. This validation could be in the form of communicating that others are also taking breaks or by sharing information about the benefits of break-taking. Such interventions are likely to reduce intrusive thoughts about unfinished tasks during the break and enhance the enjoyment derived from the break, thereby improving the overall perceived break quality. Conversely, in a state of high goal progress, where the quality of the break is already expected to be relatively high, the introduction of such external validation nudges might not significantly impact the break experience. Therefore, I hypothesize that:

H2a: The effect of goal progress on perceived break enjoyment is moderated by external validation. In conditions of low goal progress, the presence (vs. absence) of an external validation nudge enhances perceived break enjoyment. However, in conditions of high goal progress, the presence of an external validation nudge does not amplify the already elevated perceived break enjoyment.

H2b: The effect of goal progress on intrusive thoughts is moderated by external validation. In conditions of low goal progress, the presence (vs. absence) of an external validation nudge reduces the prevalence of intrusive thoughts. However, in conditions of high goal progress, the presence of an external validation nudge does not diminish the already reduced level of intrusive thoughts.

The Moderating Role of Trait Hedonic Capacity

The role of trait hedonic capacity (Bernecker & Becker, 2021), as another potential moderator in the relationship between goal progress and break quality, warrants consideration in this study. This concept, as introduced by Bernecker and Becker (2021), pertains to an individual's capacity to successfully engage in hedonic activities, those activities or pursuits that yield pleasure and enjoyment. For individuals high in trait hedonic capacity, hedonic goals might

be more chronically accessible and potentially strengthen with time (Atkinson & Birch, 1970; Ramanathan & Menon, 2006), making it easier for them to experience breaks of higher quality. Given this potential for enhanced break quality among individuals high in trait hedonic capacity, it is worth noting the broader benefits of indulging in hedonic activities. Engaging in hedonic activities intermittently is important, as a continuous focus on long-term objectives can detrimentally affect overall well-being (Bernecker & Becker, 2021; Ordóñez et al., 2009). Further, research by Dano (2022) suggests a positive link between trait hedonic capacity and one's level of happiness. According to Becker and Bernecker (2023), hedonic activities not only enhance well-being and happiness but also support the achievement of long-term goals. The positive feelings generated by hedonic activities can help spur action, particularly when working on challenging goals (Kuhl et al., 2021; Taquet et al., 2016). Moreover, incorporating pleasurable diversions into a goal-oriented plan has been shown to sustain motivation and does not hinder the pursuit of long-term goals (Becker & Bernecker, 2023; do Vale et al., 2016; Prinsen et al., 2018).

It is important to note that individuals with a high trait hedonic capacity are not less preoccupied about achieving their performance goals. In fact, Bernecker et al. (2023) found that individuals with higher trait hedonic capacity perform on par with their lower trait hedonic capacity counterparts in both academic and professional settings. However, these individuals also invested more time in engaging in hedonic activities. This means that people with high trait hedonic capacity are able to devote a considerable amount of time to hedonic activities, without compromising their academic or job performance.

Drawing from the preceding body of literature, it can be inferred that trait hedonic capacity might buffer against the adverse effect of low goal progress on perceived break quality.

Specifically, individuals with high trait hedonic capacity may anticipate higher break utility, despite low goal progress, compared to those with low trait hedonic capacity. However, for those in states of high goal progress, where a high break quality is already anticipated, trait hedonic capacity may not necessarily contribute to further enhancement of break quality. Formally stated:

> **H3a:** The effect of goal progress on perceived break enjoyment is moderated by trait hedonic capacity. In conditions of low goal progress, individuals high in trait hedonic capacity perceive greater break enjoyment compared to those low in trait hedonic capacity. However, in conditions of high goal progress, the difference in perceived break enjoyment between individuals high and low in trait hedonic capacity is less marked.
>
> **H3b:** The effect of goal progress on intrusive thoughts is moderated by trait hedonic capacity. In conditions of low goal progress, individuals high in trait hedonic capacity experience less intrusive thoughts compared to those low in trait hedonic capacity. However, in conditions of high goal progress, the difference in the level of intrusive thoughts between individuals high and low in trait hedonic capacity is less marked.

The Mediating Role of Deservingness

Within the marketing domain, the notion of deservingness has been often used to understand consumer buying behaviors (Taylor et al., 2014). It refers to a sense of entitlement to a desired outcome, typically a hedonic, indulgent behavior (Cavanaugh, 2014; Celsi et al., 2017; Tezer & Sobol, 2021). Generally, situations that highlight a valued quality or achievement make people feel deserving of rewards, while situations that draw attention to a lack of achievement can make them feel unworthy (Cavanaugh, 2014; Mick & Faure, 1998). This paper investigates this construct in the context of a person's perceived deservingness to take a break (while pursuing a performance-related goal) and its influence on the perceived quality of their breaks.

When considering the influence of goal progress on perceived break quality, deservingness is anticipated to mediate the relationship, owing to the psychological validation to disengage from the goal (at least temporarily) which arises from assessments of high goal progress (Mick & Demoss, 1990; Xu & Schwarz, 2009). Specifically, upon reaching certain milestones, which instill a sense of achievement, an individual may find a greater sense of merit for taking a break (Khan & Dhar, 2006; Kivetz & Simonson, 2002). This elevated sense of deservingness can, in turn, positively influence the quality of the breaks that they take, as they might allow themselves to fully relax and disconnect without guilt or worry (Martin et al., 2003). Therefore, I hypothesize that:

H4a: The effect of goal progress on perceived break enjoyment is mediated by feelings of deservingness towards the break.

H4b: The effect of goal progress on intrusive thoughts is mediated by feelings of deservingness towards the break.

In prior hypotheses (H2a and H2b), it was suggested that for individuals in a state of low goal progress, an external validation nudge can improve the perceived quality of a break. Building on this, it is also proposed that feelings of deservingness play a mediating role in this interaction effect. I expect that external validation, achieved through nudges such as offering factual information about the benefits of breaks or referencing social norms of break-taking, could strengthen feelings of deservingness towards a break. In their research, Bilandzic and Busselle (2013) underscore the role of factual information in persuasion and, consequently, in behavior modification. Applied to the current context, this suggests that such information could legitimize break-taking and bolster an individual's sense of entitlement towards a break. In a similar vein, the behavior of others can influence an individual's own actions, serving as a social

reference point (Cialdini & Goldstein, 2004). In this context, knowing that others are also taking breaks can reinforce an individual's feelings of deservingness towards a break, which in turn is likely to lead to enhanced perceived break quality. Formally stated:

H5a: Deservingness mediates the interactive effect of goal progress and external validation on perceived break enjoyment.

H5b: Deservingness mediates the interactive effect of goal progress and external validation on intrusive thoughts.

The role of deservingness is further examined, this time, in relation to another previously proposed moderation hypothesis, namely the interaction between trait hedonic capacity and goal progress on perceived break quality (H3a and H3b). As per Bernecker and Becker's (2021) research, individuals with higher trait hedonic capacity inherently derive greater enjoyment from hedonic activities and experience a greater quality of engagement with these activities. Further to this, Woolley and Fishbach (2016) demonstrate a positive relationship between the quality of one's engagement in hedonic activities and the persistence in undertaking those activities, and Bernecker et al. (2023) find that individuals with high trait hedonic capacity dedicate more time to hedonic activities and initiate such activities more often than those scoring low on this trait. Individuals with high hedonic capacity are more attuned to their hedonic needs, better at giving themselves the license to take breaks compared to their counterparts, and do so without jeopardizing their goal-related performance (Bernecker et al., 2023; Bernecker & Becker, 2021). Given all this, it is expected that individuals with a higher trait hedonic capacity feel more deserving of a break and are able to enjoy their breaks more without being afflicted by thoughts of unfinished tasks or unmet goals. Therefore, the following hypotheses are proposed:

H6a: Deservingness mediates the interactive effect of goal progress and trait hedonic capacity on perceived break enjoyment.

H6b: Deservingness mediates the interactive effect of goal progress and trait hedonic capacity on intrusive thoughts.

In both instances of moderation – with external validation and with trait hedonic capacity – deservingness is anticipated to mediate the relationships. This is because it is the sense of worthiness or entitlement that is expected to bridge the gap between the progress made and the ultimate quality of the break. In essence, the feeling of deservingness is expected to regulate how goal progress, external validation, and trait hedonic capacity impact perceived break quality.

Downstream Effects on Task Motivation

Breaks are an essential component of a productive work environment, as they are known to have significant psychological and physiological benefits, and lead to improvements in employee performance and productivity (Fritz & Sonnentag, 2006; Nastasi et al., 2023; Singh et al., 2020). This positive impact is largely due to the replenishment of cognitive resources (Hobfoll, 1989) that aids in increasing attention and concentration, a finding that is also supported by EEG data (J. Li et al., 2016; Ross et al., 2014). Further, studies indicate that work breaks also result in elevated job satisfaction (Hunter & Wu, 2016; K. Li et al., 2020).

While many studies have measured different outcomes of taking breaks (for a summary, see Scholz et al. (2019)), this research narrows its focus on one specific outcome: the motivation to return to work on goal-related tasks after a break. Extant literature shows recovery appraisals of a break, such as levels of relaxation, enjoyment, or the degree of detachment from work-related thoughts, often act as mediators explaining break outcomes (Bennett, 2015; Kinnunen et al., 2011; ten Brummelhuis & Bakker, 2012). Building on this foundation, this research posits

that not only the occurrence of the break but also the perceived quality of the break can exert an influence on the individual's motivation to return to goal-related tasks.

Increased enjoyment of a break can amplify one's positive affect and diminish one's negative affect, and these shifts in affect variables have been demonstrated to enhance motivation and facilitate more successful goal pursuit (Isen & Reeve, 2005; Kim et al., 2017, 2018; Kuhl et al., 2021). Moreover, a reduction in intrusive thoughts, which is also characteristic of high-quality breaks, can facilitate the replenishment of an individual's cognitive resources (Hobfoll, 1989; Kim et al., 2018; Meijman & Mulder, 1998), thereby resulting in greater motivation towards goal-related tasks post-break. Therefore, the following hypotheses are proposed:

H7a: Increase in perceived break enjoyment will lead to a subsequent increase in task motivation.

H7b: Decrease in intrusive thoughts will lead to a subsequent increase in task motivation.

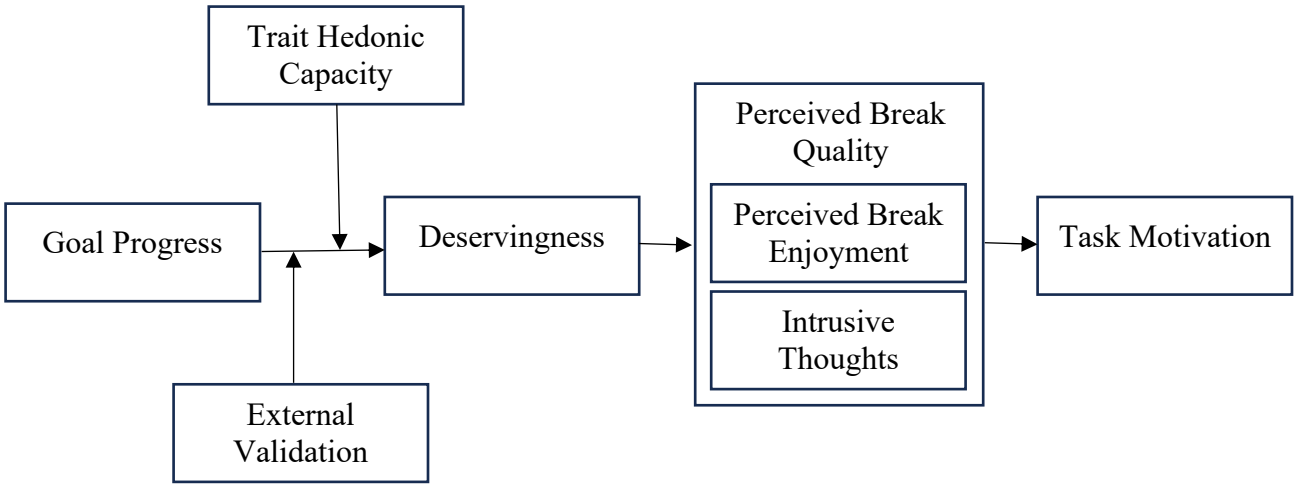


Figure 1: Conceptual Model

Overview of Experiments

The proposed hypotheses were examined across three studies. The participants for studies

1 and 2 were recruited from Amazon's Mechanical Turk (MTurk), while undergraduate students served as participants in Study 3. Study 1 aimed to test the main effect of goal progress on perceived break enjoyment and intrusive thoughts, the moderating effects of external validation (social nudge) and trait hedonic capacity, the mediating role of deservingness, and the downstream effects on task motivation. Study 2 was designed to generalize the findings by employing different manipulations for goal progress and external validation (informative nudge). Finally, Study 3 aimed to test the conceptual model within an alternative participant demographic.

Study 1

Design and Sample

The study recruited four hundred and thirteen participants from Amazon's Mechanical Turk (M_{age} = 43.78, SD = 11.83; 50.8% female) to partake in an 8-minute online study, which was compensated monetarily ($1.00). The experiment commenced with participants reading and signing the consent form. In the event of non-consent, participants were redirected to the end of the survey and thanked for their time. In terms of the experiment's objective, participants were informed that it aimed to study the impact of a break on task performance. The experiment implemented a 2 (goal progress: low vs. high) x 2 (external validation: present vs. absent) between-subjects design. Participants were randomly allocated to one of the four conditions. Furthermore, they were informed that they would be required to respond to a series of evaluative questions throughout the survey to determine the effectiveness of taking a break. All the proposed relationships in the conceptual model are tested in this study.

Method

The focal task that manipulated goal progress in Study 1 pertained to an anagram task.

The task was described as a series of scrambled words to be rearranged into two correct words using all provided letters. Participants were told they had unlimited time for each anagram. An example was first shown to illustrate the task. Then, a practice session was initiated where participants worked on two anagrams to familiarize themselves with the task, with solutions revealed after each one, after which they proceeded to the actual task (refer to Appendix A for the list of anagrams). All participants were told they would have a break after the 5th anagram. Participants in the *high goal progress* condition were informed that they had a total of 7 anagrams to solve (i.e., 5/7 of task would be solved before the break), whereas those in the *low goal progress* condition were told they had 17 anagrams to solve in total (i.e., 5/17 of task would be solved before the break). The design, adopted from Bullard & Manchanda (2017), ensured the same number of anagrams were solved pre-break, controlling for depletion. Performance during this task was not tracked.

After the fifth anagram, all participants were invited to take a break. The break involved a breathing exercise guided by a 90-second audio track (see Appendix B). Participants were asked to ensure a distraction-free environment and suggested to close their eyes for optimal results. In the *external validation* condition, participants were informed that other study participants were taking the break at the same time, whereas no such information was given in the *no external validation* condition.

Numerous studies have highlighted the potential recovery benefits of mindfulness interventions and guided breathing exercises (Bolm et al., 2022; Creswell, 2017; Jamieson & Tuckey, 2016). As such, I have chosen a guided breathing exercise as the break activity. In terms of break duration, prior research suggests that periods well under 10 minutes can offer notable recovery benefits (Bennett, 2015; Henning et al., 1989; Tucker, 2003). Therefore, for the purpose

of testing the hypotheses, I expect that a guided breathing exercise lasting less than two minutes will be sufficient.

The next screen featured the audio track (i.e., the break). Post-break, to assess perceptions of break quality, participants answered the following two questions: "How would you rate the overall quality of the break?" (1 = Very poor, 7 = Very good; adapted from Moorthy and Hawkins (2005)) and "To what extent did you enjoy the break?" (1 = Not at all, 7 = Very much; adapted from Isen and Reeve (2005)). The two items were averaged to yield the measure of perceived break enjoyment ($r = .86$, $p < .001$). Next, to assess the extent to which participants experienced intrusive thoughts during their break which arguably spoiled the break experience, the two following questions were asked: "Please indicate the extent to which thoughts about the unfinished anagram task distracted you during the break?" (1 = Not at all, 7 = Very much; adapted from Masicampo and Baumeister (2011) and "Overall, how distracted were you during the break?" (1 = Not distracted, 7 = Very distracted; adapted from Lewandowski et al. (2021)). An average of the two items was computed to derive the measure for intrusive thoughts ($r = .53$, $p < .001$).

Other exploratory variables, intended to potentially gauge the recuperative benefits of a break, such as the level of relaxation (two-item scale: "I kicked back and relaxed during the break", "During the break, I used the time to relax", 1 = Totally disagree, 7 = Totally agree, $r = .92$, $p < .001$; adapted from Bakker et al. (2015)) and psychological detachment achieved during the break (three-item scale: "I forgot about the anagram task during the break", "I didn't think about the anagram task at all during the break", "During the break, I distanced myself from the anagram task", 1 = Totally disagree, 7 = Totally agree, $\alpha = .94$; adapted from Bakker et al. (2015)) were measured. Next, participants were asked to respond to the 10-item

hedonic/utilitarian (HED/UT) scale (Voss et al., 2003), which captured how valuable participants found the break by recording both the hedonic value (five semantic differential response items, with endpoints such as not fun/fun and dull/exciting, $\alpha = .91$) and utilitarian value (five semantic differential response items, with endpoints such as not effective/ineffective and helpful/unhelpful, $\alpha = .93$). None of these exploratory variables offered any significant results and will not be further discussed.

Next, participants were prompted to reflect on how much they felt they deserved the break: "To what extent did you feel deserving to take a break, despite not having finished the anagram task.", (1 = Not at all, 7 = Very much; adapted from Cavanaugh (2014)). A second item that intended to measure deservingness was included: "To what extent did it feel like you had earned the opportunity to unwind yourself during the break?" (1 = Not at all, 7 = Very much; adapted from Mick and Faure (1998)), however it did not produce significant results. Even though the two items correlated strongly ($r = .82$, $p < .001$), it is possible that the nuanced difference in asking about deservingness of taking a break vs. deservingness of unwinding during the break disrupted the results. For this reason, the second item was dropped from the analyses in this study, was not included in the subsequent studies, and will not be further discussed.

Then, participants indicated how motivated they were to resume working on the anagram task (1 = Not at all motivated, 7 = Extremely motivated). They were then informed that they did not have to complete the remainder of the anagrams for the purposes of this study, and, instead, they would be presented with some more questions about the break. Participants were asked to complete the 10-item trait hedonic capacity scale, which captures a person's capacity to successfully engage in hedonic activities (items include: "I am good at pursuing my desires" and "In my spare time, I can 'switch off' well", 1 = Not at all like me, 7 = Very much like me, $\alpha =$

0.90; adapted from Bernecker and Becker (2021)). Next, participants completed manipulation check measures for the goal progress and external validation manipulations respectively: "Considering the number of anagrams you were initially asked to solve, how much progress have you made towards finishing the task before taking the break?", 1 = No progress at all, 7 = A lot of progress; and "Before the start of the break, do you remember being informed that other respondents completing the survey at the same time as you were also asked to take the break?", with response options: (1) Yes, I was informed about other participants taking a break, (2) No, I was not informed about other participants taking a break, and (3) I do not recall.

To control for potential confounding factors, participants' frequency of engaging in meditation/breathing exercises, enjoyment of such exercises, enjoyment of the anagram task, the level of annoyance from the interruption of the task, and their self-efficacy were assessed. Finally, questions about the quietness of the participant's surroundings, any interruptions during the study, device information, demographic information, and self-reported English proficiency were answered. None of these control variables impacted the results in this or any other study, and, therefore, are not discussed while reporting the results. Before being asked to log off, participants had a chance to leave a qualitative comment to the researchers.

Results

Exclusions and Manipulation Checks

Twenty-one participants indicated that they had problems with the relaxation exercise or the study in the comments section (e.g., "It took most of the break to figure breathing exercise to get it to work.", "The breathing exercise was not very pleasant. I found the pacing to be uncomfortable."). Given that such negative experiences likely adversely impacted participants' perceptions of break quality, these individuals were excluded from the data set (see Appendix D

for further explanation of the exclusion criteria used in all studies).

An independent samples t-test was conducted to verify the efficacy of the goal progress manipulation. There was a significant difference between the perceived goal progress scores in the *low goal progress* (M = 3.55, SD = 1.20) and the *high goal progress* conditions (M = 5.34, SD = 1.02; $t(390) = -15.91$, $p < .001$). These results confirm that the manipulation was successful in creating distinct perceptions of goal progress between the two conditions. Among participants in the *low goal progress* condition, where participants solved five out of seventeen anagrams, those who evaluated their progress to be high (i.e., more than 4 on the 7-point scale) were excluded from the analysis for failing to correctly interpret their goal progress. Analogously, within the *high goal progress* condition, where participants solved five out of seven anagrams, those who assessed their progress as less than 4 on the same scale were also excluded from the analyses. This led to the exclusion of forty-three more responses, resulting in a sample size of three hundred and forty-nine (M_{age} = 43.86, SD = 11.65; 51% female) for the analyses.

