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Task-related fluctuations in action-state orientation: roles of anticipated task difficulty and task-related affect

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Abstract

Action-state orientation (ASO) refers to regulatory modes influencing intention initiation and goal pursuit. While ASO pertains to both dispositional and time- and context-sensitive states, extant research predominantly focuses on individual differences in ASO, leaving within-person dynamics and situational antecedents underexplored. Addressing this gap, the study explored task-related fluctuations in ASO (ASO-T) and its relationship with task-related affect and anticipated task difficulty. Both the pilot study (N_{person} = 62, $N_{measurement}$ = 248) and the main study (N_{person} = 165, $N_{measurement}$ = 660) employed a biweekly data collection. However, in the main study, the assessment of anticipated task difficulty and other measures was temporally separated. Results of the pilot study indicated that the measurement of ASO-T is a reliable and valid instrument and ASO-T displays substantial within-person variation. The main study findings showed that task-related negative affect, but not positive affect, mediates the relationship between anticipated task difficulty and two forms of ASO-T (hesitation and preoccupation). Additionally, task-related positive affect was more strongly related to ASO-T than task-related negative affect. These findings confirm ASO-T as a context-sensitive and malleable construct and extend the ASO research by shedding light on task-related, situational antecedents of ASO-T.

Keywords Action-state orientation · Positive affect · Negative affect · Task difficulty · Self-regulation

Introduction

Why do some individuals successfully initiate their intentions, transforming thought into action, while others remain in the realm of contemplation? What separates those who actualize their daily goals from those whose aspirations dissipate as the day unfolds? How do certain people escape the inertia of unfulfilled intentions whereas others find themselves trapped in the cycle of delay and deferment? Volumes of research in personality and social psychology have aimed to tackle these questions, delving into the cognitions, beliefs, personality traits, and situational factors that drive the realization of intentions (Ajzen & Kruglanski, 2019; Burnette et al., 2013; Muraven et al., 1998; Sheeran & Webb, 2016).

Contributing to this effort, the Action Control Theory (Koole et al., 2023; Kuhl, 1994a) seeks to answer the question of why people fail to realize their intentions despite high motivation. Centering on post-decisional phases, the Action Control Theory illuminates the volitional factors that either support or impede the initiation and fulfillment of intentions. Situated within the Action Control Theory, action–state orientation (ASO) delineates different regulatory modes that affect the way people initiate intentions and pursue objectives through to completion (Jostmann & Koole, 2010; Kuhl, 1994a). ASO is a bipolar construct, wherein action orientation and state orientation represent opposite ends. Action orientation refers to a regulatory mode that prompts change, marked by a flexible and rapid initiation of intended actions. Consequently, action orientation positively impacts the initiation and maintenance of goals. State orientation, on the other hand, entails a change-preventing regulatory mode, impeding processes that facilitate action. As a result,

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it adversely affects the initiation and completion of goals (Kazén & Quirin, 2018; Kuhl, 1984).

The research on ASO has predominantly centered around the outcomes associated with stable individual differences in action versus state orientation. This line of research indicated that action orientation was generally related to more favorable outcomes compared to state orientation. These outcomes include, among others, improved self-regulation, regulation of emotions, the pursuit of objectives, task completion, concentration, and overall performance, particularly in challenging situations (e.g., when confronted with high demands or self-threatening circumstances, see Koole et al., 2023 for a review). Consequently, extant research has primarily explored the role of individual differences in disposition towards action- versus state-oriented regulatory modes on various outcomes.

However, within the Action Control Theory, ASO is conceptualized not only as a trait-like characteristic but also as a state that is time- and environment-sensitive (Kuhl, 1992). The Action Control Theory outlines the dynamic and context-sensitive action- or state-oriented *states* that individuals may experience, influenced by external factors. Despite this, the predominant focus of ASO research has revolved around the influence of individual differences in ASO on outcomes. Consequently, an exploration of situational fluctuations in ASO from a longitudinal, within-person standpoint has remained relatively underexplored. Notably, this gap has been previously identified through repeated calls for research. Koole and Kuhl (2008) advocated for investigations into ASO variations and situational determinants of ASO. Echoing this call, Diefendorff et al. (2018) put forth intriguing ideas regarding the concept, antecedents, and consequences of momentary action–state orientation within the context of work.