In order to verify the effectiveness of the external validation manipulation, participants' responses to the manipulation check question were analyzed. Ideally, participants in the *external validation: present* condition should recall that 'yes, they were aware of the validation', whereas those in the *external validation: absent* condition should respond 'no', signifying an absence of this awareness. In the *external validation: present* condition, out of 182 participants, 156 correctly indicated 'yes', signifying that they had received the external validation, 14 participants responded with 'I do not recall', and an equal number of participants incorrectly chose 'no'. In the *external validation: absent* condition, out of 167 participants, 91 correctly responded 'no'. However, 64 participants indicated 'I do not recall', and 12 incorrectly responded 'yes'. These findings indicate variations in participants' recall of the presence or absence of external

validation. A Chi-Square test of independence was performed to examine the relation between the conditions and responses to the manipulation check question (answered correctly vs. I do not recall or answered incorrectly). The relation between these variables was significant, ($\chi^2(1, N = 349) = 40.76$, $p < .001$). This result suggests that participants' recall/interpretation accuracy across conditions (presence or absence of external validation) varied significantly, suggesting that the manipulation may not have been entirely successful. Also, the considerable number of participants who either chose 'I do not recall' or responded incorrectly suggests that the manipulation was too subtle, leading participants to overlook it.

Main Analyses

To test whether high (vs. low) goal progress leads to high (vs. low) perceived break enjoyment (H1a), a 2 (goal progress: low vs. high) x 2 (external validation: present vs. absent) two-tailed ANOVA was conducted. The analysis found a marginally significant main effect for goal progress on perceived break enjoyment ($F(1, 345) = 3.80$, $p = .052$). Participants in the high goal progress condition reported a mean score for perceived break enjoyment of 5.03 ($SD = 1.48$), which was higher than the mean score of 4.69 ($SD = 1.80$) reported by participants in the low goal progress condition. These findings provide marginal support for H1a.

The analysis also revealed no significant main effect for external validation on perceived break enjoyment ($F(1, 345) = .001$, $p = .98$). Importantly, the interaction between goal progress and external validation was also found to be non-significant ($F(1, 345) = .26$, $p = .61$). These findings do not offer support for H2a, which suggested that external validation would moderate the effect of goal progress on perceived break enjoyment. This result aligns with the unsuccessful manipulation check for external validation as well.

Next, to test the effect of goal progress on intrusive thoughts (H1b), another 2 (goal

progress: low vs. high) x 2 (external validation: present vs. absent) two-tailed ANOVA was conducted. The analysis found a significant main effect for goal progress on intrusive thoughts ($F(1, 345) = 4.85$, $p = .028$). Participants in the high goal progress condition reported a mean score for intrusive thoughts of 2.21 ($SD = 1.33$), which was lower than the mean score of 2.56 ($SD = 1.54$) reported by participants in the low goal progress condition. These results provide support for H1b.

The analysis also revealed no significant main effect for external validation on intrusive thoughts ($F(1, 345) = 1.02$, $p = .31$). Importantly, the interaction between goal progress and external validation was also found to be non-significant ($F(1, 345) = .35$, $p = .56$). These findings do not offer support for H2b, which suggested that external validation would moderate the effect of goal progress on intrusive thoughts. This result aligns with the unsuccessful manipulation check for external validation as well.

Following that, the hypotheses relating to the mediation by deservingness (H4a and H4b) were tested using PROCESS model 4 (Hayes, 2017) with 5000 bootstrapped samples. In the first model, goal progress was included as the independent variable (0 = low progress, 1 = high progress), deservingness as the mediator, and perceived break enjoyment as the dependent variable. The results did not reveal a significant indirect effect of goal progress on perceived break enjoyment through deservingness ($\beta = .09$, $SE = .08$, 95% CI = [-.05, .25]). The relationship between the independent variable (goal progress) and the mediator (deservingness) was not significant ($\beta = .26$, $t = 1.23$, $p = .22$), but the relationship between the mediator (deservingness) and the dependent variable (perceived break quality) was significant ($\beta = .37$, $t = 9.03$, $p < .001$). Similar results were observed when intrusive thoughts was included as the dependent variable instead of perceived break enjoyment. The indirect effect of goal progress on

intrusive thoughts through deservingness was not significant (β = -.06, SE = 0.05, 95% CI = [-.17, .03]). The relationship between the independent variable (goal progress) and the mediator (deservingness) was not significant (β = .26, t = 1.23, p = .22), but the relationship between the mediator (deservingness) and the dependent variable (intrusive thoughts) was significant (β = -.24, t = -6.50, p < .001). These findings do not provide support for H4a and H4b.

Proceeding further, the hypotheses of moderated mediation with external validation as the moderator were examined (H5a and H5b) using PROCESS model 8 (Hayes, 2017) with 5000 bootstrapped samples. Within this model, goal progress served as the independent variable (0 = low progress, 1 = high progress), external validation as the moderator, and deservingness as the mediator. The two outcome variables, i.e., perceived break enjoyment and intrusive thoughts, were respectively set as the dependent variable. The index of moderated mediation did not attain significance within a 95% confidence interval for either of the dependent variables (perceived break enjoyment: index = .06 SE = .16, CI [-.24, .38]; intrusive thoughts: index = -.04 SE = .10, CI [-.24, .16]). Therefore, these results do not lend support to H5a nor H5b.

Given that the external validation manipulation was unsuccessful, I decided to omit the construct when analyzing the moderating effect of trait hedonic capacity (H3a and H3b). Instead of collapsing all the data together, I decided to only focus on participants who were not exposed to the external validation condition (N = 167) to retain the study design as clean as possible. To evaluate H3a, PROCESS model 1 (Hayes, 2017) was employed to probe how the influence of goal progress on perceived break enjoyment changed based on an individual's trait hedonic capacity. When goal progress was included as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity as the moderator, and perceived break enjoyment as the dependent variable, the analysis revealed a significant main effect for both goal progress (β =

2.26, SE = .89, t = 2.53, p = .01) and trait hedonic capacity (β = .35, SE = .15, t = 2.30, p = .02). Importantly, the interaction effect was also significant (β = -.43, SE = .20, t = -2.13, p = .04; see Figure 1). To delve deeper into this interaction, a Johnson-Neyman analysis was conducted, which revealed that at a trait hedonic capacity value of 4.12 (on 7), the conditional effect of goal progress on perceived break enjoyment transitions from significant to non-significant, encompassing 50.9% of the sample in the significance region. Moreover, when the trait hedonic capacity was one standard deviation below the mean, the effect of goal progress was highly significant ($\beta_{Conditional}$ = .96, SE = .35, t = 2.75, p < .01; see Appendix E for PROCESS model output). To clarify the observed interaction, in a state of low goal progress, individuals with low trait hedonic capacity retain relatively low levels of perceived break enjoyment, but those with high trait hedonic capacity seem to enjoy the break significantly more. On the other hand, in situations where goal progress is high, trait hedonic capacity does not have an impact on perceived break enjoyment. These findings provide support for H3a.

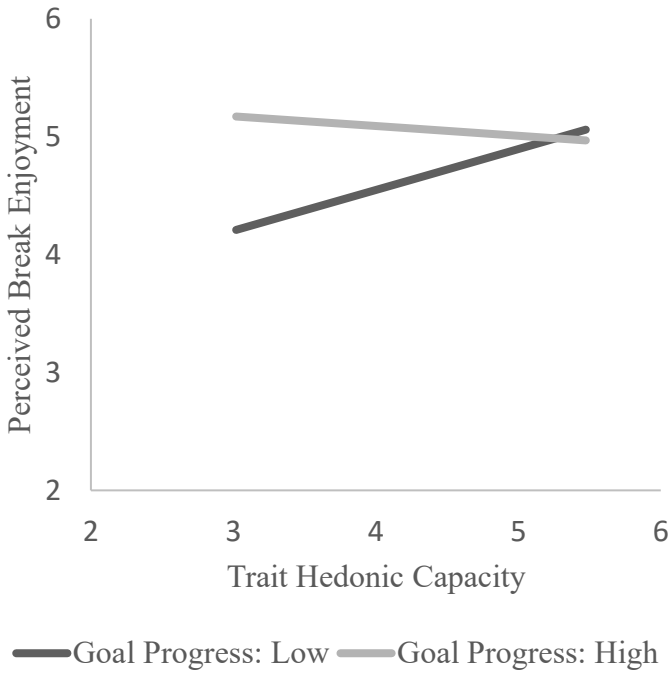
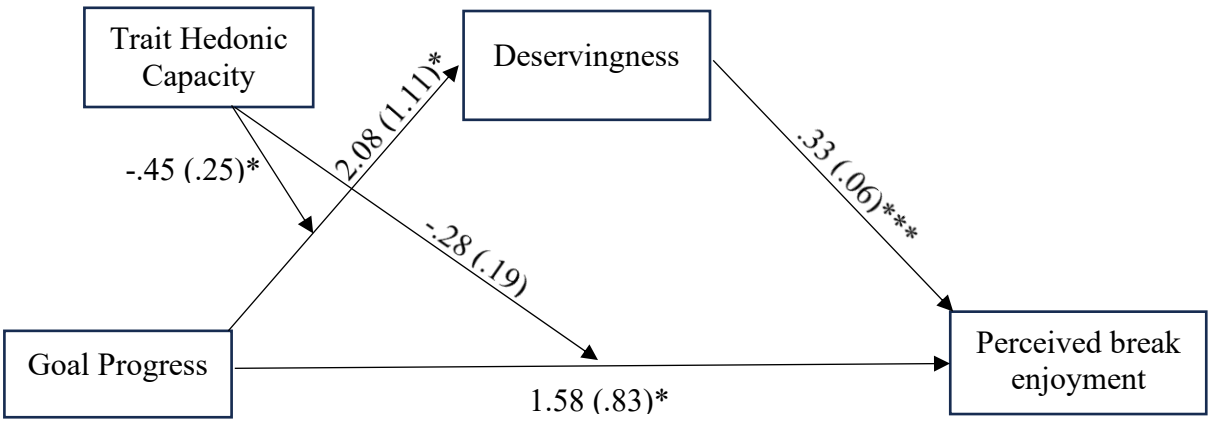


Figure 2: Perceived break enjoyment as a function of the interactive relationship between goal progress and trait hedonic capacity (Study 1)

To test H3b, the measure of intrusive thoughts was included as the dependent variable in the model. The analysis, however, failed to uncover a significant effect for goal progress (β = -.09, SE = .73, t = -.13, p = .90) or a significant interaction effect (β = -.04, SE = .16, t = -.22, p = .82). Only a marginally significant main effect was observed for trait hedonic capacity (β = -.21, SE = .12, t = -1.74, p = .08). These findings fail to support H3b.

To test the role of deservingness as a mediator between the interactive effects of goal progress and trait hedonic capacity on perceived break enjoyment and intrusive thoughts respectively (H6a and H6b), model 8 in PROCESS (Hayes, 2017) was employed to assess the proposed moderated mediation models. In these models, goal progress was included as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity was treated as the moderator, deservingness was the proposed mediator, and each of the outcome measures

were included (separately) as the dependent variable. When perceived break enjoyment was included as the dependent variable, a 95% confidence interval based on a 5000 bootstrap sample failed to exhibit a significant index of moderated mediation (index = -.15, SE = .09, CI [-.33, .02]). Nevertheless, when the model was examined with a 90% confidence interval, the moderated mediation index was significant (index = -.15, SE = .09, CI [-.30, -.01]). This result suggests that the hypothesized relationships could find support with increased statistical power. The details of these statistical relationships, inclusive of effect sizes, standard errors, and significance levels, are visually represented in Figure 2. These results provide marginal support for H6a.

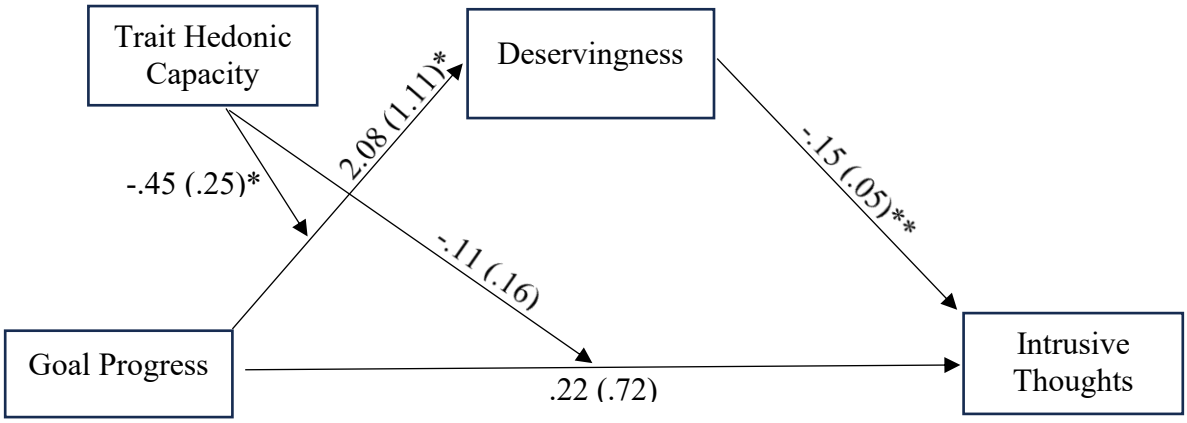


Note: * p < .10, ** p < .05, *** p < .01

Figure 3: Moderated mediation analysis with perceived break enjoyment as the dependent variable (Study 1)

Continuing the analysis, I considered intrusive thoughts as the dependent variable in the moderated mediation model. With 5000 bootstrap samples, the index of moderated mediation was not significant when determined through the use of a 95% confidence interval (index = .07, SE = .05, CI [-.01, .17]). However, it was significant when calculated within a 90% confidence interval (index = .07, SE = .05, CI [.002, .153]). Figure 3 displays the effect sizes, standard errors, and significance levels for all relations in the model. These results provide marginal

support for H6b (see Appendix E for results).



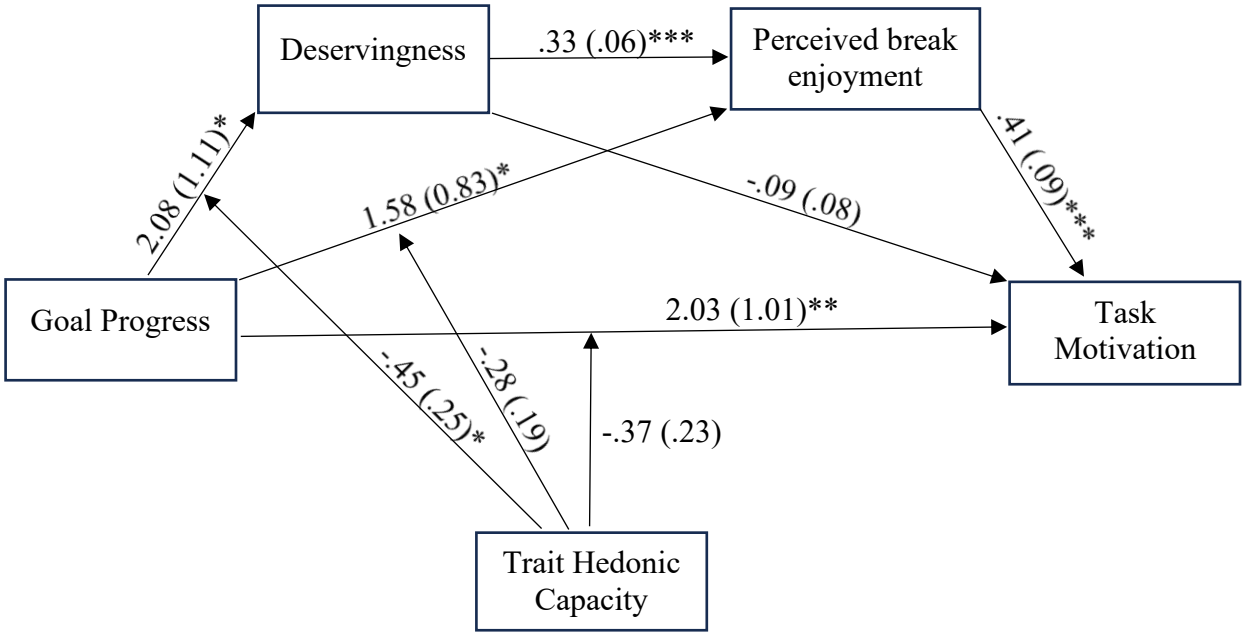
Note: * p < .10, ** p < .05, *** p < .01

Figure 4: Moderated mediation analysis with intrusive thoughts as the dependent variable (Study 1)

The last set of hypotheses, pertaining to the downstream motivational consequences of taking a quality break (H7a and H7b), were tested using PROCESS model 85 with 5000 bootstrapped samples to assess the full model (excluding external validation). Goal progress was incorporated as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity acted as the moderator, deservingness was included as the first mediator, perceived break enjoyment or intrusive thoughts was included as the second mediator, and task motivation served as the dependent variable. The models aimed to examine whether an increase in perceived break enjoyment (or intrusive thoughts) would lead to a corresponding rise (decrease) in motivation to resume the task.

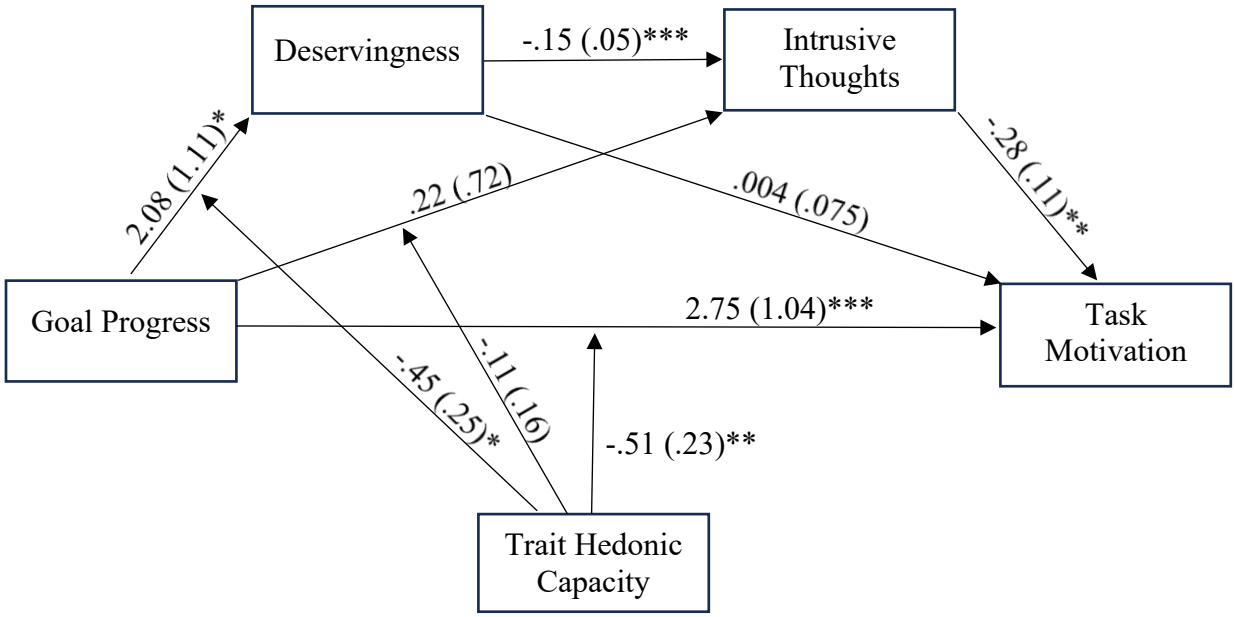
When perceived break enjoyment was included in the model, its effect on task motivation was significant when estimated with a 95% confidence interval. However, the index of moderated mediation failed to reach significance when calculated with a confidence interval of 95% (index = -.06, SE = .04, CI [-.15, .01]), but was found to be significant within a 90% confidence interval (index = .06, SE = .04, CI [-.130, -.001]). Figure 4 provides a detailed visual

representation of the effect sizes, standard errors, and significance levels of all relationships in the model. These findings lend marginal support for H7a. When the model was adjusted to include intrusive thoughts as the second mediator, its effect on task motivation was significant when tested using a 95% confidence interval. Nonetheless, the index of moderated mediation was not significant when calculated within a 95% (index = -.02, SE = .02, CI [-.056, .004]) or a 90% confidence interval (index = -.02, SE = .02, CI [-.046, .001]). The index of moderated mediation approached marginal significance but did not achieve the accepted level for statistical significance. Hence, these findings do not offer support for H7b. Figure 5 presents the effect sizes, standard errors, and significance levels of all relationships in the model.



Note: * p < .10, ** p < .05, *** p < .01

Figure 5: PROCESS model 85 to test the full model with perceived break enjoyment as one of the mediators (Study 1)



Note: * p < .10, ** p < .05, *** p < .01

Figure 6: PROCESS model 85 to test the full model with intrusive thoughts as one of the mediators (Study 1)

Study 2

Design and Sample

In this study, the initial task that served to manipulate goal progress was changed in order to generalize the findings and to assess the proposed relationships in a different context. Instead of assigning a simulated task, such as solving anagrams (as in Study 1), participants were requested to reflect on and describe a personally relevant goal. This shift aimed to create a more authentic context that could generate genuine responses, thus ensuring a greater degree of validity in the experiment. Moreover, the manipulation of external validation was modified. Instead of using the behavior of others as a source of validating the act of taking a break, in this study break-taking was validated by providing information about the productivity benefits of taking breaks. This change was also necessitated by the fact that the manipulation of external validation used in Study 1 did not work. These changes aimed to bolster the robustness of the research methodology and thereby, the trustworthiness of the findings of this research.

Four hundred and forty-one participants were recruited from Amazon's Mechanical Turk (M_{age} = 45.28, SD = 12.64; 45.6% female). All participants were remunerated $1.10 for their involvement in the online experiment, which was designed to be completed in approximately 10 minutes. The first stage of the experiment involved reading and signing the consent form. Participants that did not provide consent were promptly redirected to the end of survey and thanked for their time. The purpose of the study was portrayed to participants as researching the effectiveness of a relaxation technique. The experiment implemented a 2 (goal progress: low vs. high) x 2 (external validation: present vs. absent) between-subjects design, and participants were randomly assigned to one of the four conditions. They were first informed that they would complete a self-reflective task, which would be followed by a break and a series of questions to determine the effectiveness of the relaxation technique. Similar to Study 1, this study also tested all the proposed relationships in the conceptual model.

Method

The method of manipulating goal progress employed in this study was adapted from Fitzsimons and Fishbach (2010: Study 1). In the *low goal progress* condition, participants were instructed to describe a specific and attainable goal that is important and meaningful to them and to outline three actions that they intend to execute in the near future (within the week) to help achieve this objective. Participants in the *high goal progress* condition were also required to describe a specific and achievable goal. However, their instructions involved listing three actions they had recently taken (within the week) towards realizing their goal. Focusing on taken actions, versus actions to be taken, automatically evokes a sense of goal progress (Fitzsimons and Fishbach, 2010).

Upon the completion of this task, all participants were informed they would be taking a

short break before proceeding to the remainder of the study. Those assigned to the *external validation* condition were exposed to a statement suggesting that research indicates mindfulness breaks can significantly boost productivity, promote psychological well-being, and improve long-term health outcomes. Conversely, participants in the *no external validation* condition were not provided with any such information detailing the potential benefits of taking a break.

The methodology and instructions surrounding the break were identical to those implemented in Study 1. Namely, participants listened to a 90-second audio tape guiding them through a relaxing breathing exercise. Post-break, participants were prompted to report their feelings of deservingness towards the break ("To what extent did it feel deserving to take a break?", 1 = Not at all deserving, 7 = Very deserving; adapted from Cavanaugh (2014)). Note that in the present study, the assessment of this measure was carried out prior to the evaluation of the dependent variables. Following this, perceived break enjoyment was assessed using the same two items as in Study 1 ($r = .84$, $p < .001$). Intrusive thoughts was also measured using the same two items as in Study 1 ($r = .54$, $p < .001$). Next, task motivation was measured, followed by participants' trait hedonic capacity (10-item scale, Bernecker and Becker (2021): $\alpha = 0.89$). Participants then completed a manipulation check pertaining to goal progress ("Right now, how much progress do you feel you have made towards your goal?", 1 = No progress at all, 7 = A lot of progress). In addition, participants were also queried about the level of difficulty they encountered in recalling a goal and the associated three actions (1 = Very difficult, 7 = Very easy). To serve as a manipulation check for external validation, participants were asked whether they had been informed about the advantages of taking a break (response options: (1) Yes, I was informed about the benefits of taking breaks, (2) No, I was not informed about the benefits of taking breaks, and (3) I do not recall). After measuring the same set of control variables as in the

previous study, participants were provided the opportunity to leave a qualitative comment to the researcher, and then thanked for their participation and asked to log off (see Appendix C for all measures used).

Results

Exclusions and Manipulation Checks

As in Study 1, responses from participants who reported issues with the relaxation exercise or the study in the comments section were excluded (N = 17). This adjustment resulted in a final sample size of four hundred and twenty-four for the analysis (M_{age} = 44.93, SD = 12.51; 45.5% female).

The manipulation for goal progress was successful as shown by the response to the goal progress manipulation check question. Participants in the *high goal progress* condition reported a higher sense of progress made towards their goal (M = 4.42, SD = 1.37) compared to participants in the *low goal progress* condition (M = 3.88, SD = 1.70; t(422) = -3.63, p < .001). Furthermore, an independent samples t-test was performed to examine whether there was a significant difference between participants in the two goal progress conditions regarding the difficulty of recalling a goal and its associated three actions. The results revealed no significant difference between the conditions ($M_{Goal\ Progress:\ Low}$ = 5.82, SD = 1.37; $M_{Goal\ Progress:\ High}$ = 5.82, SD = 1.34; t(422) = -.019, p = .985).

In order to verify the effectiveness of the external validation manipulation, participants' responses to the manipulation check question were analyzed. The question was designed to ascertain whether they were presented with any information about the benefits of taking mindfulness breaks. The response options, summarized here, were 'yes', 'no', and 'I do not recall'. In the *external validation: present* condition, out of 207 participants, 148 correctly indicated

'yes', signifying that they had received the external validation, 29 participants responded with 'I do not recall', and 30 participants incorrectly chose 'no'. In the *external validation: absent* condition, out of 217 participants, 108 correctly responded 'no'. However, 51 participants indicated 'I do not recall', and 58 incorrectly responded 'yes'. These findings indicate variations in participants' accuracy of recall of the presence or absence of external validation. A Chi-Square test of independence was performed to examine the relation between the conditions and responses to the manipulation check question (answered correctly vs. I do not recall or answered incorrectly). The relation between these variables was significant ($\chi^2(1, N = 424) = 20.9$, $p < .001$). This result suggests that participants' recall accuracy across conditions (presence or absence of external validation) was significantly discrepant, suggesting that the manipulation may not have been entirely successful. Also, the considerable number of participants who either chose 'I do not recall' or responded incorrectly suggests that the manipulation was too understated, causing participants to not fully attend to it.

Main Analyses

To test whether high (vs. low) goal progress leads to high (vs. low) perceived break enjoyment (H1a), a 2 (goal progress: low vs. high) x 2 (external validation: present vs. absent) two-tailed ANOVA was conducted. The analysis showed that the main effect for goal progress on perceived break enjoyment was not significant ($F(1, 420) = 1.13$, $p = .29$). These findings do not provide support for H1a. However, the means did vary in the predicted direction; participants in the high goal progress condition reported a mean score for perceived break enjoyment of 5.49 ($SD = 1.35$), which was higher than the mean score of 5.35 ($SD = 1.36$) reported by participants in the low goal progress condition.

The analysis also revealed no significant main effect for external validation on perceived

break enjoyment ($F(1, 420) = 2.38$, $p = .12$). Importantly, the interaction between goal progress and external validation was also found to be non-significant ($F(1, 420) = .97$, $p = .33$). These findings do not offer support for H2a, which suggested that external validation would moderate the effect of goal progress on perceived break enjoyment. This result aligns with the unsuccessful manipulation check for external validation as well.

Next, to test the effect of goal progress on intrusive thoughts (H1b), another 2 (goal progress: low vs. high) x 2 (external validation: present vs. absent) two-tailed ANOVA was conducted. The analysis showed that the main effect for goal progress on intrusive thoughts was not significant ($F(1, 420) = 2.21$, $p = .14$). These results do not provide support for H1b. However, the means did vary in the predicted direction; participants in the high goal progress condition reported a mean score for intrusive thoughts of 1.85 ($SD = 1.09$), which was lower than the mean score of 2.03 ($SD = 1.36$) reported by participants in the low goal progress condition.

The analysis also revealed no significant main effect for external validation on intrusive thoughts ($F(1, 420) = .68$, $p = .41$). Importantly, the interaction between goal progress and external validation was also found to be non-significant ($F(1, 420) = .08$, $p = .78$). These findings do not offer support for H2b, which suggested that external validation would moderate the effect of goal progress on intrusive thoughts. This result aligns with the unsuccessful manipulation check for external validation as well.

Following that, the hypotheses relating to the mediation by deservingness (H4a and H4b) were tested using PROCESS model 4 (Hayes, 2017) with 5000 bootstrapped samples. In the first model, goal progress was included as the independent variable (0 = low progress, 1 = high progress), deservingness as the mediator, and perceived break enjoyment as the dependent

variable. The pattern of results observed is similar to that in Study 1. The indirect effect of goal progress on perceived break enjoyment through deservingness was not significant (β = .10, SE = .08, 95% CI = [-.04, .25]). Specifically, the relationship between the independent variable (goal progress) and the mediator (deservingness) was not significant (β = .22, t = 1.39, p = .17), but the relationship between the mediator (deservingness) and the dependent variable (perceived break quality) was significant (β = .47, t = 14.39, p < .001). Similarly, when intrusive thoughts was included as the dependent variable instead of perceived break enjoyment, the indirect effect of goal progress on intrusive thoughts through deservingness was also not significant (β = -.02, SE = 0.02, 95% CI = [-.07, .01]). Specifically, the relationship between the independent variable (goal progress) and the mediator (deservingness) was not significant (β = .22, t = 1.39, p = .17), but the relationship between the mediator (deservingness) and the dependent variable (intrusive thoughts) was significant (β = -.10, t = -2.79, p = .005). These findings do not provide support for H4a and H4b.

Proceeding further, the hypotheses of moderated mediation with external validation as the moderator and deservingness as the mediator were examined (H5a and H5b) using PROCESS model 8 (Hayes, 2017) with 5000 bootstrapped samples. In these models, goal progress was included as the independent variable (0 = low progress, 1 = high progress), external validation as the moderator, and deservingness as the mediator. One model was formulated with perceived break enjoyment as the dependent variable, while the other model utilized intrusive thoughts as the dependent variable. The index of moderated mediation did not attain statistical significance when calculated using a 95% confidence interval for either model (with perceived break enjoyment as the dependent variable: index = -.12 SE = .15, CI [-.42, .17]; with intrusive thoughts as the dependent variable: index = .03 SE = .04, CI [-.04, .11]). Likewise, the results

remained non-significant when calculated with a 90% confidence interval as well. Therefore, these results do not offer support for either H5a or H5b.

For the rest of the analysis, mirroring the approach in Study 1, a sub-sample of participants who were not exposed to the external validation manipulation, i.e., those falling under the *external validation: absent* condition (N = 217), was utilized. To test the moderating effect of trait hedonic capacity (H3a and H3b), PROCESS model 1 (Hayes, 2017) was employed to probe how the influence of goal progress on perceived break enjoyment changed based on an individual's trait hedonic capacity (H3a). When goal progress was included as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity as the moderator, and perceived break enjoyment as the dependent variable, the analysis revealed a significant main effect for both goal progress ($\beta = 1.87$, SE = .64, $t = 2.90$, $p = .004$) and trait hedonic capacity ($\beta = .44$, SE = .09, $t = 4.72$, $p < .001$). Importantly, the interaction effect also emerged as significant ($\beta = -.36$, SE = .14, $t = -2.52$, $p = .012$; see Fig. 6). To delve deeper into this interaction, a Johnson-Neyman analysis was conducted, which revealed that at a trait hedonic capacity value of 4.33 (on 7), the conditional effect of goal progress on perceived break enjoyment transitions from significant to non-significant, encompassing 50.7% of the sample in the significance region. At a trait hedonic capacity value of one standard deviation below the mean, the effect of goal progress was highly significant ($\beta_{Conditional} = .72$, SE = .24, $t = 3.04$, $p = .003$). These findings provide support for H3a. The interaction observed here parallels the pattern witnessed in Study 1. In a state of low goal progress, individuals with low trait hedonic capacity retain relatively low levels of perceived break enjoyment, but those with high trait hedonic capacity seem to enjoy the break significantly more. On the other hand, in situations where goal progress is high, trait hedonic capacity does not have an impact on perceived break enjoyment.

Similarly, when testing for H3b, intrusive thoughts was included as the dependent variable and the analysis revealed a significant effect for both goal progress ($\beta = -1.59$, SE = .61, $t = -2.61$, $p = .01$) and trait hedonic capacity ($\beta = -.52$, SE = .09, $t = -5.83$, $p < .001$). Crucially, the hypothesized interaction effect was also found to be significant ($\beta = .30$, SE = .13, $t = 2.28$, $p = .023$; see Fig. 7). Upon conducting a Johnson-Neyman analysis, it was found that at a trait hedonic capacity value of 4.2 (on 7), the conditional effect of goal progress on intrusive thoughts shifts from significant to non-significant, encompassing 47.9% of the sample in the significant region. When the value of trait hedonic capacity was one standard deviation below its mean, the effect of goal progress was highly significant ($\beta_{Conditional} = -.61$, SE = .22, $t = -2.73$, $p = .007$). These results lend support to H3b. To clarify the observed interaction further, when goal progress is low, individuals with low trait hedonic capacity experienced relatively higher levels of intrusive thoughts during the break than those with higher trait hedonic capacity scores. Conversely, when goal progress is high, trait hedonic capacity does not have an impact on the level of intrusive thoughts experienced during the break.

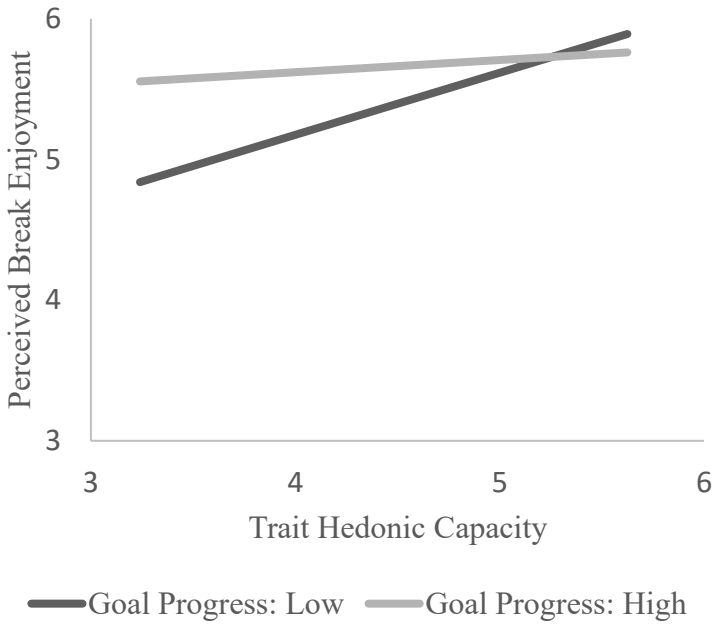


Figure 7: Perceived break enjoyment as a function of the interactive relationship between goal progress and trait hedonic capacity (Study 2)

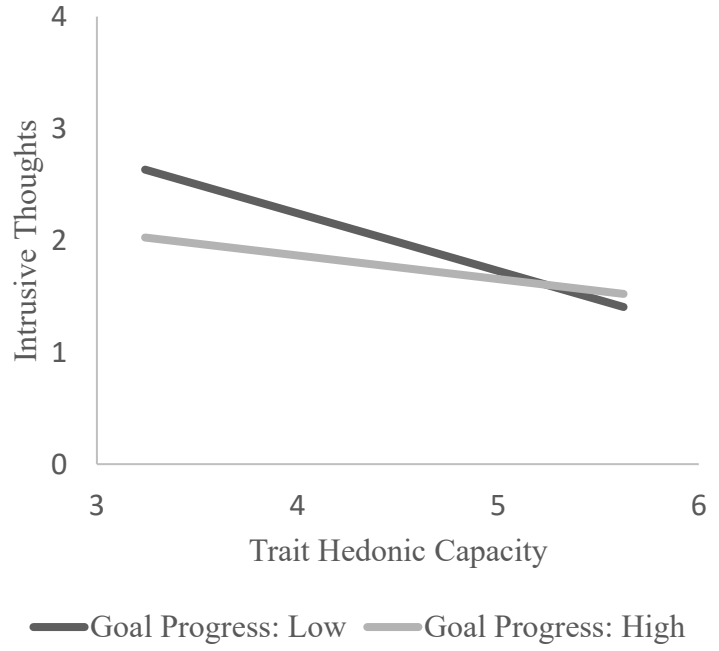
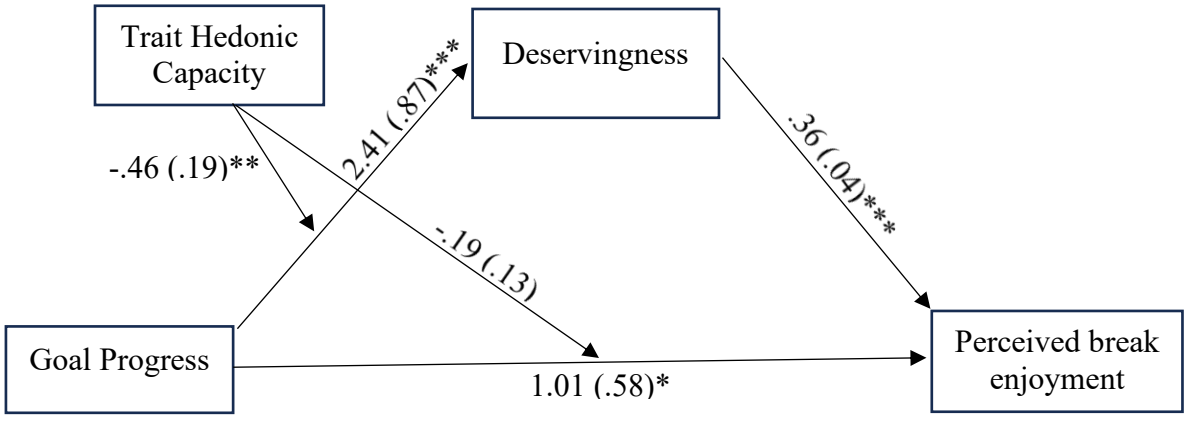


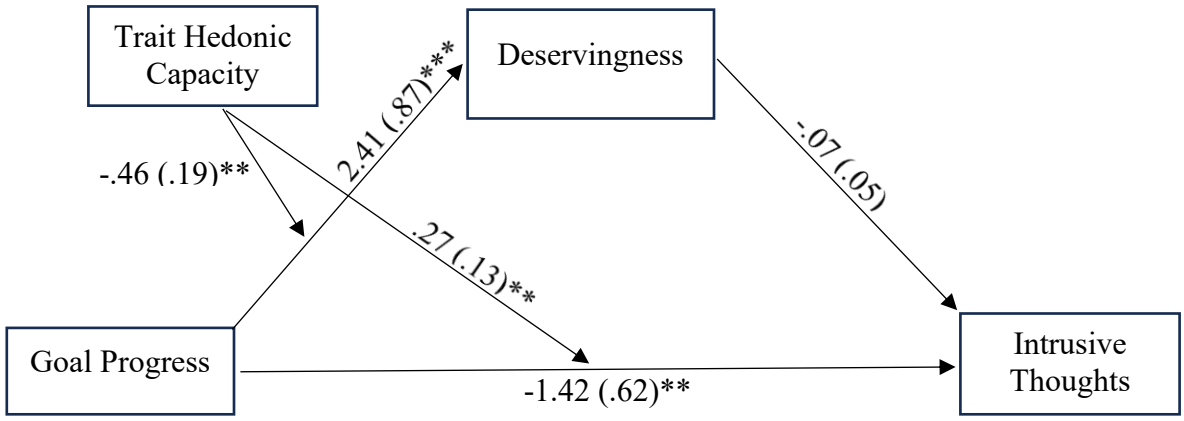
Figure 8: Intrusive thoughts as a function of the interactive relationship between goal progress and trait hedonic capacity (Study 2)

To examine the mediating role of deservingness explaining the interactive effect of goal progress and trait hedonic capacity on perceived break enjoyment and intrusive thoughts respectively (H6a and H6b), model 8 in PROCESS (Hayes, 2017) with 5000 bootstrap samples was utilized. Separate analyses were conducted, each setting either perceived break enjoyment or intrusive thoughts as the dependent variable. When goal progress as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity as the moderator, deservingness as the mediator, and perceived break enjoyment as the dependent variable, the index of moderated mediation was significant when tested using a 95% confidence interval (index = -.16, SE = .07, CI [-.32, -.03]). These findings provide support for H6a. Conversely, when the measure for intrusive thoughts was included as the dependent variable, the index of moderated mediation was not significant when using a 95% (index = .03, SE = .03, CI [-.014, .093]) or a 90% confidence interval (index = .03, SE = .03, CI [-.005, .080]). Hence, these results do not offer support for H6b. Figures 8 and 9 show the effect sizes, standard errors and significance levels for all relations in both the models.