In response to these previous calls, the present study develops and tests a model examining the factors that influence task-related action-state orientation (henceforth, ASO-T) in the context of academic duties, utilizing biweekly assessments for data collection. Drawing on the theory and research on ASO, we investigate whether ASO exhibits episodic variations in response to perceptions of task characteristics. To this end, our model posits an indirect relationship between anticipated task difficulty and two forms of ASO (i.e., preoccupation and hesitation) mediated by task-related positive and negative affect.

In confirming its propositions, this study aims to make several contributions to existing research. Firstly, we aim to empirically examine the idea that ASO has a substantive within-person component, which displays temporal variations and is sensitive to environmental influences (Diefendorff et al., 2018). Confirmation of this proposition complements the experimental evidence about the malleability of ASO with a more ecologically valid research design that focuses on naturally occurring, task-related variations in ASO. Moreover, the findings have the potential to guide and stimulate future research efforts such as the investigation of outcomes associated with within-person variations in ASO-T. Secondly, our investigation proposes and tests task difficulty as an antecedent that relates to state orientation through task-related affect. Therefore, this study holds the potential to illuminate the contextual, task-related factors that drive individuals toward a state orientation. Thirdly, this research extends its reach to broader implications within the domain of self-regulation. Specifically, it has the potential to uncover a state closely linked with impaired self-regulation, thereby enriching our understanding of how task-specific variables and affect can influence situational self-regulatory states that exacerbate the gap between intended actions and actual behaviors.

A within-person conceptualization of action–state orientation

ASO significantly influences the regulatory processes involved in initiating and maintaining chosen actions (Jostmann & Koole, 2010). The adoption of an action- or state-oriented response to a situation hinges on a combination of situational and dispositional factors (Kuhl, 1987). Situational factors such as negative mood, boredom, time constraints, fear of failure, extrinsic motivation, and perceived loss of control act as drivers leading individuals into a state orientation (Kuhl, 1985, 1992). Distal factors encompass, besides individual differences in ASO, experiences of trauma, thwarted basic needs, or insufficient stimulation (Koole et al., 2006; Kuhl, 1992). Moreover, the Action Control Theory underscores the interplay between situational and dispositional factors on action versus state orientation. When faced with extremely challenging circumstances (e.g., confronting an exceedingly demanding or threatening situation), individuals are likely to become state-oriented, regardless of their disposition towards action or state orientation (Koole et al., 2006; Kuhl, 1985). Correspondingly, the disparities between action-oriented and state-oriented individuals diminish or dissipate under favorable conditions (e.g., in an autonomy-supporting setting, Diefendorff et al., 2006; Koole et al., 2005). Consequently, highlighting the role of context-dependent variability, the Action Control Theory states that the role of dispositional differences in ASO on the action- or state-oriented regulatory modes is contingent on the characteristics of a situation. This proposition is supported by a series of studies that used various forms of demand or threat induction procedures in experimental settings to investigate the interaction between situations and individual differences in ASO (Baumann et al.,

2005; Gröpel, 2016; Jostmann & Koole, 2006; Koole & Jostmann, 2004; Waldenmeier et al., 2023).

Consistent with the preceding discussions, Diefendorff et al. (2018) pointed out the possibility that ASO may encompass a within-person component that meaningfully varies with contextual and dynamic aspects of the environment and following a comprehensive review, presented a compelling argument for approaching ASO with a within-person perspective. Several experimental studies also provide initial support to the proposition that ASO has a malleable and situation-sensitive component. For example, one of the earliest studies on ASO induced a state orientation by probing participants to reflect on their failures about the preceding performance task and current emotional states in an experimental setting (Kuhl, 1981). Similarly, van Putten et al. (2009) and van Putten (2015) successfully induced state (action) orientation in the participants by having them ponder over their thoughts and feelings (reflect on what can be done to improve the situation) about a missed opportunity. Therefore, we expect that the perceived characteristics of academic tasks (i.e., task difficulty and task-related affect) may play a role in producing task-related, momentary ASO.