Note: * p < .10, ** p < .05, *** p < .01

Figure 9: Moderated mediation analysis with perceived break enjoyment as the dependent variable (Study 2)

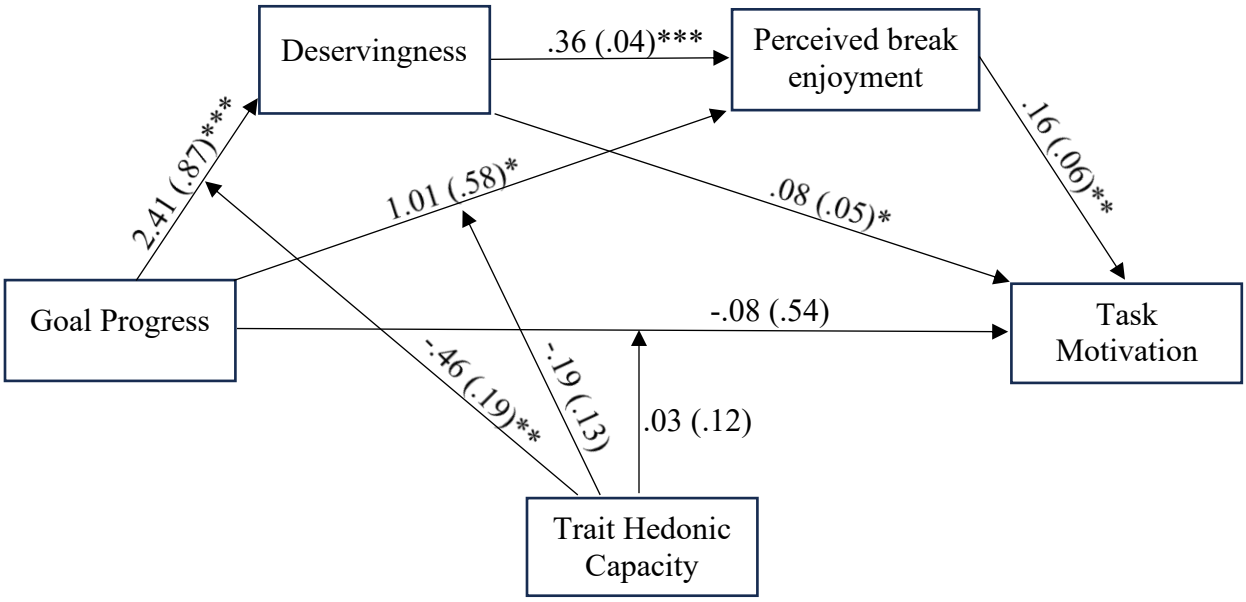


Note: * p < .10, ** p < .05, *** p < .01

Figure 10: Moderated mediation analysis with intrusive thoughts as the dependent variable (Study 2)

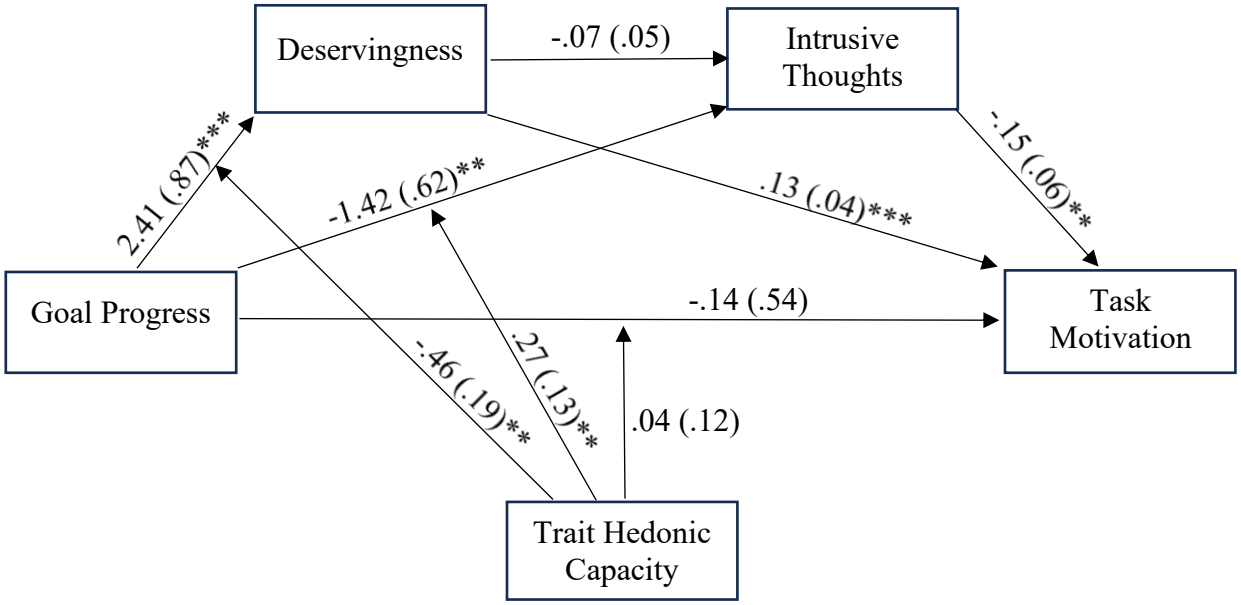
Lastly, to examine the downstream consequences on motivation to resume goal pursuit (H7a and H7b), PROCESS model 85 with 5000 bootstrapped samples was used to assess the full model (excluding external validation). Goal progress was included as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity functioned as the moderator, and deservingness, in combination with one of the outcome measures (perceived break enjoyment or intrusive thoughts), acted as serial mediators. Task motivation served as the dependent variable.

When perceived break enjoyment was included in the model, its effect on task motivation was significant when tested using a 95% confidence interval, and the index of moderated mediation was also significant (index = -.03, SE = .02, CI [-.065, -.002]). These findings offer support for H7a. However, when the model was adjusted to include intrusive thoughts as the second mediator, even though its effect on task motivation remained significant, the index of moderated mediation was not significant when using a 95% confidence interval (index = -.01, SE = .01, CI [-.016, .002]) or a 90% confidence interval (index = -.01, SE = .01, CI [-.014, .001]). Hence, these findings do not lend support for H7b. Figures 10 and 11 present the effect sizes, standard errors, and significance levels of all relationships in both the models.



Note: * p < .10, ** p < .05, *** p < .01

Figure 11: PROCESS model 85 to test the full model with perceived break enjoyment as one of the mediators (Study 2)



Note: * p < .10, ** p < .05, *** p < .01

Figure 12: PROCESS model 85 to test the full model with intrusive thoughts as one of the mediators (Study 2)

Study 3

Design and Sample

In contrast to the initial two studies which sourced participants from Amazon MTurk, this study opted for a different participant pool. The sample in this study consisted of three hundred and seventy-two undergraduate students (M_{age} = 21.15, SD = 2.83; 51.1% female) who participated in an 8-minute online study in exchange for partial course credit. Given the unsuccessful manipulations of external validation in the preceding two studies, the decision was made to omit this construct in this study. The focus was directed instead towards the interaction between goal progress and trait hedonic capacity. The aim of this study was to replicate the findings from the previous two studies within this alternate sample.

Mirroring the structure of Study 1, the same anagram task was utilized to manipulate goal progress. A single-factor between-subjects design was adopted, with goal progress (low vs. high) acting as single factor, and participants were randomly assigned to one of these two conditions. All the proposed relationships in the conceptual model, except the ones involving external validation, are tested in this study.

Method

After signing the consent form, participants proceeded to complete the same anagram task as in Study 1. Specifically, participants in the *low goal progress* condition were informed they would be tasked with solving 17 anagrams in total, whereas those in the *high goal progress* condition were told they had a total of 7 anagrams to solve. All participants were informed that they will transition to the break phase after completing the 5th anagram. The break involved the same guided breathing exercise utilized in the prior two studies.

Post-break, the measures of perceived break enjoyment ($r = .81$, $p < .001$) and intrusive

thoughts ($r = .39$, $p < .001$)[1] were assessed, followed by the one-item questions measuring deservingness and task motivation. Trait hedonic capacity was gauged utilizing the same 10-item scale (Bernecker & Becker, 2021) as used in the previous studies ($\alpha = 0.78$). Subsequently, a manipulation check was conducted regarding goal progress, using the same item and response options as in Study 1. After measuring the same control variables as in previous studies, participants were provided with an opportunity to leave a qualitative comment for the researchers and subsequently thanked for their participation and asked to log off.

Results

Exclusions and Manipulation Checks

Five participants indicated that they had problems with the relaxation exercise or the study in the comments sections and their responses were excluded from the analysis, as in the previous studies.

An independent samples t-test was conducted to verify the efficacy of the goal progress manipulation. There was a significant difference between the perceived goal progress scores in the *low goal progress* ($M = 4.43$, $SD = 1.39$) and the *high goal progress* conditions ($M = 4.98$, $SD = 1.15$; $t(365) = -4.07$, $p < .001$). These results confirm that the manipulation was successful in creating distinct perceptions of goal progress between the two conditions. As done in Study 1, responses of participants who failed the manipulation check for goal progress were removed. This led to the exclusion of ninety-nine more responses, resulting in a sample size of two hundred and sixty-eight ($M_{age} = 21.19$, $SD = 2.91$; 51.9% female) for analysis. Among the remaining sample, ninety-nine participants belonged to the *low goal progress* condition, and one

[1] Due to the observed low inter-item correlation for intrusive thoughts ($r = .39$, $p < .001$), all analyses were redone on each item separately. However, this approach did not yield significantly different outcomes. As such, in the interest of maintaining consistency, the results reported are based on the combined measure of intrusive thoughts.

hundred and sixty-nine participants were included in the *high goal progress* condition.

To ascertain that the prerequisites for conducting an ANOVA were satisfied, particularly considering the substantial variance in the number of participants across the two conditions, Levene's test for homogeneity of variances was performed. The results indicated that the assumption of homogeneity of variances was not violated for the dependent variables. For perceived break enjoyment, the Levene statistic was not significant ($p = .17$), indicating that the assumption of equal variances across the two goal progress conditions held true. Similarly, for intrusive thoughts and task motivation the test yielded non-significant results ($p = .63$ and $p = .22$ respectively), again supporting the assumption of homogeneity of variances across the two conditions. Thus, the data met the necessary criteria for further analysis. Additionally, the inter-item correlations and Cronbach's alpha for the multi-item scales remained consistent with the values reported prior to participant exclusion: perceived break enjoyment ($r = .81$, $p < .001$), intrusive thoughts ($r = .43$, $p < .001$), and trait hedonic capacity ($\alpha = 0.78$).

Main Analyses

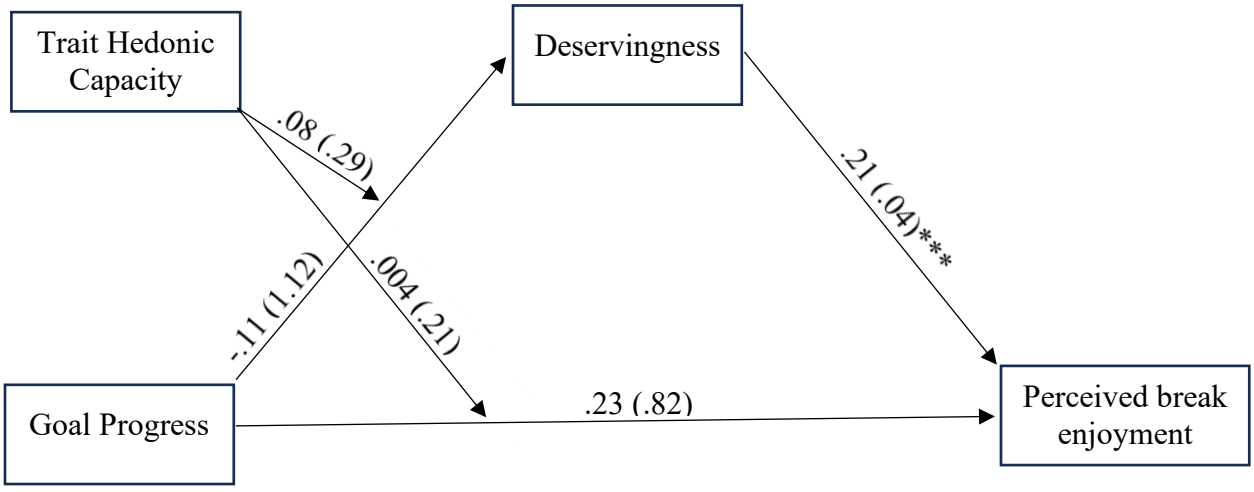
To examine the main effect of goal progress on perceived break enjoyment and intrusive thoughts, respectively (H1a and H1b), independent samples t-tests were conducted. The mean scores for both perceived break enjoyment ($M_{\text{Goal Progress: Low}} = 4.87$, $SD = 1.54$; $M_{\text{Goal Progress: High}} = 5.15$, $SD = 1.32$; $t(266) = -1.59$, $p = .11$) and intrusive thoughts ($M_{\text{Goal Progress: Low}} = 2.94$, $SD = 1.53$; $M_{\text{Goal Progress: High}} = 3.03$, $SD = 1.47$; $t(266) = -.47$, $p = .64$) did not significantly differ between the conditions. While the means for perceived break enjoyment differed in the expected direction between the conditions, the mean difference for intrusive thoughts did not vary in the predicted direction. Nevertheless, the mean differences were not significant, and as a result, H1a and H1b were not supported.

Following that, the hypotheses relating to the mediation by deservingness (H4a and H4b) were tested using PROCESS model 4 (Hayes, 2017) with 5000 bootstrapped samples. In the first model, goal progress was included as the independent variable (0 = low progress, 1 = high progress), deservingness as the mediator, and perceived break enjoyment as the dependent variable. The indirect effect of goal progress on perceived break enjoyment through deservingness was not significant ($\beta = .04$, SE = .05, 95% CI = [-.06, .13]). Specifically, the relationship between the independent variable (goal progress) and the mediator (deservingness) was not significant ($\beta = .17$, $t = .73$, $p = .47$), but the relationship between the mediator (deservingness) and the dependent variable (perceived break quality) was significant ($\beta = .21$, $t = 4.64$, $p < .001$). Next, when intrusive thoughts was included as the dependent variable instead of perceived break enjoyment, the indirect effect of goal progress on intrusive thoughts through deservingness was also not significant ($\beta = -.01$, SE = 0.02, 95% CI = [-.05, .03]). This lack of significance can also be observed in both the relationship between goal progress and deservingness ($\beta = .17$, $t = .73$, $p = .47$) and the relationship between deservingness and intrusive thoughts ($\beta = -.05$, $t = -.91$, $p = .36$). These findings do not provide support for H4a and H4b.

Next, to test H3a and H3b, which posit that an individual's trait hedonic capacity moderates the effect of goal progress on perceived break enjoyment and intrusive thoughts, respectively, PROCESS model 1 (Hayes, 2017) was employed. In both models, however, neither the main effects nor interactions were found to be significant. Specifically, when perceived break enjoyment was employed as the dependent variable, the main effect of goal progress was not significant ($\beta = .21$, SE = .85, $t = .25$, $p = .81$), nor was the main effect of trait hedonic capacity ($\beta = -.21$, SE = .18, $t = -1.17$, $p = .24$), nor the interaction between these variables ($\beta = .02$, SE = .22, $t = .09$, $p = .93$). A similar pattern emerged when intrusive thoughts served as the dependent

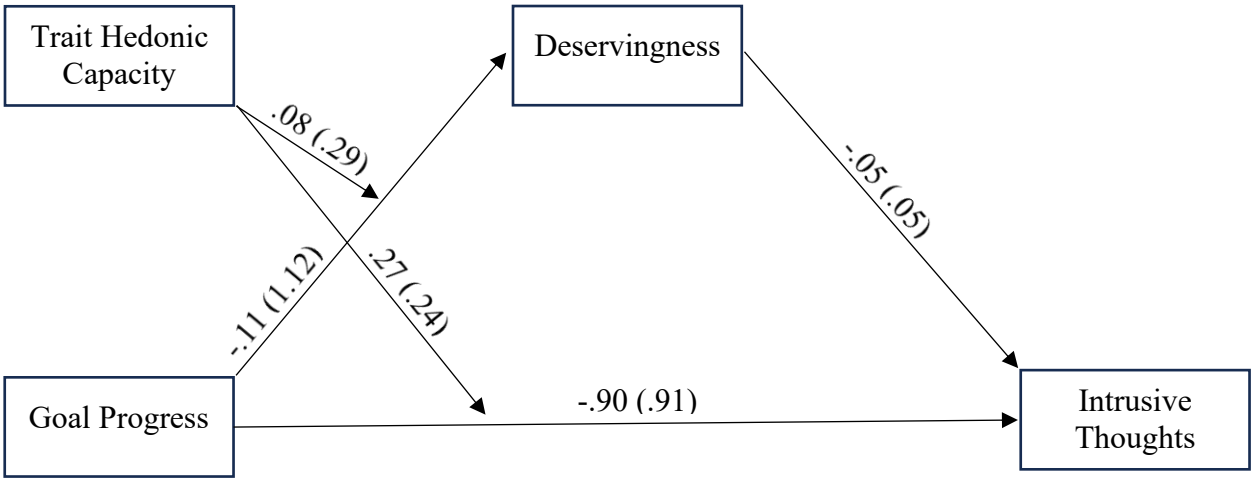
variable. The results showed no significant effect for goal progress (β = -.90, SE = .91, t = -.99, p = .32), trait hedonic capacity (β = -.23, SE = .20, t = -1.17, p = .24), nor their interaction (β = .26, SE = .24, t = 1.11, p = .27). Thus, the empirical evidence did not provide support for hypotheses H3a and H3b.

To test for the moderated mediation proposed in H6a and H6b, PROCESS model 8 (Hayes, 2017) with 5000 bootstrapped samples was employed. In these models, goal progress served as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity was the moderator, and deservingness was the mediator. Meanwhile, either perceived break enjoyment or intrusive thoughts was set as the dependent variable. The index of moderated mediation did not attain significance when tested with a 95% confidence interval for either of the dependent variables (with perceived break enjoyment as the dependent variable: index = .02, SE = .06, CI [-.11, .15]; with intrusive thoughts as the dependent variable: index = -.004, SE = .02, CI [-.06, .04]). The results remained non-significant when calculated with a 90% confidence interval as well. Thus, these results do not lend support to H6a and H6b. Figures 12 and 13 show the effect sizes, standard errors and significance levels for all relations in both the models.



Note: * p < .10, ** p < .05, *** p < .01

Figure 13: Moderated mediation analysis with perceived break enjoyment as the dependent variable (Study 3)

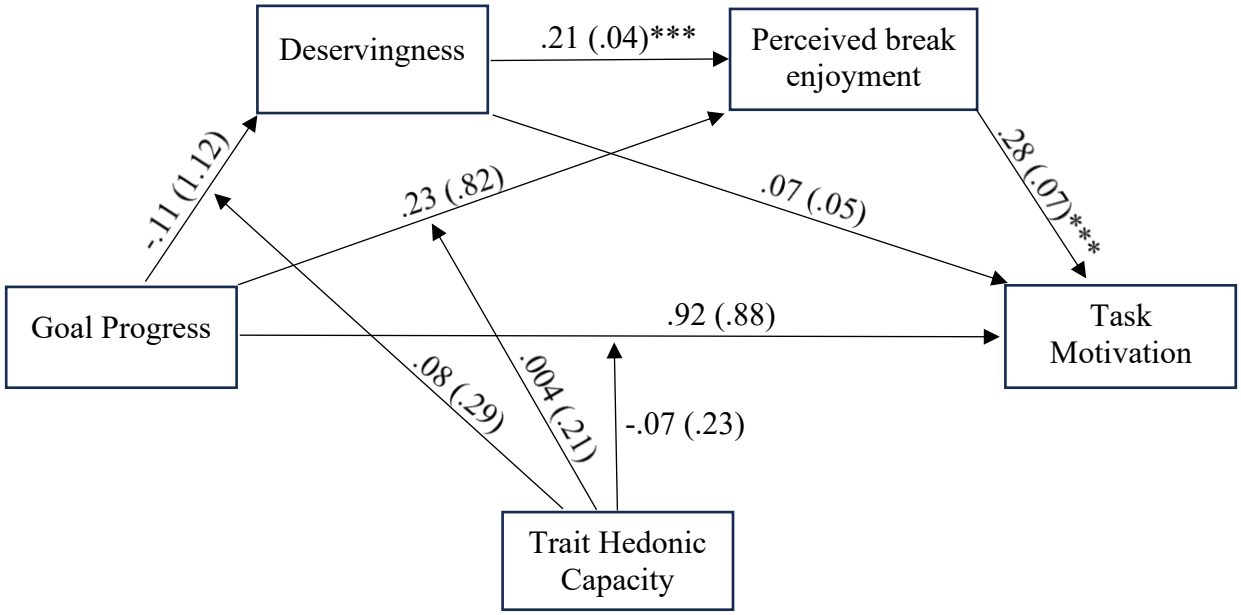


Note: * p < .10, ** p < .05, *** p < .01

Figure 14: Moderated mediation analysis with intrusive thoughts as the dependent variable (Study 3)

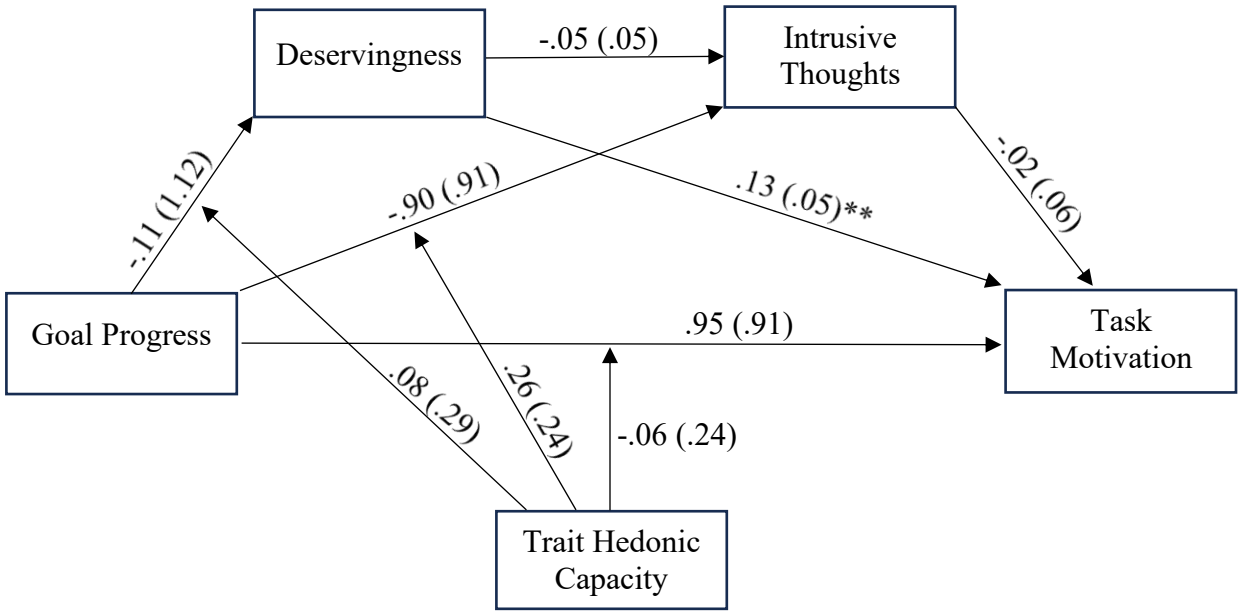
Lastly, the motivational downstream effects (H7a and H7b) were tested using PROCESS model 85 with 5000 bootstrapped samples to assess all the relationships in the model (excluding the ones involving external validation). Goal progress was incorporated as the independent variable (0 = low progress, 1 = high progress), trait hedonic capacity acted as the moderator, and deservingness, together with either perceived break enjoyment or intrusive thoughts, functioned as serial mediators. Task motivation served as the dependent variable in the model. With perceived break enjoyment included in the model, its effect on task motivation was significant when calculated using a 95% confidence interval. However, the index of moderated mediation was not significant (index = .004, SE = .02, CI [-.03, .05]), which was expected given the lack of support for the previous hypotheses. Conversely, when the model was adjusted to include intrusive thoughts in place of perceived break enjoyment as the serial mediator, both its effect on task motivation and the moderated mediation index did not reach statistical significance when evaluated at a 95% confidence interval (index = .0001, SE = .0018, CI [-.0035, .0037]). As such, these results do not lend support to H7a and H7b. Figures 14 and 15 present the effect sizes,

standard errors, and significance levels of all relationships in both models.



Note: * p < .10, ** p < .05, *** p < .01

Figure 15: PROCESS model 85 to test the full model with perceived break enjoyment as one of the mediators (Study 3)



Note: * p < .10, ** p < .05, *** p < .01

Figure 16: PROCESS model 85 to test the full model with intrusive thoughts as one of the mediators (Study 3)

Summary of Findings

Table 1: Support for hypotheses across the three studies

Hypotheses	Study 1 Sample: MTurk workers Manipulation(s) Goal progress: Anagram task External validation (social nudge): Failed	Study 2 Sample: MTurk workers Manipulation(s) Goal progress: Self-reported goals External validation (informative nudge): Failed	Study 3 Sample: Undergraduate students Manipulation(s) Goal progress: Anagram task
H1a: High (vs. low) goal progress leads to high (vs. low) perceived break enjoyment.	**H1a:** Marginally supported	**H1a:** Not supported	**H1a:** Not supported
H1b: High (vs. low) goal progress leads to low (vs. high) levels of intrusive thoughts during the break.	**H1b:** Supported	**H1b:** Not supported	**H1b:** Not supported
H2a: The effect of goal progress on perceived break enjoyment is moderated by external validation.	**H2a:** Not supported	**H2a:** Not supported	**H2a:** NA
H2b: The effect of goal progress on intrusive thoughts is moderated by external validation.	**H2b:** Not supported	**H2b:** Not supported	**H2b:** NA
H3a: The effect of goal progress on perceived break enjoyment is moderated by trait hedonic capacity.	**H3a:** Supported	**H3a:** Supported	**H3a:** Not supported
H3b: The effect of goal progress on intrusive thoughts is moderated by trait hedonic capacity.	**H3b:** Not supported	**H3b:** Supported	**H3b:** Not supported
H4a: The effect of goal progress on perceived break enjoyment is mediated by feelings of	**H4a:** Not supported	**H4a:** Not supported	**H4a:** Not supported

deservingness towards the break. **H4b:** The effect of goal progress on intrusive thoughts is mediated by feelings of deservingness towards the break.	**H4b:** Not supported	**H4b:** Not supported	**H4b:** Not supported
H5a: Deservingness mediates the interactive effect of goal progress and external validation on perceived break enjoyment. **H5b:** Deservingness mediates the interactive effect of goal progress and external validation on intrusive thoughts.	**H5a:** Not supported **H5b:** Not supported	**H5a:** Not supported **H5b:** Not supported	**H5a:** NA **H5b:** NA
H6a: Deservingness mediates the interactive effect of goal progress and trait hedonic capacity on perceived break enjoyment. **H6b:** Deservingness mediates the interactive effect of goal progress and trait hedonic capacity on intrusive thoughts.	**H6a:** Marginally supported **H6b:** Marginally supported	**H6a:** Supported **H6b:** Not supported	**H6a:** Not supported **H6b:** Not supported
H7a: Increase in perceived break enjoyment will lead to a subsequent increase in task motivation. **H7b:** Decrease in intrusive thoughts will lead to a subsequent increase in task motivation.	**H7a:** Marginally supported **H7b:** Not supported	**H7a:** Supported **H7b:** Not supported	**H7a:** Not supported **H7b:** Not supported

General Discussion

In summarizing the results of the studies conducted, it is clear that the outcomes of hypothesis testing presented a blend of significant, marginally significant, and non-significant results. When considering both significant and marginally significant results, along with borderline cases that show trends in the expected direction from studies 1 and 2, there is preliminary support suggesting that goal progress influences both dimensions of break quality – perceived break enjoyment and intrusive thoughts. Specifically, individuals experiencing high goal progress reported greater enjoyment during their breaks and fewer intrusive thoughts.

The moderating effect of trait hedonic capacity garnered considerable support. Participants experiencing low goal progress but possessing high trait hedonic capacity reported higher break quality, bolstering the premise that trait hedonic capacity can buffer against the adverse effect of low goal progress on break quality. This interactive effect between goal progress and trait hedonic capacity on break quality was often mediated by feelings of deservingness.

Moreover, while the full conceptual model (with only trait hedonic capacity as a moderator, and excluding external validation) was not consistently significant, it was observed that a higher perceived break quality, characterized by heightened enjoyment and decreased intrusive thoughts, led to an increased motivation to resume work after the break.

Unfortunately, the hypotheses regarding external validation were not supported, likely due to the unsuccessful manipulation. In Study 3, which utilized a student sample, none of the hypotheses found support.

Theoretical Contributions and Managerial Implications

While previous studies have extensively explored goal progress (e.g., Bullard &

Manchanda, 2017; Fishbach & Dhar, 2005; Locke & Latham, 2002) and work breaks (Henning et al., 1989; Kim et al., 2018; Scholz et al., 2019) independently, the relationship between these two concepts remains largely unexamined. The research at hand sought to bridge this gap by investigating the relationship between goal progress and the perceived quality of a break taken during goal pursuit. This thesis may be the first attempt to explore this intersection, thereby enriching the understanding of these two concepts, and providing preliminary evidence that goal progress influences the quality of breaks taken. Given that continuous revitalization of depleted resources is crucial for individuals to successfully achieve their long-term goals (Baumeister et al., 2000; Becker & Bernecker, 2023; Bennett, 2015), it becomes important to understand the various factors that can influence the quality of breaks taken during the course of achieving these goals.

This study adds to the growing research on trait hedonic capacity, which has been found to be positively associated with subjective well-being (Bernecker & Becker, 2021). While Becker and Bernecker (2023) suggest that taking breaks and engaging in other hedonic activities can support long-term goals, this research, through a series of experiments, examines how trait hedonic capacity facilitates quality break taking within the context of goal pursuit.

Furthermore, this research contributes to the existing literature confirming the benefits of breaks on subsequent performance and motivation. It emphasizes that not only the act of taking a break (Kim et al., 2017, 2018; Wendsche et al., 2016) but also the quality of the break plays a pivotal role in influencing outcome variables such as post-break task motivation.

In considering the practical implications stemming from this study's findings, managers should recognize the positive association between goal progress and the quality of employees' breaks. To enhance break experiences and help employees return feeling rejuvenated, it would be

favorable to time breaks when employees feel they have made significant progress in their tasks. Similarly, emphasizing their achievements just before a break can be beneficial. A simple reminder of what they have accomplished thus far can also instill this sense of progress. With this sense of heightened goal progress, employees are likely to experience lower levels of intrusive thoughts about unfinished tasks during the break, enjoy their downtime more, and return to work feeling more motivated.

Further, managerial implications also relate to businesses that design digital tools that aim to help individuals in goal tracking, habit formation, and break planning (e.g., Focus To-Do, The Fabulous Planner, Productivity Challenge Timer, etc.). These applications provide a range of functionalities from basic pomodoro timers (e.g., alternating 25-minute work periods and 5-minute breaks) to intricate features that curate comprehensive day-long schedules based on user-specified goals and objectives. To make the most out of such apps, users are encouraged to input their actual behavioral data as well. These applications subsequently engage in longitudinal tracking, analyzing metrics over extended durations, and provide recommendations based on the accumulated data. However, a one-size-fits-all approach may not be optimal for such scheduling recommendations. High trait hedonic capacity individuals might more readily afford themselves quality breaks even amid low goal progress due to a heightened sense of deservingness towards breaks. This would allow them to take better quality breaks and feel more motivated to resume tasks after the break, feeling more rejuvenated and energized. Conversely, those with a diminished trait hedonic capacity may require assistance in cultivating this sense of deservingness, particularly when goal progress is not favorable. If these applications integrate measures of trait hedonic capacity during user profiling, they could provide more tailored recommendations. Specifically, individuals with a reduced trait hedonic capacity might benefit

from interventions designed to boost their sense of deservingness towards a break.

Limitations and Future Research

The present research is comprised of several limitations that offer opportunities for future research. Notably, this study did not identify a successful intervention strategy to enhance perceptions of break quality. The unsuccessful manipulations of external validation in my studies precluded the study of its effects as a moderator. The fact that many participants were unable to recollect whether they were subjected to the external validation manipulations implies that the stimuli could have been too subtle. Strengthening the manipulation by presenting more robust benefits of the break or by displaying the benefits over several steps of the survey, could have produced a stronger effect. Moreover, while common knowledge and theory suggest that external validation should heighten an individual's sense of break deservingness (Blasche et al., 2021; Münscher et al., 2016), future investigations could strive to identify more efficient nudges for this context. Research by Hummel and Maedche (2019) and See et al. (2013) revealed that the efficacy of a nudge in modifying attitudes and behaviors can significantly fluctuate depending on the type of the nudge and the experimental context, and they can even occasionally backfire. Hence, future research could aim to identify the most suitable type(s) of nudges to encourage break-taking.

In the context of individual differences, this research shed light on the role played by trait hedonic capacity. However, further exploration is warranted. Future studies could investigate the roles of other individual difference variables, such as trait entitlement (Emmons, 1984; Grubbs & Exline, 2016) and need for cognitive closure (Webster & Kruglanski, 1994, 1997). For instance, individuals with a high need for closure might demonstrate an enhanced motivation to continue with their ongoing task or goal, resisting breaks. Understanding these nuances could offer richer

insights into break-taking behaviors across varied personalities.

Study 3 presents another limitation, with none of the hypotheses gaining support, a contrast from the pattern of results observed in the initial two studies. This discrepancy may be attributed to the divergent participant demographics, a student population versus MTurk participants. Future studies could look into the unique characteristics of student populations that might account for the lack of observed effects seen in the first two studies. In Study 3, the levels of intrusive thoughts during the break were generally higher, across both conditions, compared to the levels reported by participants in the first two studies. This increase might be attributed to the unique academic pressures faced by the student participants, particularly as the study was conducted around the time of their end-of-semester examinations. Future research can investigate if different populations would show or not show the proposed effects and why. The research could also have benefited from the inclusion of more stringent attention checks and filters to eliminate inattentive participants, thus bolstering confidence in the results.

Existing research and meta-analyses highlight the lack of a unified theoretical model for work breaks and the varied methods employed to assess the recovery benefits of breaks (Scholz et al., 2019). Further, most research examines the act of taking a break as a prerequisite to performance (Kim et al., 2017, 2018; Wendsche et al., 2016), while this research suggests that the perceived quality of a break might be an additional crucial variable to consider. This research conceptualized perceived break quality in terms of perceived break enjoyment and the incidence of intrusive thoughts. To examine this phenomena more comprehensively, future research should delve deeper into the construct of perceived break quality, identifying its various constituent dimensions as well as their distinct and cumulative effects on break outcomes.

In this research, the chosen break activity - a guided breathing exercise - was imposed on

all participants. While it was favorably evaluated by most participants, future studies can leave the choice of break activity to the individual, making such a setup more realistic. Furthermore, while the manipulations of goal progress proved successful in all the studies carried out within this research, the hypotheses and conceptual model would benefit from being studied in a more realistic context. For instance, future research can consider an experimental design in a real-world context such as a factory or production line, where participants are already engaged in achieving specific goals. Additionally, the manipulation of external validation, particularly when provided through a social nudge, can be incorporated more naturally, thereby potentially strengthening the manipulation and increasing its likelihood of success. In such settings, the required variables such as deservingness and perceived break quality could be gathered, providing a more robust test of the proposed hypotheses. The relationship between goal progress and perceived break quality did not receive consistent support across all studies conducted. As such, future research could scrutinize this relationship further in a context that closely mirrors real-life situations.

The scope of the current research was limited to pre-scheduled, planned breaks, leaving out the phenomenon of spontaneous, unplanned breaks. In such instances, emotions of deservingness or perceived goal progress might not necessarily play a pivotal role, and other factors such as frustration towards the task at hand could trigger these spontaneous breaks (Moss-Pech et al., 2021). Consequently, the conceptual model posited in this research may not extend to this facet of break-taking behavior. Therefore, future investigations could focus on the dynamics and underlying motivations behind spontaneous breaks, expanding the understanding of break-taking behavior in a broader context.

Finally, while some support was found for the notion that feelings of deservingness

mediate the interactive effect of goal progress and trait hedonic capacity on perceived break quality (studies 1 and 2), no direct relationship between goal progress and deservingness was detected. Deservingness did not act as a mediator (in the simple mediation model) between goal progress and perceived break quality, even in the presence of a main effect of goal progress on perceived break quality. Future investigations can identify and study other potential mediators that help explain how goal progress culminates in perceived break quality, providing deeper insight into the underlying processes.

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Appendices

Appendix A: List of anagrams used in Study 1

Set	Examples of possible answers
Practice	
ILESM	SMILE, LIMES, MILES, SLIME
ROSHE	HORSE, SHORE
Task	
ALEST	STEAL, STALE, LEAST, TALES, SLATE
GALNE	ANGEL, ANGLE, GLEAN
EKRAB	BREAK, BRAKE, BAKER
CSAER	CARES, RACES, ACRES, SCARE
ETSRA	RATES, TEARS, STARE, TASER

Appendix B: Audio track used during the break

Source (hyperlink): https://www.youtube.com/watch?v=1Dv-ldGLnIY
YouTube Video Title: 4-7-8 Calm Breathing Exercise - Relaxing Breath Technique | Hands-On Meditation
YouTube Channel: Hands-On Meditation
A cropped version of the audio was embedded in the Qualtrics survey

Appendix C: Measurements and manipulation checks

Table C.1: Measures used in Study 1

Measure	Scale Item(s)	Source
Perceived break enjoyment	How would you rate the overall quality of the break? 1 = Very poor, 7 = Very good To what extent did you enjoy the break? 1 = Not at all, 7 = Very much	Adapted from Moorthy & Hawkins (2005) and Adapted from Isen & Reeve (2005)
Intrusive thoughts	Please indicate the extent to which thoughts about the unfinished anagram task distracted you during the break? 1 = Not at all, 7 = Very much Overall, how distracted were you during the break? 1 = Not distracted, 7 = Very distracted	Adapted from Masicampo & Baumeister (2011) and Lewandowski et al. (2021)
Relaxation	Please indicate your level of (dis)agreement with each of the below statements: I kicked back and relaxed during the break	Adapted from Bakker et al. (2015)

	1 = Totally disagree, 7 = Totally agree During the break, I used the time to relax 1 = Totally disagree, 7 = Totally agree	
Psychological detachment	Please indicate your level of (dis)agreement with each of the below statements: I forgot about the anagram task during the break I didn't think about the anagram task at all during the break During the break, I distanced myself from the anagram task 1 = Totally disagree, 7 = Totally agree	Adapted from Bakker et al. (2015)
Perceived value (utilitarian and hedonic)	Using the below scales, please indicate how you feel about the break. The break was... 1 = Effective, 7 = Ineffective 1 = Helpful, 7 = Unhelpful 1 = Functional, 7 = Not functional 1 = Necessary, 7 = Unnecessary 1 = Practical, 7 = Impractical 1 = Not fun, 7 = Fun 1 = Dull, 7 = Exciting 1 = Not delightful, 7 = Delightful 1 = Not thrilling, 7 = Thrilling 1 = Enjoyable, 7 = Unenjoyable	Adapted from Voss et al. (2003)
Deservingness	To what extent did you feel deserving to take a break - despite not having finished the anagram task 1 = Not at all deserving, 7 = Very deserving To what extent did it feel like you had earned the opportunity to unwind yourself? 1 = Not at all, 7 = Very much	Adapted from Cavanaugh (2014) and Mick & Faure (1998)
Task motivation	Now that you are done with your break, how motivated are you to resume working on the anagram task? 1 = Not at all motivated, 7 = Extremely motivated	Adapted from Chan & Briers (2019)
Trait hedonic capacity	Please indicate the extent to which each statement is a fitting description of yourself I am good at pursuing my desires. I can follow my desires in the here and now. I often do what I feel like doing. In my spare time, I can relax well. In my spare time, I can “switch off” well. In my spare time, I find it difficult to turn off thoughts about what is still left to do. Thoughts about my work sometimes prevent me from enjoying pleasant activities and moments	Bernecker & Becker (2021)

	Sometimes I cannot stop myself from thinking about things I still need to do. I often think about my duties even while I am enjoying a good moment. I often think after the fact that I should have enjoyed the moment more. 1 = Not at all like me, 7 = Very much like me	
Frequency of engaging in such breaks	How often do you engage in similar meditating activities such as the breathing exercise? 1 = Never, 2 = Rarely – once to a few times in the past year, 3 = Very occasionally – once per month or so, 4 = About once per week, 5 = Once every 2-3 days, 6 = Daily, 7 = Several times in a day	
Extent of liking breathing/meditation exercises	To what extent do you like engaging in meditating activities such as the breathing exercise? 1 = Not at all, 7 = Very much	
Task enjoyment	To what extent did you enjoy the anagram task? 1 = Not at all, 7 = Very much	Adapted from Isen & Reeve (2005)
Experienced bother	How much did it bother you to be asked to stop the task in the middle (i.e., after the 5th anagram)? 1 = Not at all, 7 = Very much	Adapted from Jhang & Lynch (2015)
Self-efficacy	Please indicate the extent to which you feel you have the skills and resources necessary to do very well in anagram tasks 1 = Not at all, 7 = Very much	Adapted from Koestner et al. (2002)
Adherence to study's instructions	Did you follow all the instructions during the breathing exercise? i.e., did you actually close your eyes and do the timed breathing exercises? 1 = No, I did not follow the instructions, 7 = Yes, I followed every instruction	
Device information	What device are you currently using to take this survey? Smartphone / Laptop / Personal Computer / iPad / Other (please specify)	
Unexpected distractions	During the task or the break, were you unexpectedly distracted or interrupted? (e.g., someone came into the room, the phone rang, you received an important email, etc.) Yes / No	
Surrounding noise	How quiet and relaxing is the surrounding you are in currently? 1 = Noisy and has distraction, 7 = Quiet and no distractions	
Demographics	Age: What is your age? Gender: Male / Female / Non-binary/third gender / Prefer not to say	

	Languages: In what language(s) can you speak fluently? (Click all that apply) Fluency: How would you rate your knowledge of English (e.g., reading)? No ability at all / Very little / Moderate / Very good / Totally fluent	

Table C.2: Manipulation checks used in Study 1

Manipulation	Scale Item(s)
Goal Progress	Considering the number of anagrams you were initially asked to solve, how much progress have you made towards finishing the task? 1 = No progress at all, 7 = A lot of progress
External Validation	Before the start of the break, do you remember being informed that other respondents completing the survey at the same time as you were also asked to take the break? Yes, I was informed about other participants taking a break / No, I was not informed about other participants taking a break / I do not recall

Table C.3: Other measures used in Study 2

Measure	Scale Item(s)	Source
Deservingness	To what extent did it feel deserving to take a break? 1 = Not at all deserving, 7 = Very deserving	Adapted from Cavanaugh (2014)
Intrusive thoughts	Please indicate the extent to which thoughts about your goal distracted you during the break? 1 = Not at all, 7 = Very much Overall, how distracted were you during the break? 1 = Not distracted, 7 = Very distracted	Adapted from Masicampo & Baumeister (2011) and Lewandowski et al. (2021)
Task motivation	How motivated are you to continue working on your goal? 1 = Not at all motivated, 7 = Extremely motivated	Adapted from Chan & Briers (2019)
Difficulty of recall	How difficult or easy was it to list three actions that you plan to take (or have taken) within the next (or last) week which will help you accomplish (or towards accomplishing) your goal? 1 = Very difficult, 7 = Very easy	
Relaxation evaluation of the breathing exercise	How would you evaluate the breathing exercise you were instructed to partake in? 1 = It was not at all relaxing, 7 = It was very relaxing	

Adherence to study's instructions	Did you follow all the instructions during the breathing exercise? i.e., did you actually close your eyes and do the timed breathing exercises? Yes, I followed the instruction / No, I did not follow the instructions	
Unexpected distractions	During the breathing exercise, were you in a noisy environment or unexpectedly distracted/interrupted? (e.g., someone came into the room, the phone rang, you received an important email, etc.) Yes / No	

Table C.4: Manipulation checks used in Study 2

Manipulation	Scale Item(s)
Goal Progress	Right now, how much progress do you feel you have made towards your goal? 1 = No progress at all, 7 = A lot of progress
External Validation	Before the start of the break, do you remember being informed of the benefits of taking a break? Yes, I was informed about the benefits of taking breaks / No, I was not informed about the benefits of taking breaks / I do not recall

Appendix D: Participant exclusion criteria

Study 1

Based on goal progress manipulation: For those in the *low goal progress* condition—who would have completed five out of seventeen anagrams—any participants who evaluated their progress higher than 4 on the 7-point scale were excluded from the analysis. Analogously, within the *high goal progress* condition—where participants solved five out of seven anagrams—those who assessed their progress as less than 4 on the same scale were also eliminated.