Task-related affect mediates the association between anticipated task difficulty and task-related action-state orientation

The Action Control Theory outlines dimensions of ASO that are associated with different cognitive activities that impede or facilitate action intentions. This study focuses on preoccupation and hesitation (labeled by the stated-oriented pole of ASO) that are related to the cognitive activities that affect the *initiation* of intentions. Preoccupation describes the experience of intrusive thoughts and emotions that interfere with intention initiation. These thoughts can involve past, present, and future states and can be related to real or imaginary situations (Kazén et al., 2003; Kuhl, 1994b). Preoccupation typically relates to uncontrollable and ruminative thoughts about experiences or situations such as a past negative experience, an anticipated failure, or a tempting action alternative. State-oriented preoccupation can also be induced through exposure to repeated failure or self-relevant information (Kuhl, 1981, 1996). Hesitation is directly related to the regulatory processes associated with difficulties in the enactment of an intention. In other words, hesitation refers to a state-oriented regulatory mode that inhibits regulatory facilitation, resulting in indecisiveness and procrastination (Chowdhury & Pychyl, 2018; Kuhl, 1994b). Hedonically aversive states (e.g., boredom, stress) and task characteristics (e.g., monotony, difficulty) are among the factors that lead individuals into state-oriented hesitation and impair processes associated with intention initiation (Kuhl, 1984).

According to the Action Control Theory, unfavorable conditions (e.g., demanding, self-threatening, or frustrating situations) are among the factors that may impair effortless regulatory functioning and induce a state orientation characterized by a fixation on thoughts or emotions and hesitation rather than a focus on intention initiation (Koole & Fockenberg, 2011). Task difficulty can serve such a situational factor triggering a state orientation (Kuhl, 1984). Put differently, a task is expected to drive individuals into a state orientation to the extent that accomplishment of it is anticipated to be difficult. Difficult academic tasks require complex decision-making and the execution of actions involving multiple steps. Under such demanding situations, the Action Control Theory posits that individuals transition to a regulatory mode characterized by a state-oriented hesitation, utilizing stored cognitive representations of explicit action plans and intentions to address the demands (Koole et al., 2023).

Moreover, academic tasks typically represent self-relevant performance situations, the successful completion of which is important for students (Pascarella & Terenzini, 2005). Consequently, difficulty perceptions may invite intrusive thoughts and rumination about a potential failure or anxiety about the performance of a task (Matthews et al., 2000), triggering a state-oriented preoccupation. Lastly, the difficulty perceptions of a task could be accompanied by aversiveness toward the task and reluctance to carry it out (Kumar & Jagacinski, 2011; Milgram et al., 1995), making alternative action tendencies more tempting and hampering the initiation of the current intention (Kuhl, 1994a).

We further reasoned that the affect triggered by a task has a crucial role in carrying out the influence of anticipated task difficulty on the state orientation. Tasks can trigger different array of emotions such as joy or frustration depending on the appraisal of their characteristics (Beal et al., 2005; Pekrun & Perry, 2014). The affective experiences tied to academic tasks are typically related to activities and outcomes that involve achievement and significantly impact the task completion process and outcomes (Pekrun, 2006). Tasks may shape negative and positive emotions of themselves as a function of their difficulty. As the perceptions of its difficulty increase, a task may be anticipated as too demanding, the perceived control over the enactment and performance of the task diminishes, and the probability of success for such a task is threatened (Efklides, 2006; Pekrun & Stephens, 2010). Such an appraisal is likely to increase task-related negative affect (e.g., feelings of anxiety and sadness) and a decrease task-related positive affect (e.g., feelings of hope and enjoyment, Raccanello et al., 2018). Supporting this prediction, studies that utilized experimental (Laybourn

et al., 2022) and multilevel (Tanaka & Murayama, 2014) designs demonstrated an association between task difficulty and task-related positive and negative affective states.