Based on participant feedback: This criterion for participant exclusion relied upon the comments provided by participants at the conclusion of the study. A free-form text box allowed participants to express their experiences and thoughts about the study. The following participants' responses were excluded prior to the analysis of the results: (i) those who reported issues with the execution of the breathing exercise task, (ii) individuals expressing dissatisfaction with their study participation, and (iii) participants who signaled they encountered difficulties with the anagram task.

Study 2

Based on participant feedback as described above.

Study 3

Based on goal progress manipulation and participant feedback as described above.

Appendix E: PROCESS model outputs

Outputs from Study 1

Investigating the interaction between goal progress and trait hedonic capacity on perceived break enjoyment (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : BrkEnjy
    X  : GoalProg
    W  : THC

Sample
Size:  167

**************************************************************************
OUTCOME VARIABLE:
 BrkEnjy

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2259      .0510     2.5135     2.9215     3.0000   163.0000      .0357

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.1631      .6661     4.7484      .0000     1.8477     4.4784
GoalProg     2.2573      .8922     2.5299      .0124      .4954     4.0191
THC           .3465      .1507     2.2996      .0227      .0490      .6440
Int_1        -.4290      .2019    -2.1252      .0351     -.8277     -.0304

Product terms key:
 Int_1    :        GoalProg     x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0263     4.5165     1.0000   163.0000      .0351
----------
    Focal predict: GoalProg   (X)
          Mod var: THC        (W)
```

Conditional effects of the focal predictor at values of the moderator(s):

THC	Effect	se	t	p	LLCI	ULCI
3.0196	.9618	.3499	2.7490	.0067	.2709	1.6526
4.2467	.4353	.2470	1.7626	.0798	-.0524	.9230
5.4738	-.0912	.3497	-.2606	.7947	-.7818	.5995

Moderator value(s) defining Johnson-Neyman significance region(s):

Value	% below	% above
4.1184	50.8982	49.1018

Conditional effect of focal predictor at values of the moderator:

THC	Effect	se	t	p	LLCI	ULCI
1.0000	1.8282	.7005	2.6099	.0099	.4450	3.2114
1.3000	1.6995	.6442	2.6383	.0091	.4275	2.9715
1.6000	1.5708	.5887	2.6683	.0084	.4084	2.7333
1.9000	1.4421	.5343	2.6989	.0077	.3870	2.4972
2.2000	1.3134	.4814	2.7281	.0071	.3627	2.2640
2.5000	1.1847	.4306	2.7515	.0066	.3345	2.0349
2.8000	1.0560	.3825	2.7604	.0064	.3006	1.8113
3.1000	.9273	.3386	2.7389	.0069	.2588	1.5958
3.4000	.7986	.3004	2.6584	.0086	.2054	1.3917
3.7000	.6699	.2705	2.4760	.0143	.1356	1.2041
4.0000	.5411	.2520	2.1478	.0332	.0436	1.0387
4.1184	.4904	.2483	1.9746	.0500	.0000	.9807
4.3000	.4124	.2472	1.6684	.0971	-.0757	.9006
4.6000	.2837	.2570	1.1038	.2713	-.2238	.7913
4.9000	.1550	.2799	.5538	.5805	-.3978	.7078
5.2000	.0263	.3130	.0841	.9331	-.5918	.6445
5.5000	-.1024	.3535	-.2897	.7725	-.8004	.5956
5.8000	-.2311	.3991	-.5791	.5633	-1.0191	.5569
6.1000	-.3598	.4482	-.8027	.4233	-1.2449	.5253
6.4000	-.4885	.4999	-.9773	.3299	-1.4756	.4986
6.7000	-.6172	.5533	-1.1154	.2663	-1.7099	.4754
7.0000	-.7459	.6081	-1.2266	.2218	-1.9468	.4549

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
   GoalProg        THC    BrkEnjy   .
BEGIN DATA.
      .0000     3.0196     4.2093
     1.0000     3.0196     5.1711
      .0000     4.2467     4.6345
     1.0000     4.2467     5.0698
      .0000     5.4738     5.0596
     1.0000     5.4738     4.9685
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     BrkEnjy BY       GoalProg   .
```

********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS **********

OUTCOME VARIABLE:
BrkEnjy

	Coeff	BootMean	BootSE	BootLLCI	BootULCI
constant	3.1631	3.1364	.7492	1.6617	4.5801
GoalProg	2.2573	2.2748	.9329	.4514	4.1128
THC	.3465	.3528	.1641	.0314	.6795
Int_1	-.4290	-.4337	.2065	-.8396	-.0361

```
************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

Investigating the moderated mediation model with goal progress as the independent variable, trait hedonic capacity as the moderator, deservingness as the mediator, and perceived break enjoyment as the dependent variable (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 8
    Y  : BrkEnjy
    X  : GoalProg
    M  : Dvng
    W  : THC

Sample
Size:  167

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1531      .0234     3.8697     1.3045     3.0000   163.0000      .2748

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.5379      .8265     3.0705      .0025      .9058     4.1700
GoalProg     2.0805     1.1071     1.8792      .0620     -.1056     4.2665
THC           .3282      .1869     1.7557      .0810     -.0409      .6974
Int_1        -.4511      .2505    -1.8009      .0736     -.9457      .0435

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0194     3.2432     1.0000   163.0000      .0736
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):
```

THC	Effect	se	t	p	LLCI	ULCI
3.0196	.7183	.4341	1.6548	.0999	-.1389	1.5755
4.2467	.1648	.3064	.5378	.5915	-.4403	.7699
5.4738	-.3887	.4340	-.8958	.3717	-1.2456	.4682

There are no statistical significance transition points within the observed range of the moderator found using the Johnson-Neyman method.

Conditional effect of focal predictor at values of the moderator:

THC	Effect	se	t	p	LLCI	ULCI
1.0000	1.6294	.8692	1.8746	.0626	-.0869	3.3456
1.2857	1.5005	.8026	1.8696	.0633	-.0843	3.0853
1.5714	1.3716	.7369	1.8612	.0645	-.0836	2.8268
1.8571	1.2427	.6725	1.8478	.0664	-.0853	2.5707
2.1429	1.1138	.6097	1.8269	.0695	-.0901	2.3177
2.4286	.9849	.5490	1.7941	.0747	-.0991	2.0690
2.7143	.8561	.4912	1.7426	.0833	-.1140	1.8261
3.0000	.7272	.4376	1.6618	.0985	-.1369	1.5912
3.2857	.5983	.3897	1.5351	.1267	-.1713	1.3679
3.5714	.4694	.3501	1.3409	.1818	-.2218	1.1607
3.8571	.3405	.3216	1.0587	.2913	-.2946	.9756
4.1429	.2116	.3075	.6881	.4923	-.3957	.8189
4.4286	.0828	.3098	.2671	.7897	-.5290	.6945
4.7143	-.0461	.3280	-.1406	.8883	-.6938	.6016
5.0000	-.1750	.3598	-.4864	.6273	-.8855	.5355
5.2857	-.3039	.4020	-.7560	.4507	-1.0977	.4898
5.5714	-.4328	.4516	-.9583	.3393	-1.3245	.4590
5.8571	-.5617	.5065	-1.1089	.2691	-1.5618	.4385
6.1429	-.6906	.5651	-1.2219	.2235	-1.8065	.4254
6.4286	-.8194	.6265	-1.3080	.1927	-2.0565	.4176
6.7143	-.9483	.6898	-1.3748	.1711	-2.3104	.4138
7.0000	-1.0772	.7546	-1.4276	.1553	-2.5672	.4128

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
   GoalProg     THC        Dvng       .
BEGIN DATA.
      .0000     3.0196     3.5290
     1.0000     3.0196     4.2474
      .0000     4.2467     3.9318
     1.0000     4.2467     4.0966
      .0000     5.4738     4.3346
     1.0000     5.4738     3.9458
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     Dvng     BY       GoalProg   .
```

```
**************************************************************************
OUTCOME VARIABLE:
 BrkEnjy
```

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4549	.2069	2.1136	10.5669	4.0000	162.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.3341	.6283	3.7151	.0003	1.0934	3.5747
GoalProg	1.5777	.8270	1.9077	.0582	-.0554	3.2107
Dvng	.3267	.0579	5.6431	.0000	.2123	.4410
THC	.2393	.1395	1.7156	.0882	-.0361	.5147

```
Int_1        -.2817      .1870    -1.5067      .1338     -.6508      .0875

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0111     2.2701     1.0000   162.0000      .1338
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        BrkEnjy    .
BEGIN DATA.
      .0000     3.0196     4.3710
     1.0000     3.0196     5.0981
      .0000     4.2467     4.6646
     1.0000     4.2467     5.0460
      .0000     5.4738     4.9582
     1.0000     5.4738     4.9940
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     BrkEnjy  BY       GoalProg   .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.0196      .7271      .3235     2.2477      .0259      .0883     1.3659
     4.2467      .3815      .2267     1.6829      .0943     -.0661      .8291
     5.4738      .0358      .3215      .1115      .9114     -.5990      .6707

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    BrkEnjy

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196      .2346      .1596     -.0647      .5754
     4.2467      .0538      .1027     -.1416      .2688
     5.4738     -.1270      .1380     -.3995      .1430

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.1474      .0882     -.3280      .0239
---

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

Investigating the moderated mediation model with goal progress as the independent variable, trait hedonic capacity as the moderator, deservingness as the mediator, and perceived break enjoyment as the dependent variable (using a 90% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 8
    Y  : BrkEnjy
    X  : GoalProg
    M  : Dvng
    W  : THC

Sample
Size:  167

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1531      .0234     3.8697     1.3045     3.0000   163.0000      .2748

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.5379      .8265     3.0705      .0025     1.1706     3.9052
GoalProg     2.0805     1.1071     1.8792      .0620      .2491     3.9119
THC           .3282      .1869     1.7557      .0810      .0190      .6375
Int_1        -.4511      .2505    -1.8009      .0736     -.8655     -.0367

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0194     3.2432     1.0000   163.0000      .0736
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     2.9880      .7326      .4397     1.6660      .0976      .0051     1.4600
     4.1000      .2310      .3086      .7483      .4553     -.2796      .7415
     5.6000     -.4457      .4569     -.9755      .3308    -1.2015      .3101

**************************************************************************
OUTCOME VARIABLE:
 BrkEnjy

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4549      .2069     2.1136    10.5669     4.0000   162.0000      .0000

Model
```

```
              coeff         se          t          p       LLCI       ULCI
constant     2.3341      .6283     3.7151      .0003     1.2947     3.3734
GoalProg     1.5777      .8270     1.9077      .0582      .2095     2.9458
Dvng          .3267      .0579     5.6431      .0000      .2309      .4224
THC           .2393      .1395     1.7156      .0882      .0085      .4700
Int_1        -.2817      .1870    -1.5067      .1338     -.5909      .0276

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0111     2.2701     1.0000   162.0000      .1338

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     2.9880      .7360      .3277     2.2457      .0261      .1938     1.2782
     4.1000      .4228      .2285     1.8504      .0661      .0448      .8008
     5.6000      .0003      .3386      .0008      .9993     -.5599      .5605

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng       ->    BrkEnjy

        THC     Effect     BootSE   BootLLCI   BootULCI
     2.9880      .2393      .1621     -.0094      .5183
     4.1000      .0754      .1049     -.0887      .2539
     5.6000     -.1456      .1465     -.3900      .0891

      Index of moderated mediation:
              Index     BootSE   BootLLCI   BootULCI
THC         -.1474      .0891     -.2971     -.0085
---

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

------ END MATRIX -----
```

Investigating the moderated mediation model with goal progress as the independent variable, trait hedonic capacity as the moderator, deservingness as the mediator, and intrusive thoughts as the dependent variable (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
```

```
Model  : 8
    Y  : IT
    X  : GoalProg
    M  : Dvng
    W  : THC

Sample
Size:  167

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1531      .0234     3.8697     1.3045     3.0000   163.0000      .2748

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.5379      .8265     3.0705      .0025      .9058     4.1700
GoalProg     2.0805     1.1071     1.8792      .0620     -.1056     4.2665
THC           .3282      .1869     1.7557      .0810     -.0409      .6974
Int_1        -.4511      .2505    -1.8009      .0736     -.9457      .0435

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0194     3.2432     1.0000   163.0000      .0736
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.0196      .7183      .4341     1.6548      .0999     -.1389     1.5755
     4.2467      .1648      .3064      .5378      .5915     -.4403      .7699
     5.4738     -.3887      .4340     -.8958      .3717    -1.2456      .4682

There are no statistical significance transition points within the observed
range of the moderator found using the Johnson-Neyman method.

Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.0000     1.6294      .8692     1.8746      .0626     -.0869     3.3456
     1.2857     1.5005      .8026     1.8696      .0633     -.0843     3.0853
     1.5714     1.3716      .7369     1.8612      .0645     -.0836     2.8268
     1.8571     1.2427      .6725     1.8478      .0664     -.0853     2.5707
     2.1429     1.1138      .6097     1.8269      .0695     -.0901     2.3177
     2.4286      .9849      .5490     1.7941      .0747     -.0991     2.0690
     2.7143      .8561      .4912     1.7426      .0833     -.1140     1.8261
     3.0000      .7272      .4376     1.6618      .0985     -.1369     1.5912
     3.2857      .5983      .3897     1.5351      .1267     -.1713     1.3679
     3.5714      .4694      .3501     1.3409      .1818     -.2218     1.1607
     3.8571      .3405      .3216     1.0587      .2913     -.2946      .9756
     4.1429      .2116      .3075      .6881      .4923     -.3957      .8189
     4.4286      .0828      .3098      .2671      .7897     -.5290      .6945
     4.7143     -.0461      .3280     -.1406      .8883     -.6938      .6016
     5.0000     -.1750      .3598     -.4864      .6273     -.8855      .5355
     5.2857     -.3039      .4020     -.7560      .4507    -1.0977      .4898
     5.5714     -.4328      .4516     -.9583      .3393    -1.3245      .4590
```

```
     5.8571     -.5617      .5065    -1.1089      .2691    -1.5618      .4385
     6.1429     -.6906      .5651    -1.2219      .2235    -1.8065      .4254
     6.4286     -.8194      .6265    -1.3080      .1927    -2.0565      .4176
     6.7143     -.9483      .6898    -1.3748      .1711    -2.3104      .4138
     7.0000    -1.0772      .7546    -1.4276      .1553    -2.5672      .4128

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        Dvng       .
BEGIN DATA.
      .0000     3.0196     3.5290
     1.0000     3.0196     4.2474
      .0000     4.2467     3.9318
     1.0000     4.2467     4.0966
      .0000     5.4738     4.3346
     1.0000     5.4738     3.9458
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     Dvng     BY       GoalProg   .

************************************************************************
OUTCOME VARIABLE:
 IT

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3278      .1075     1.5823     4.8774     4.0000   162.0000      .0010

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.7168      .5436     6.8375      .0000     2.6434     4.7903
GoalProg      .2244      .7156      .3136      .7542    -1.1886     1.6374
Dvng         -.1522      .0501    -3.0388      .0028     -.2511     -.0533
THC          -.1630      .1207    -1.3510      .1786     -.4013      .0753
Int_1        -.1056      .1618     -.6527      .5148     -.4250      .2138

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0023      .4261     1.0000   162.0000      .5148
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        IT         .
BEGIN DATA.
      .0000     3.0196     2.6121
     1.0000     3.0196     2.5177
      .0000     4.2467     2.4121
     1.0000     4.2467     2.1881
      .0000     5.4738     2.2120
     1.0000     5.4738     1.8585
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     IT       BY       GoalProg   .
```

```
****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.0196     -.0944      .2799     -.3373      .7363     -.6471      .4583
     4.2467     -.2240      .1961    -1.1420      .2551     -.6113      .1633
     5.4738     -.3535      .2782    -1.2709      .2056     -.9029      .1958

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    IT

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196     -.1093      .0853     -.3046      .0306
     4.2467     -.0251      .0519     -.1417      .0730
     5.4738      .0592      .0708     -.0699      .2090

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC          .0687      .0479     -.0115      .1733
---

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

Investigating the moderated mediation model with goal progress as the independent variable, trait hedonic capacity as the moderator, deservingness as the mediator, and intrusive thoughts as the dependent variable (using a 90% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 8
    Y  : IT
    X  : GoalProg
    M  : Dvng
    W  : THC

Sample
Size:  167

**************************************************************************
OUTCOME VARIABLE:
 Dvng
```

```
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1531      .0234     3.8697     1.3045     3.0000   163.0000      .2748

Model
             coeff         se          t          p       LLCI       ULCI
constant     2.5379      .8265     3.0705      .0025     1.1706     3.9052
GoalProg     2.0805     1.1071     1.8792      .0620      .2491     3.9119
THC           .3282      .1869     1.7557      .0810      .0190      .6375
Int_1        -.4511      .2505    -1.8009      .0736     -.8655     -.0367

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0194     3.2432     1.0000   163.0000      .0736
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     2.9880      .7326      .4397     1.6660      .0976      .0051     1.4600
     4.1000      .2310      .3086      .7483      .4553     -.2796      .7415
     5.6000     -.4457      .4569     -.9755      .3308    -1.2015      .3101

**************************************************************************
OUTCOME VARIABLE:
 IT

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3278      .1075     1.5823     4.8774     4.0000   162.0000      .0010

Model
             coeff         se          t          p       LLCI       ULCI
constant     3.7168      .5436     6.8375      .0000     2.8176     4.6161
GoalProg      .2244      .7156      .3136      .7542     -.9593     1.4082
Dvng         -.1522      .0501    -3.0388      .0028     -.2351     -.0693
THC          -.1630      .1207    -1.3510      .1786     -.3626      .0366
Int_1        -.1056      .1618     -.6527      .5148     -.3732      .1620

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0023      .4261     1.0000   162.0000      .5148

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     2.9880     -.0911      .2836     -.3212      .7485     -.5602      .3780
     4.1000     -.2085      .1977    -1.0545      .2932     -.5355      .1186
     5.6000     -.3669      .2930    -1.2521      .2123     -.8516      .1179

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    IT
```

```
        THC     Effect     BootSE   BootLLCI   BootULCI
     2.9880     -.1115      .0834     -.2599      .0077
     4.1000     -.0352      .0522     -.1271      .0443
     5.6000      .0678      .0741     -.0435      .1947

      Index of moderated mediation:
            Index     BootSE   BootLLCI   BootULCI
THC          .0687      .0465      .0015      .1527
---

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

------ END MATRIX -----
```

PROCESS model 85 with perceived break enjoyment as one of the mediators (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 85
    Y  : TM
    X  : GoalProg
   M1  : Dvng
   M2  : BrkEnjy
    W  : THC

Sample
Size:  167

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1531      .0234     3.8697     1.3045     3.0000   163.0000      .2748

Model
             coeff         se          t          p       LLCI       ULCI
constant     2.5379      .8265     3.0705      .0025      .9058     4.1700
GoalProg     2.0805     1.1071     1.8792      .0620     -.1056     4.2665
THC           .3282      .1869     1.7557      .0810     -.0409      .6974
Int_1        -.4511      .2505    -1.8009      .0736     -.9457      .0435

Product terms key:
 Int_1    :        GoalProg   x        THC
```

```
Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0194     3.2432     1.0000   163.0000      .0736
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.0196      .7183      .4341     1.6548      .0999     -.1389     1.5755
     4.2467      .1648      .3064      .5378      .5915     -.4403      .7699
     5.4738     -.3887      .4340     -.8958      .3717    -1.2456      .4682

There are no statistical significance transition points within the observed
range of the moderator found using the Johnson-Neyman method.

Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.0000     1.6294      .8692     1.8746      .0626     -.0869     3.3456
     1.2857     1.5005      .8026     1.8696      .0633     -.0843     3.0853
     1.5714     1.3716      .7369     1.8612      .0645     -.0836     2.8268
     1.8571     1.2427      .6725     1.8478      .0664     -.0853     2.5707
     2.1429     1.1138      .6097     1.8269      .0695     -.0901     2.3177
     2.4286      .9849      .5490     1.7941      .0747     -.0991     2.0690
     2.7143      .8561      .4912     1.7426      .0833     -.1140     1.8261
     3.0000      .7272      .4376     1.6618      .0985     -.1369     1.5912
     3.2857      .5983      .3897     1.5351      .1267     -.1713     1.3679
     3.5714      .4694      .3501     1.3409      .1818     -.2218     1.1607
     3.8571      .3405      .3216     1.0587      .2913     -.2946      .9756
     4.1429      .2116      .3075      .6881      .4923     -.3957      .8189
     4.4286      .0828      .3098      .2671      .7897     -.5290      .6945
     4.7143     -.0461      .3280     -.1406      .8883     -.6938      .6016
     5.0000     -.1750      .3598     -.4864      .6273     -.8855      .5355
     5.2857     -.3039      .4020     -.7560      .4507    -1.0977      .4898
     5.5714     -.4328      .4516     -.9583      .3393    -1.3245      .4590
     5.8571     -.5617      .5065    -1.1089      .2691    -1.5618      .4385
     6.1429     -.6906      .5651    -1.2219      .2235    -1.8065      .4254
     6.4286     -.8194      .6265    -1.3080      .1927    -2.0565      .4176
     6.7143     -.9483      .6898    -1.3748      .1711    -2.3104      .4138
     7.0000    -1.0772      .7546    -1.4276      .1553    -2.5672      .4128

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        Dvng       .
BEGIN DATA.
      .0000     3.0196     3.5290
     1.0000     3.0196     4.2474
      .0000     4.2467     3.9318
     1.0000     4.2467     4.0966
      .0000     5.4738     4.3346
     1.0000     5.4738     3.9458
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     Dvng     BY       GoalProg   .

************************************************************************
OUTCOME VARIABLE:
 BrkEnjy

Model Summary
```

```
          R       R-sq        MSE          F        df1        df2          p
      .4549      .2069     2.1136    10.5669     4.0000   162.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.3341      .6283     3.7151      .0003     1.0934     3.5747
GoalProg     1.5777      .8270     1.9077      .0582     -.0554     3.2107
Dvng          .3267      .0579     5.6431      .0000      .2123      .4410
THC           .2393      .1395     1.7156      .0882     -.0361      .5147
Int_1        -.2817      .1870    -1.5067      .1338     -.6508      .0875

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0111     2.2701     1.0000   162.0000      .1338
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        BrkEnjy    .
BEGIN DATA.
      .0000     3.0196     4.3710
     1.0000     3.0196     5.0981
      .0000     4.2467     4.6646
     1.0000     4.2467     5.0460
      .0000     5.4738     4.9582
     1.0000     5.4738     4.9940
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     BrkEnjy  BY       GoalProg   .

************************************************************************
OUTCOME VARIABLE:
 TM

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3984      .1587     3.0792     6.0737     5.0000   161.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.7830      .7900     3.5230      .0006     1.2230     4.3430
GoalProg     2.0329     1.0094     2.0141      .0457      .0396     4.0262
Dvng         -.0875      .0764    -1.1454      .2537     -.2385      .0634
BrkEnjy       .4119      .0948     4.3431      .0000      .2246      .5991
THC           .0931      .1699      .5479      .5845     -.2424      .4285
Int_1        -.3659      .2272    -1.6104      .1093     -.8147      .0828

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0136     2.5933     1.0000   161.0000      .1093
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)
```

```
Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        TM         .
BEGIN DATA.
      .0000     3.0196     4.7206
     1.0000     3.0196     5.6485
      .0000     4.2467     4.8348
     1.0000     4.2467     5.3137
      .0000     5.4738     4.9490
     1.0000     5.4738     4.9789
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     TM       BY       GoalProg   .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.0196      .9280      .3965     2.3403      .0205      .1449     1.7110
     4.2467      .4789      .2760     1.7354      .0846     -.0661     1.0239
     5.4738      .0299      .3881      .0771      .9387     -.7365      .7963

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196     -.0629      .0825     -.2611      .0699
     4.2467     -.0144      .0397     -.1088      .0596
     5.4738      .0340      .0610     -.0537      .1910

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC          .0395      .0495     -.0376      .1622
---

INDIRECT EFFECT:
 GoalProg      ->    BrkEnjy     ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196      .2995      .1637      .0258      .6687
     4.2467      .1571      .1065     -.0279      .3902
     5.4738      .0148      .1428     -.2785      .2945

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.1160      .0902     -.3186      .0339
---

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    BrkEnjy     ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196      .0966      .0740     -.0317      .2613
     4.2467      .0222      .0464     -.0597      .1285
     5.4738     -.0523      .0585     -.1697      .0728

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
```

```
THC         -.0607      .0390     -.1473      .0110
---

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

PROCESS model 85 with perceived break enjoyment as one of the mediators (using a 90% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 85
    Y  : TM
    X  : GoalProg
   M1  : Dvng
   M2  : BrkEnjy
    W  : THC

Sample
Size:  167

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1531      .0234     3.8697     1.3045     3.0000   163.0000      .2748

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.5379      .8265     3.0705      .0025     1.1706     3.9052
GoalProg     2.0805     1.1071     1.8792      .0620      .2491     3.9119
THC           .3282      .1869     1.7557      .0810      .0190      .6375
Int_1        -.4511      .2505    -1.8009      .0736     -.8655     -.0367

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0194     3.2432     1.0000   163.0000      .0736
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):
```

```
       THC     Effect         se          t          p       LLCI       ULCI
    3.0196      .7183      .4341     1.6548      .0999      .0002     1.4364
    4.2467      .1648      .3064      .5378      .5915     -.3421      .6717
    5.4738     -.3887      .4340     -.8958      .3717    -1.1066      .3291

Moderator value(s) defining Johnson-Neyman significance region(s):
     Value    % below    % above
    3.0210    16.7665    83.2335

Conditional effect of focal predictor at values of the moderator:
       THC     Effect         se          t          p       LLCI       ULCI
    1.0000     1.6294      .8692     1.8746      .0626      .1916     3.0672
    1.3000     1.4940      .7993     1.8692      .0634      .1718     2.8162
    1.6000     1.3587      .7304     1.8601      .0647      .1504     2.5670
    1.9000     1.2234      .6630     1.8453      .0668      .1266     2.3201
    2.2000     1.0880      .5974     1.8214      .0704      .0999     2.0762
    2.5000      .9527      .5342     1.7833      .0764      .0689     1.8365
    2.8000      .8174      .4746     1.7221      .0869      .0322     1.6026
    3.0210      .7177      .4338     1.6543      .1000      .0000     1.4354
    3.1000      .6821      .4201     1.6237      .1064     -.0128     1.3770
    3.4000      .5467      .3727     1.4668      .1443     -.0699     1.1633
    3.7000      .4114      .3357     1.2256      .2221     -.1439      .9667
    4.0000      .2761      .3126      .8831      .3785     -.2411      .7932
    4.3000      .1407      .3067      .4589      .6469     -.3666      .6481
    4.6000      .0054      .3189      .0170      .9865     -.5222      .5330
    4.9000     -.1299      .3473     -.3740      .7089     -.7045      .4447
    5.2000     -.2652      .3884     -.6829      .4957     -.9078      .3773
    5.5000     -.4006      .4386     -.9132      .3625    -1.1262      .3250
    5.8000     -.5359      .4952    -1.0822      .2808    -1.3551      .2833
    6.1000     -.6712      .5562    -1.2069      .2292    -1.5912      .2488
    6.4000     -.8065      .6203    -1.3004      .1953    -1.8326      .2195
    6.7000     -.9419      .6866    -1.3718      .1720    -2.0777      .1939
    7.0000    -1.0772      .7546    -1.4276      .1553    -2.3255      .1711

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        Dvng       .
BEGIN DATA.
      .0000     3.0196     3.5290
     1.0000     3.0196     4.2474
      .0000     4.2467     3.9318
     1.0000     4.2467     4.0966
      .0000     5.4738     4.3346
     1.0000     5.4738     3.9458
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     Dvng     BY       GoalProg   .

************************************************************************
OUTCOME VARIABLE:
 BrkEnjy

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4549      .2069     2.1136    10.5669     4.0000   162.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.3341      .6283     3.7151      .0003     1.2947     3.3734
GoalProg     1.5777      .8270     1.9077      .0582      .2095     2.9458
```

```
Dvng          .3267      .0579     5.6431      .0000      .2309      .4224
THC           .2393      .1395     1.7156      .0882      .0085      .4700
Int_1        -.2817      .1870    -1.5067      .1338     -.5909      .0276

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0111     2.2701     1.0000   162.0000      .1338
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        BrkEnjy    .
BEGIN DATA.
      .0000     3.0196     4.3710
     1.0000     3.0196     5.0981
      .0000     4.2467     4.6646
     1.0000     4.2467     5.0460
      .0000     5.4738     4.9582
     1.0000     5.4738     4.9940
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     BrkEnjy  BY       GoalProg   .

************************************************************************
OUTCOME VARIABLE:
 TM

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3984      .1587     3.0792     6.0737     5.0000   161.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant    2.7830      .7900     3.5230      .0006     1.4761     4.0899
GoalProg    2.0329     1.0094     2.0141      .0457      .3631     3.7028
Dvng        -.0875      .0764    -1.1454      .2537     -.2140      .0389
BrkEnjy      .4119      .0948     4.3431      .0000      .2550      .5688
THC          .0931      .1699      .5479      .5845     -.1879      .3741
Int_1       -.3659      .2272    -1.6104      .1093     -.7418      .0100

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0136     2.5933     1.0000   161.0000      .1093
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        TM         .
BEGIN DATA.
```

```
      .0000     3.0196     4.7206
     1.0000     3.0196     5.6485
      .0000     4.2467     4.8348
     1.0000     4.2467     5.3137
      .0000     5.4738     4.9490
     1.0000     5.4738     4.9789
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     TM       BY       GoalProg   .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.0196      .9280      .3965     2.3403      .0205      .2720     1.5839
     4.2467      .4789      .2760     1.7354      .0846      .0224      .9355
     5.4738      .0299      .3881      .0771      .9387     -.6121      .6719

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196     -.0629      .0830     -.2175      .0388
     4.2467     -.0144      .0395     -.0850      .0398
     5.4738      .0340      .0601     -.0391      .1499

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC          .0395      .0495     -.0216      .1336
---

INDIRECT EFFECT:
 GoalProg      ->    BrkEnjy     ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196      .2995      .1689      .0687      .6146
     4.2467      .1571      .1104      .0021      .3558
     5.4738      .0148      .1453     -.2359      .2440

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.1160      .0916     -.2871      .0086
---

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    BrkEnjy     ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.0196      .0966      .0737     -.0111      .2279
     4.2467      .0222      .0458     -.0440      .1061
     5.4738     -.0523      .0593     -.1476      .0451

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.0607      .0398     -.1300     -.0010
---

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  90.0000
```

```
Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

Outputs from Study 2

Investigating the interaction between goal progress and trait hedonic capacity on perceived break enjoyment (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : BrkEnjy
    X  : GoalProg
    W  : THC

Sample
Size:  217

**************************************************************************
OUTCOME VARIABLE:
 BrkEnjy

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3275      .1072     1.4983     8.5272     3.0000   213.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.4083      .4342     7.8496      .0000     2.5524     4.2641
GoalProg     1.8667      .6448     2.8951      .0042      .5958     3.1377
THC           .4415      .0935     4.7216      .0000      .2572      .6259
Int_1        -.3551      .1408    -2.5228      .0124     -.6326     -.0777

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0267     6.3646     1.0000   213.0000      .0124
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.2402      .7161      .2357     3.0385      .0027      .2515     1.1806
     4.4327      .2926      .1665     1.7578      .0802     -.0355      .6207
```

```
     5.6252     -.1309      .2371     -.5519      .5816     -.5983      .3365

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     4.3297    50.6912    49.3088

Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.1000     1.4761      .4968     2.9712      .0033      .4968     2.4554
     1.3950     1.3713      .4579     2.9949      .0031      .4688     2.2739
     1.6900     1.2666      .4195     3.0194      .0028      .4397     2.0934
     1.9850     1.1618      .3817     3.0437      .0026      .4094     1.9142
     2.2800     1.0571      .3448     3.0655      .0025      .3774     1.7368
     2.5750      .9523      .3091     3.0808      .0023      .3430     1.5616
     2.8700      .8475      .2750     3.0816      .0023      .3054     1.3897
     3.1650      .7428      .2433     3.0533      .0026      .2632     1.2223
     3.4600      .6380      .2149     2.9692      .0033      .2145     1.0616
     3.7550      .5333      .1913     2.7870      .0058      .1561      .9104
     4.0500      .4285      .1746     2.4536      .0149      .0843      .7727
     4.3297      .3292      .1670     1.9712      .0500      .0000      .6584
     4.3450      .3237      .1668     1.9405      .0536     -.0051      .6526
     4.6400      .2190      .1692     1.2944      .1969     -.1145      .5525
     4.9350      .1142      .1813      .6302      .5292     -.2431      .4715
     5.2300      .0095      .2013      .0470      .9625     -.3874      .4063
     5.5250     -.0953      .2273     -.4192      .6755     -.5433      .3528
     5.8200     -.2000      .2574     -.7773      .4379     -.7074      .3073
     6.1150     -.3048      .2903    -1.0500      .2949     -.8770      .2674
     6.4100     -.4096      .3252    -1.2595      .2092    -1.0506      .2314
     6.7050     -.5143      .3615    -1.4228      .1563    -1.2269      .1982
     7.0000     -.6191      .3988    -1.5524      .1221    -1.4052      .1670

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        BrkEnjy    .
BEGIN DATA.
      .0000     3.2402     4.8389
     1.0000     3.2402     5.5550
      .0000     4.4327     5.3654
     1.0000     4.4327     5.6580
      .0000     5.6252     5.8919
     1.0000     5.6252     5.7610
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     BrkEnjy  BY       GoalProg   .

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 BrkEnjy

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant     3.4083     3.4102      .4404     2.5490     4.2647
GoalProg     1.8667     1.8737      .6528      .6270     3.1552
THC           .4415      .4408      .0886      .2639      .6080
Int_1        -.3551     -.3562      .1413     -.6397     -.0854

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000
```

```
Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

Investigating the interaction between goal progress and trait hedonic capacity on intrusive thoughts (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : IT
    X  : GoalProg
    W  : THC

Sample
Size:  217

**************************************************************************
OUTCOME VARIABLE:
 IT

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3990      .1592     1.3365    13.4400     3.0000   213.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.3005      .4101    10.4867      .0000     3.4921     5.1088
GoalProg    -1.5905      .6090    -2.6118      .0096    -2.7909     -.3901
THC          -.5148      .0883    -5.8292      .0000     -.6889     -.3407
Int_1         .3036      .1329     2.2834      .0234      .0415      .5656

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0206     5.2139     1.0000   213.0000      .0234
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.2402     -.6069      .2226    -2.7266      .0069    -1.0456     -.1681
     4.4327     -.2449      .1572    -1.5576      .1208     -.5548      .0650
     5.6252      .1171      .2240      .5230      .6016     -.3243      .5586

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     4.2002    47.9263    52.0737
```

```
Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.1000    -1.2566      .4692    -2.6780      .0080    -2.1815    -.3317
     1.3950    -1.1670      .4325    -2.6986      .0075    -2.0195    -.3146
     1.6900    -1.0775      .3962    -2.7196      .0071    -1.8584    -.2965
     1.9850     -.9879      .3605    -2.7403      .0067    -1.6986    -.2773
     2.2800     -.8984      .3257    -2.7585      .0063    -1.5403    -.2564
     2.5750     -.8088      .2919    -2.7705      .0061    -1.3843    -.2333
     2.8700     -.7193      .2598    -2.7690      .0061    -1.2313    -.2072
     3.1650     -.6297      .2298    -2.7407      .0067    -1.0826    -.1768
     3.4600     -.5402      .2029    -2.6616      .0084     -.9402    -.1401
     3.7550     -.4506      .1807    -2.4934      .0134     -.8068    -.0944
     4.0500     -.3611      .1649    -2.1890      .0297     -.6862    -.0359
     4.2002     -.3155      .1600    -1.9712      .0500     -.6309     .0000
     4.3450     -.2715      .1576    -1.7230      .0863     -.5821     .0391
     4.6400     -.1820      .1598    -1.1388      .2561     -.4969     .1330
     4.9350     -.0924      .1712     -.5398      .5899     -.4298     .2450
     5.2300     -.0028      .1902     -.0150      .9881     -.3777     .3720
     5.5250      .0867      .2147      .4039      .6867     -.3365     .5099
     5.8200      .1763      .2431      .7251      .4692     -.3029     .6554
     6.1150      .2658      .2742      .9695      .3334     -.2746     .8063
     6.4100      .3554      .3071     1.1570      .2486     -.2500     .9608
     6.7050      .4449      .3414     1.3031      .1939     -.2281    1.1179
     7.0000      .5345      .3767     1.4190      .1574     -.2080    1.2769

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        IT         .
BEGIN DATA.
      .0000     3.2402     2.6323
     1.0000     3.2402     2.0254
      .0000     4.4327     2.0184
     1.0000     4.4327     1.7735
      .0000     5.6252     1.4044
     1.0000     5.6252     1.5216
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     IT       BY       GoalProg   .

************ BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 IT

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant     4.3005     4.2829      .5229     3.2602     5.2876
GoalProg    -1.5905    -1.5601      .6727    -2.8494     -.2349
THC          -.5148     -.5111      .1014     -.7061     -.3128
Int_1         .3036      .2969      .1324      .0356      .5568

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

Investigating the moderated mediation model with goal progress as the independent variable, trait hedonic capacity as the moderator, deservingness as the mediator, and perceived break enjoyment as the dependent variable (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 8
    Y  : BrkEnjy
    X  : GoalProg
    M  : Dvng
    W  : THC

Sample
Size:  217

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2448      .0599     2.7186     4.5270     3.0000   213.0000      .0042

Model
             coeff         se          t          p       LLCI       ULCI
constant    2.8035      .5849     4.7933      .0000     1.6506     3.9564
GoalProg    2.4085      .8685     2.7731      .0060      .6965     4.1206
THC          .4195      .1260     3.3301      .0010      .1712      .6678
Int_1       -.4612      .1896    -2.4326      .0158     -.8350     -.0875

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0261     5.9174     1.0000   213.0000      .0158
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.3000      .8864      .3095     2.8639      .0046      .2763     1.4966
     4.3000      .4252      .2255     1.8858      .0607     -.0192      .8697
     5.7000     -.2205      .3297     -.6689      .5043     -.8704      .4293

**************************************************************************
OUTCOME VARIABLE:
 BrkEnjy

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5591      .3125     1.1591    24.0956     4.0000   212.0000      .0000
```

```
Model
              coeff         se          t          p       LLCI       ULCI
constant     2.4102      .4020     5.9958      .0000     1.6178     3.2026
GoalProg     1.0092      .5773     1.7483      .0819     -.1287     2.1472
Dvng          .3560      .0447     7.9572      .0000      .2678      .4442
THC           .2922      .0844     3.4634      .0006      .1259      .4585
Int_1        -.1909      .1255    -1.5210      .1298     -.4383      .0565

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0075     2.3133     1.0000   212.0000      .1298

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.3000      .3793      .2060     1.8413      .0670     -.0268      .7853
     4.3000      .1883      .1485     1.2687      .2059     -.1043      .4810
     5.7000     -.0789      .2155     -.3663      .7145     -.5037      .3459

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    BrkEnjy

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.3000      .3156      .1264      .0820      .5848
     4.3000      .1514      .0868     -.0088      .3292
     5.7000     -.0785      .1178     -.3212      .1476

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.1642      .0736     -.3169     -.0294
---

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

------ END MATRIX -----
```

Investigating the moderated mediation model with goal progress as the independent variable, trait hedonic capacity as the moderator, deservingness as the mediator, and intrusive thoughts as the dependent variable (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3
```

```
**************************************************************************
Model  : 8
    Y  : IT
    X  : GoalProg
    M  : Dvng
    W  : THC

Sample
Size:  217

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2448      .0599     2.7186     4.5270     3.0000   213.0000      .0042

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.8035      .5849     4.7933      .0000     1.6506     3.9564
GoalProg     2.4085      .8685     2.7731      .0060      .6965     4.1206
THC           .4195      .1260     3.3301      .0010      .1712      .6678
Int_1        -.4612      .1896    -2.4326      .0158     -.8350     -.0875

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0261     5.9174     1.0000   213.0000      .0158
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.2402      .9140      .3174     2.8793      .0044      .2883     1.5397
     4.4327      .3640      .2242     1.6233      .1060     -.0780      .8060
     5.6252     -.1860      .3194     -.5824      .5609     -.8157      .4436

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     4.2536    47.9263    52.0737

Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.1000     1.9012      .6692     2.8409      .0049      .5821     3.2203
     1.3950     1.7651      .6168     2.8618      .0046      .5493     2.9809
     1.6900     1.6290      .5650     2.8830      .0043      .5152     2.7428
     1.9850     1.4930      .5142     2.9036      .0041      .4794     2.5065
     2.2800     1.3569      .4645     2.9213      .0039      .4413     2.2725
     2.5750     1.2208      .4164     2.9321      .0037      .4001     2.0416
     2.8700     1.0848      .3705     2.9281      .0038      .3545     1.8150
     3.1650      .9487      .3277     2.8951      .0042      .3028     1.5947
     3.4600      .8126      .2894     2.8076      .0055      .2421     1.3832
     3.7550      .6766      .2577     2.6250      .0093      .1685     1.1846
     4.0500      .5405      .2352     2.2977      .0226      .0768     1.0042
     4.2536      .4466      .2266     1.9712      .0500      .0000      .8932
     4.3450      .4045      .2247     1.7997      .0733     -.0385      .8474
     4.6400      .2684      .2279     1.1777      .2402     -.1808      .7176
```

```
     4.9350      .1323      .2442      .5420      .5884     -.3489      .6136
     5.2300     -.0037      .2712     -.0138      .9890     -.5383      .5308
     5.5250     -.1398      .3062     -.4566      .6484     -.7433      .4637
     5.8200     -.2759      .3467     -.7957      .4271     -.9593      .4075
     6.1150     -.4119      .3910    -1.0535      .2933    -1.1827      .3589
     6.4100     -.5480      .4380    -1.2510      .2123    -1.4114      .3154
     6.7050     -.6841      .4869    -1.4049      .1615    -1.6439      .2757
     7.0000     -.8201      .5372    -1.5267      .1283    -1.8790      .2388

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        Dvng       .
BEGIN DATA.
      .0000     3.2402     4.1626
     1.0000     3.2402     5.0766
      .0000     4.4327     4.6628
     1.0000     4.4327     5.0268
      .0000     5.6252     5.1631
     1.0000     5.6252     4.9770
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     Dvng     BY       GoalProg   .

************************************************************************
OUTCOME VARIABLE:
 IT

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4094      .1676     1.3293    10.6726     4.0000   212.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.4975      .4305    10.4478      .0000     3.6490     5.3461
GoalProg    -1.4212      .6182    -2.2989      .0225    -2.6398     -.2026
Dvng         -.0703      .0479    -1.4671      .1438     -.1647      .0242
THC          -.4853      .0903    -5.3722      .0000     -.6634     -.3073
Int_1         .2711      .1344     2.0172      .0449      .0062      .5361

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0160     4.0691     1.0000   212.0000      .0449
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.2402     -.5426      .2263    -2.3983      .0173     -.9886     -.0966
     4.4327     -.2193      .1578    -1.3900      .1660     -.5303      .0917
     5.6252      .1040      .2235      .4654      .6421     -.3366      .5447

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     4.0217    41.0138    58.9862

Conditional effect of focal predictor at values of the moderator:
```

```
        THC     Effect         se          t          p       LLCI       ULCI
     1.1000    -1.1229      .4767    -2.3555      .0194    -2.0627     -.1832
     1.3950    -1.0430      .4395    -2.3730      .0185    -1.9093     -.1766
     1.6900     -.9630      .4028    -2.3910      .0177    -1.7569     -.1691
     1.9850     -.8830      .3666    -2.4086      .0169    -1.6056     -.1603
     2.2800     -.8030      .3312    -2.4242      .0162    -1.4559     -.1500
     2.5750     -.7230      .2970    -2.4346      .0157    -1.3084     -.1376
     2.8700     -.6430      .2642    -2.4336      .0158    -1.1638     -.1222
     3.1650     -.5630      .2336    -2.4101      .0168    -1.0235     -.1025
     3.4600     -.4830      .2061    -2.3436      .0200     -.8893     -.0767
     3.7550     -.4031      .1831    -2.2010      .0288     -.7640     -.0421
     4.0217     -.3307      .1678    -1.9712      .0500     -.6615      .0000
     4.0500     -.3231      .1665    -1.9400      .0537     -.6513      .0052
     4.3450     -.2431      .1583    -1.5351      .1262     -.5552      .0690
     4.6400     -.1631      .1599    -1.0201      .3088     -.4782      .1520
     4.9350     -.0831      .1708     -.4864      .6272     -.4199      .2537
     5.2300     -.0031      .1896     -.0164      .9869     -.3769      .3707
     5.5250      .0769      .2142      .3589      .7200     -.3454      .4991
     5.8200      .1569      .2428      .6461      .5189     -.3217      .6355
     6.1150      .2368      .2741      .8639      .3886     -.3036      .7773
     6.4100      .3168      .3074     1.0306      .3039     -.2892      .9228
     6.7050      .3968      .3421     1.1601      .2473     -.2775     1.0711
     7.0000      .4768      .3777     1.2624      .2082     -.2677     1.2213

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        IT         .
BEGIN DATA.
      .0000     3.2402     2.5841
     1.0000     3.2402     2.0415
      .0000     4.4327     2.0054
     1.0000     4.4327     1.7861
      .0000     5.6252     1.4266
     1.0000     5.6252     1.5306
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     IT       BY       GoalProg   .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.2402     -.5426      .2263    -2.3983      .0173     -.9886     -.0966
     4.4327     -.2193      .1578    -1.3900      .1660     -.5303      .0917
     5.6252      .1040      .2235      .4654      .6421     -.3366      .5447

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    IT

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.2402     -.0642      .0496     -.1715      .0273
     4.4327     -.0256      .0249     -.0828      .0144
     5.6252      .0131      .0282     -.0352      .0827

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC          .0324      .0266     -.0136      .0930
---
```

```
************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

PROCESS model 85 with perceived break enjoyment as one of the mediators (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 85
    Y  : TM
    X  : GoalProg
   M1  : Dvng
   M2  : BrkEnjy
    W  : THC

Sample
Size:  217

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2448      .0599     2.7186     4.5270     3.0000   213.0000      .0042

Model
             coeff         se          t          p       LLCI       ULCI
constant    2.8035      .5849     4.7933      .0000     1.6506     3.9564
GoalProg    2.4085      .8685     2.7731      .0060      .6965     4.1206
THC          .4195      .1260     3.3301      .0010      .1712      .6678
Int_1       -.4612      .1896    -2.4326      .0158     -.8350     -.0875

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0261     5.9174     1.0000   213.0000      .0158
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.2402      .9140      .3174     2.8793      .0044      .2883     1.5397
```

```
     4.4327      .3640      .2242     1.6233      .1060     -.0780      .8060
     5.6252     -.1860      .3194     -.5824      .5609     -.8157      .4436

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     4.2536    47.9263    52.0737

Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.1000     1.9012      .6692     2.8409      .0049      .5821     3.2203
     1.3950     1.7651      .6168     2.8618      .0046      .5493     2.9809
     1.6900     1.6290      .5650     2.8830      .0043      .5152     2.7428
     1.9850     1.4930      .5142     2.9036      .0041      .4794     2.5065
     2.2800     1.3569      .4645     2.9213      .0039      .4413     2.2725
     2.5750     1.2208      .4164     2.9321      .0037      .4001     2.0416
     2.8700     1.0848      .3705     2.9281      .0038      .3545     1.8150
     3.1650      .9487      .3277     2.8951      .0042      .3028     1.5947
     3.4600      .8126      .2894     2.8076      .0055      .2421     1.3832
     3.7550      .6766      .2577     2.6250      .0093      .1685     1.1846
     4.0500      .5405      .2352     2.2977      .0226      .0768     1.0042
     4.2536      .4466      .2266     1.9712      .0500      .0000      .8932
     4.3450      .4045      .2247     1.7997      .0733     -.0385      .8474
     4.6400      .2684      .2279     1.1777      .2402     -.1808      .7176
     4.9350      .1323      .2442      .5420      .5884     -.3489      .6136
     5.2300     -.0037      .2712     -.0138      .9890     -.5383      .5308
     5.5250     -.1398      .3062     -.4566      .6484     -.7433      .4637
     5.8200     -.2759      .3467     -.7957      .4271     -.9593      .4075
     6.1150     -.4119      .3910    -1.0535      .2933    -1.1827      .3589
     6.4100     -.5480      .4380    -1.2510      .2123    -1.4114      .3154
     6.7050     -.6841      .4869    -1.4049      .1615    -1.6439      .2757
     7.0000     -.8201      .5372    -1.5267      .1283    -1.8790      .2388

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        Dvng       .
BEGIN DATA.
      .0000     3.2402     4.1626
     1.0000     3.2402     5.0766
      .0000     4.4327     4.6628
     1.0000     4.4327     5.0268
      .0000     5.6252     5.1631
     1.0000     5.6252     4.9770
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     Dvng     BY       GoalProg   .

**************************************************************************
OUTCOME VARIABLE:
 BrkEnjy

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5591      .3125     1.1591    24.0956     4.0000   212.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.4102      .4020     5.9958      .0000     1.6178     3.2026
GoalProg     1.0092      .5773     1.7483      .0819     -.1287     2.1472
Dvng          .3560      .0447     7.9572      .0000      .2678      .4442
THC           .2922      .0844     3.4634      .0006      .1259      .4585
Int_1        -.1909      .1255    -1.5210      .1298     -.4383      .0565
```

```
Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0075     2.3133     1.0000   212.0000      .1298
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        BrkEnjy    .
BEGIN DATA.
      .0000     3.2402     5.0829
     1.0000     3.2402     5.4735
      .0000     4.4327     5.4313
     1.0000     4.4327     5.5943
      .0000     5.6252     5.7797
     1.0000     5.6252     5.7151
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     BrkEnjy  BY       GoalProg   .

*************************************************************************
OUTCOME VARIABLE:
 TM

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3142      .0987     1.0074     4.6226     5.0000   211.0000      .0005

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.7459      .4053    11.7102      .0000     3.9470     5.5448
GoalProg     -.0779      .5420     -.1436      .8859    -1.1464      .9907
Dvng          .0802      .0475     1.6872      .0930     -.0135      .1739
BrkEnjy       .1594      .0640     2.4903      .0135      .0332      .2857
THC           .0559      .0808      .6910      .4903     -.1035      .2152
Int_1         .0271      .1177      .2302      .8182     -.2048      .2590

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0002      .0530     1.0000   211.0000      .8182
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        TM         .
BEGIN DATA.
      .0000     3.2402     6.1949
     1.0000     3.2402     6.2048
      .0000     4.4327     6.2615
```

```
     1.0000     4.4327     6.3037
      .0000     5.6252     6.3281
     1.0000     5.6252     6.4026
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     TM       BY       GoalProg   .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.2402      .0099      .1985      .0498      .9603     -.3815      .4013
     4.4327      .0422      .1377      .3062      .7597     -.2293      .3137
     5.6252      .0745      .1946      .3826      .7024     -.3092      .4582

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.2402      .0733      .0512     -.0102      .1875
     4.4327      .0292      .0265     -.0105      .0912
     5.6252     -.0149      .0308     -.0871      .0412

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.0370      .0276     -.0991      .0072
---

INDIRECT EFFECT:
 GoalProg      ->    BrkEnjy     ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.2402      .0623      .0427     -.0057      .1620
     4.4327      .0260      .0272     -.0227      .0876
     5.6252     -.0103      .0344     -.0851      .0568

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.0304      .0231     -.0824      .0074
---

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    BrkEnjy     ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.2402      .0519      .0299      .0068      .1226
     4.4327      .0207      .0169     -.0050      .0610
     5.6252     -.0106      .0207     -.0578      .0284

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.0262      .0163     -.0653     -.0018
---

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000
```

```
W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```

PROCESS model 85 with intrusive thoughts as one of the mediators (using a 95% confidence interval)

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 85
    Y  : TM
    X  : GoalProg
   M1  : Dvng
   M2  : IT
    W  : THC

Sample
Size:  217

**************************************************************************
OUTCOME VARIABLE:
 Dvng

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2448      .0599     2.7186     4.5270     3.0000   213.0000      .0042

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.8035      .5849     4.7933      .0000     1.6506     3.9564
GoalProg     2.4085      .8685     2.7731      .0060      .6965     4.1206
THC           .4195      .1260     3.3301      .0010      .1712      .6678
Int_1        -.4612      .1896    -2.4326      .0158     -.8350     -.0875

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0261     5.9174     1.0000   213.0000      .0158
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.2402      .9140      .3174     2.8793      .0044      .2883     1.5397
     4.4327      .3640      .2242     1.6233      .1060     -.0780      .8060
     5.6252     -.1860      .3194     -.5824      .5609     -.8157      .4436

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     4.2536    47.9263    52.0737
```

```
Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.1000     1.9012      .6692     2.8409      .0049      .5821     3.2203
     1.3950     1.7651      .6168     2.8618      .0046      .5493     2.9809
     1.6900     1.6290      .5650     2.8830      .0043      .5152     2.7428
     1.9850     1.4930      .5142     2.9036      .0041      .4794     2.5065
     2.2800     1.3569      .4645     2.9213      .0039      .4413     2.2725
     2.5750     1.2208      .4164     2.9321      .0037      .4001     2.0416
     2.8700     1.0848      .3705     2.9281      .0038      .3545     1.8150
     3.1650      .9487      .3277     2.8951      .0042      .3028     1.5947
     3.4600      .8126      .2894     2.8076      .0055      .2421     1.3832
     3.7550      .6766      .2577     2.6250      .0093      .1685     1.1846
     4.0500      .5405      .2352     2.2977      .0226      .0768     1.0042
     4.2536      .4466      .2266     1.9712      .0500      .0000      .8932
     4.3450      .4045      .2247     1.7997      .0733     -.0385      .8474
     4.6400      .2684      .2279     1.1777      .2402     -.1808      .7176
     4.9350      .1323      .2442      .5420      .5884     -.3489      .6136
     5.2300     -.0037      .2712     -.0138      .9890     -.5383      .5308
     5.5250     -.1398      .3062     -.4566      .6484     -.7433      .4637
     5.8200     -.2759      .3467     -.7957      .4271     -.9593      .4075
     6.1150     -.4119      .3910    -1.0535      .2933    -1.1827      .3589
     6.4100     -.5480      .4380    -1.2510      .2123    -1.4114      .3154
     6.7050     -.6841      .4869    -1.4049      .1615    -1.6439      .2757
     7.0000     -.8201      .5372    -1.5267      .1283    -1.8790      .2388

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        Dvng       .
BEGIN DATA.
      .0000     3.2402     4.1626
     1.0000     3.2402     5.0766
      .0000     4.4327     4.6628
     1.0000     4.4327     5.0268
      .0000     5.6252     5.1631
     1.0000     5.6252     4.9770
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     Dvng     BY       GoalProg   .

**************************************************************************
OUTCOME VARIABLE:
 IT

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4094      .1676     1.3293    10.6726     4.0000   212.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.4975      .4305    10.4478      .0000     3.6490     5.3461
GoalProg    -1.4212      .6182    -2.2989      .0225    -2.6398     -.2026
Dvng         -.0703      .0479    -1.4671      .1438     -.1647      .0242
THC          -.4853      .0903    -5.3722      .0000     -.6634     -.3073
Int_1         .2711      .1344     2.0172      .0449      .0062      .5361

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0160     4.0691     1.0000   212.0000      .0449
```

```
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Conditional effects of the focal predictor at values of the moderator(s):

        THC     Effect         se          t          p       LLCI       ULCI
     3.2402     -.5426      .2263    -2.3983      .0173     -.9886     -.0966
     4.4327     -.2193      .1578    -1.3900      .1660     -.5303      .0917
     5.6252      .1040      .2235      .4654      .6421     -.3366      .5447

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     4.0217    41.0138    58.9862

Conditional effect of focal predictor at values of the moderator:
        THC     Effect         se          t          p       LLCI       ULCI
     1.1000    -1.1229      .4767    -2.3555      .0194    -2.0627     -.1832
     1.3950    -1.0430      .4395    -2.3730      .0185    -1.9093     -.1766
     1.6900     -.9630      .4028    -2.3910      .0177    -1.7569     -.1691
     1.9850     -.8830      .3666    -2.4086      .0169    -1.6056     -.1603
     2.2800     -.8030      .3312    -2.4242      .0162    -1.4559     -.1500
     2.5750     -.7230      .2970    -2.4346      .0157    -1.3084     -.1376
     2.8700     -.6430      .2642    -2.4336      .0158    -1.1638     -.1222
     3.1650     -.5630      .2336    -2.4101      .0168    -1.0235     -.1025
     3.4600     -.4830      .2061    -2.3436      .0200     -.8893     -.0767
     3.7550     -.4031      .1831    -2.2010      .0288     -.7640     -.0421
     4.0217     -.3307      .1678    -1.9712      .0500     -.6615      .0000
     4.0500     -.3231      .1665    -1.9400      .0537     -.6513      .0052
     4.3450     -.2431      .1583    -1.5351      .1262     -.5552      .0690
     4.6400     -.1631      .1599    -1.0201      .3088     -.4782      .1520
     4.9350     -.0831      .1708     -.4864      .6272     -.4199      .2537
     5.2300     -.0031      .1896     -.0164      .9869     -.3769      .3707
     5.5250      .0769      .2142      .3589      .7200     -.3454      .4991
     5.8200      .1569      .2428      .6461      .5189     -.3217      .6355
     6.1150      .2368      .2741      .8639      .3886     -.3036      .7773
     6.4100      .3168      .3074     1.0306      .3039     -.2892      .9228
     6.7050      .3968      .3421     1.1601      .2473     -.2775     1.0711
     7.0000      .4768      .3777     1.2624      .2082     -.2677     1.2213

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        IT         .
BEGIN DATA.
      .0000     3.2402     2.5841
     1.0000     3.2402     2.0415
      .0000     4.4327     2.0054
     1.0000     4.4327     1.7861
      .0000     5.6252     1.4266
     1.0000     5.6252     1.5306
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     IT       BY       GoalProg   .

************************************************************************
OUTCOME VARIABLE:
 TM

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3173      .1007     1.0053     4.7231     5.0000   211.0000      .0004
```

```
Model
              coeff         se          t          p       LLCI       ULCI
constant     5.8239      .4608    12.6399      .0000     4.9156     6.7321
GoalProg     -.1361      .5443     -.2501      .8028    -1.2090      .9368
Dvng          .1261      .0419     3.0117      .0029      .0436      .2087
IT           -.1542      .0597    -2.5822      .0105     -.2720     -.0365
THC           .0276      .0837      .3296      .7420     -.1375      .1927
Int_1         .0385      .1180      .3259      .7448     -.1942      .2711

Product terms key:
 Int_1    :        GoalProg   x        THC

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0005      .1062     1.0000   211.0000      .7448
----------
    Focal predict: GoalProg (X)
          Mod var: THC      (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   GoalProg     THC        TM         .
BEGIN DATA.
      .0000     3.2402     6.2326
     1.0000     3.2402     6.2211
      .0000     4.4327     6.2655
     1.0000     4.4327     6.2999
      .0000     5.6252     6.2984
     1.0000     5.6252     6.3787
END DATA.
GRAPH/SCATTERPLOT=
 THC      WITH     TM       BY       GoalProg   .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effect(s) of X on Y:
        THC     Effect         se          t          p       LLCI       ULCI
     3.2402     -.0115      .1994     -.0577      .9540     -.4046      .3816
     4.4327      .0343      .1378      .2492      .8034     -.2373      .3060
     5.6252      .0802      .1945      .4124      .6805     -.3032      .4636

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.2402      .1153      .0556      .0229      .2387
     4.4327      .0459      .0325     -.0085      .1175
     5.6252     -.0235      .0425     -.1145      .0575

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.0582      .0313     -.1296     -.0060
---

INDIRECT EFFECT:
 GoalProg      ->    IT          ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
```

```
     3.2402      .0837      .0563      .0005      .2187
     4.4327      .0338      .0322     -.0115      .1133
     5.6252     -.0160      .0263     -.0650      .0447

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.0418      .0251     -.0982     -.0014
---

INDIRECT EFFECT:
 GoalProg      ->    Dvng        ->    IT          ->    TM

        THC     Effect     BootSE   BootLLCI   BootULCI
     3.2402      .0099      .0086     -.0033      .0297
     4.4327      .0039      .0042     -.0021      .0143
     5.6252     -.0020      .0049     -.0141      .0062

      Index of moderated mediation:
             Index     BootSE   BootLLCI   BootULCI
THC         -.0050      .0046     -.0162      .0018
---

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

------ END MATRIX -----
```