Theorizing on ASO describes the interplay between situation, affective states, and self-regulatory functioning (Kuhl, 2000; Kuhl et al., 2021). The Action Control Theory highlights the central role of worsened affect in triggering a state orientation (Jostmann et al., 2005). Specifically, demanding situations typically reduce the positive affect and in turn, drive individuals into a state-oriented hesitation because such circumstances usually require individuals to deliberate and think to deal with the situation (Kuhl, 2000; Friederichs et al., 2020). Self-threatening situations, on the other hand, are associated with increases in negative affect. High levels of negative affect maintain a state-orientated preoccupation, characterized by rumination and an inability to detach from the intrusive thoughts (Kuhl et al., 2021; Quirin & Kuhl, 2022). The theory also notes that successful regulation of affect facilitates self-regulatory functioning which is reflected as an escape from state orientation (Kuhl, 2000; Kuhl et al., 2021). In this regard, the Action Control Theory posits that generating positive affect energizes a person toward an escape from a state-oriented hesitation, and reducing negative affect facilitates regulatory systems that inhibit state-oriented preoccupation (Koole et al., 2023: Kuhl, 2000).

These propositions are widely supported by experimental evidence (Baumann & Kuhl, 2002; Jostmann & Koole, 2007; Kazén & Kuhl, 2005). For example, Kuhl and Kazén (1999) investigated the association between positive affect and regulatory facilitation (i.e., action-oriented regulatory mode) using a modified version of the Stroop task. They experimentally manipulated affect by presenting word primes with positive, negative, or neutral affective valence before each Stroop task trial. Supporting their expectations, the Stroop interference effect, defined as higher response times in naming a color hue when there is an incongruence between the name of the color and the color used to print it, diminished when participants were primed with positive words. The authors concluded that the generation of positive affect (a shift from low to high levels of positive affect) is important for regulatory facilitation characterized by prompt and decisive actions (i.e., an escape from state-oriented hesitation).

The current study builds on the premise that academic tasks represent self-relevant aspects of students' academic lives. Increasing difficulty perceptions of a task therefore likely to constitute a demanding and self-threatening condition that drives individuals into a task-related state orientation through affective processes. Taken together, we hypothesize students will report high task-related negative affect and low task-related positive affect to the extent that they anticipate the accomplishment of the task to be difficult. Task-related positive affect, in turn, will be negatively associated with task-related state orientation, and task-related negative affect will be positively associated with task-related state orientation. Even though Action Control Theory suggests differential associations between affect and state orientation (i.e., positive affect-hesitation and negative affect-preoccupation), we expected significant associations between task-related affect and both dimensions of ASO-T. This was because all the constructs in our model pertain to the perceptions about a specific academic task, potentially increasing the shared association between them. However, in line with the propositions of the Action Control Theory, we predicted a stronger association of hesitation with positive affect than negative affect, and a stronger association of preoccupation with negative affect than positive affect.

Altogether, we hypothesize that task-related positive affect mediates the association of task difficulty with hesitation (Hypothesis 1a) and preoccupation (Hypothesis 1b) and task-related negative affect mediates the association of task difficulty with hesitation (Hypothesis 2a) and preoccupation (Hypothesis 2b). Moreover, we hypothesize that the association of hesitation with positive affect is stronger than with negative affect (Hypothesis 3a), and the association of preoccupation with negative affect is stronger than with positive affect (Hypothesis 3b).

Our line of argument thus far indicates that the perceptions about how difficult the task *will be* to accomplish would shape the affective experiences of the task. This approach also enabled us to establish a causal ordering between the anticipated difficulty perceptions and affect by separating the two with a time lag. However, even though we did not have expectations about the differential association of anticipated vs. experienced difficulty perceptions with affect, research indicates people's anticipations may have different associations with outcomes than their experiences of the same phenomena (e.g., Beymer et al., 2023). We, therefore, assessed difficulty perceptions as anticipated (i.e., prospective ratings) and experienced (i.e., retrospective ratings) and examined them for differential associations.

Measurement of task-related action-state orientation

As there was not a previously established measurement of task-related, within-person ASO, one aim of the present study is to assess a scale that captures ASO-T. To this aim, we build on the operationalizations and sample items suggested by Diefendorff et al. (2018). Specifically, the measurement of ASO-T involves participants' retrospective ratings of task-related hesitation and preoccupation concerning a specific task. Task-related hesitation is defined

as an inability or difficulty in initiating a task. Task-related preoccupation, on the other hand, is defined as the extent to which an individual fails to direct the self-regulatory mechanisms to the task at hand because of uncontrollable, intrusive thoughts. In addition to the eight items suggested by Diefendorff et al. (2018), we created four more items that capture task-related hesitation and preoccupation, totaling six items per dimension.

To assess the validity of the ASO-T measure, we investigate whether trait- and state-level components of ASO-T display the expected relationships with the theoretically relevant constructs. First, we expect significant and positive correlations between the hesitation and preoccupation dimensions of the ASO-T measure and the corresponding dimensions of the Action Control Scale that assesses individual differences in ASO (Kuhl, 1994b). Second, we expect a positive and modest to moderate correlation between the hesitation dimension of ASO-T and procrastination given that procrastination is one of the prominent behavioral manifestations of state-oriented hesitation (Chowdhury & Pychyl, 2018). Similarly, we expect a positive and modest to moderate correlation between the preoccupation dimension of ASO-T and thought intrusions as it is a characteristic of state-oriented preoccupation (Diefendorff et al., 2000). Third, drawing on the findings that suggest ASO and personality are related yet distinct constructs (Koole et al., 2023), we expect significant but modest correlations between ASO-T dimensions and conscientiousness. Fourth, the Action Control Theory describes the interplay between affect regulation and ASO. Specifically, regulating (e.g., self-generating) positive affect is negatively associated with hesitation, and regulating (e.g., reducing) negative affect is negatively associated with preoccupation (Baumann et al., 2007; Quirin & Kuhl, 2022). Therefore, we expect a significant and negative correlation between task-related positive affect and task-related hesitation and a significant and positive correlation between task-related negative affect and task-related preoccupation. Lastly, given a state orientation typically necessitates mentally demanding cognitive processes such as exerting effort to handle perseverating ruminative thoughts or an inner conflict driven by a state of indecisiveness (Kuhl et al., 2021), we expected a positive correlation between task-related ASO and regulatory depletion.

Method

Pilot study participants and procedure

We approached psychology freshmen enrolled in a psychology course to participate in our pilot study data collection. Sixty-seven students agreed to participate in exchange for course credit. We retained participants who completed all surveys, as an unbalanced and small cluster size may lead to estimation bias (Arend & Schäfer, 2019; McNeish, 2014; Oshchepkov & Shirokanova, 2022). Therefore, five participants were excluded from the data due to an incomplete response in one or more measurements. Our final sample consisted of 62 participants, 45 of whom were women, with a mean age of 19.76 years ($SD = 2.19$).

We utilized an online survey tool to collect data and created e-mail and messaging application groups to distribute the survey links. Once the survey link was sent, we provided the participants with three days to complete the questionnaire. On the second day, we sent a group message to remind nonresponders to fill out the survey. To match the questionnaires, we instructed participants to create a code name and use it throughout the data collection process.

We examined the course syllabi of the sample to decide on a suitable time lag between measurements. Given the overall frequency of academic tasks, such as quizzes, exams, presentations, assignments, and projects, we decided on a two-week lag. The surveys were administered in four waves, each separated by a two-week lag. In the first section of the survey, participants indicated whether they had completed any academic tasks in the past two weeks. The survey ended for those who did not complete any academic tasks. Participants who completed academic tasks chose one and provided a brief description of it, using one to three sentences. They rated the task-related surveys, which included the ASO-T, task-related positive and negative affect, and regulatory depletion measures. Additionally, they completed person-level measures, i.e., trait ASO, procrastination, thought occurrence, and conscientiousness, during the first wave of data collection.

Pilot study measures

Two experts participated in translating scales that lack Turkish versions, employing the back-translation procedure. The factor analysis results for these scales can be found in the online supplementary materials.

Task-related action-state orientation

We assessed participants' task-related action versus state orientation (ASO-T) levels by building on the items offered by Diefendorff et al. (2018). We included two additional items into each subscale, totaling six items per dimension (see online supplementary materials for the full list of items). Responses to the items are rated on a 5-point scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*, with higher scores indicating state orientation. The psychometric

evaluation of this scale is detailed in the Results section, and the items are listed in Table 1. For the pilot study sample, the within-person ω values for task-related hesitation and preoccupation were 0.84 and 0.80, respectively.

Task-related positive and negative affect

We evaluated participants' task-related positive and negative affect by adapting the items from the short form of the Positive and Negative Affect Schedule (Mackinnon et al., 1999) to reflect task-related affective states. After reading the prompt "The task I completed made me feel…", participants used a 5-point scale (1 = *very slightly or not at all*, 5 = *extremely*) to rate their agreement with 10 affect adjectives (five items per dimension) such as excited (positive affect item) and upset (negative affect item). In the pilot study sample, the within-person ω values for task-related positive and negative affect were 0.78 and 0.85, respectively.

Regulatory depletion

We employed the 5-item regulatory depletion scale used by Johnson et al. (2014) to assess shorter-term depletion. Participants rated the extent to which the items (e.g., Right now, my mental energy is running low) reflected how they felt using a 7-point scale (1 = *very slightly or not at all*, 7 = *very much*). The within-person ω value was 0.89 in the pilot study.

Action-state orientation

We utilized the hesitation (8 items) and preoccupation (9 items) subscales of the Turkish translation (Peker & Meşe, 2022) of the Action Control Scale (ACS) which was originally developed by Kuhl (1994b) to measure action versus state orientation. This scale presents participants with situations where they choose between two response options—one action-oriented and one state-oriented. For instance, a sample item from the hesitation subscale reads: "When I know I must finish something soon: (a) I have to push myself to get started, (b) I find it easy to get it done and over with." Similarly, an example from the preoccupation subscale is: "When I'm in a competition and lose every time: (a) I can soon put losing out of my mind, (b) The thought that I lost keeps running through my mind." We coded state-oriented responses as 1 and action-oriented responses as 0. Subsequently, we totaled these scores to compute the state-oriented hesitation and preoccupation. The ω values for hesitation and preoccupation were 0.81 and 0.78, respectively.

Procrastination

We used five items from the Tuckman Procrastination Scale (Tuckman, 1991) which was translated into Turkish by Özer et al. (2013). Participants rated statements (e.g., I am an incurable time waster) on a 5-point scale (1 = *strongly disagree*, 4 = *strongly agree*). The ω was 0.83 in the current study.

Thought intrusions

We assessed thought intrusions with the 9-item task-relevant worries dimension of the Thought Occurrence Questionnaire (Sarason et al., 1986). Participants indicated their agreement with statements reflecting concerns they experienced while trying to concentrate (e.g., I think about what someone will think of me) on a 5-point (1 = *never*, 5 = *very often*) scale. The ω value observed in the current study was 0.84.

Conscientiousness

We used the 9-item conscientiousness dimension of the Big Five Inventory developed by Benet-Martínez and John

Table 1 The factor loadings and ICC values of items of ASO-T

	Within-person		Between-person		ICC
Items	Hesitation	Preoccupation	Hesitation	Preoccupation	
1. It took a lot of willpower for me to start working on this task.	0.64		0.87		0.24
2. I was able to easily begin working on this task (R).	0.82		0.98		0.31
3. I found it difficult to get going on this task.	0.86		0.99		0.35
4. I found it difficult to start this task and kept postponing it.	0.80		0.94		0.34
5. I was able to forget about other things I need to do and focus only on this task (R).		0.73		0.97	0.35
6. I kept thinking about other things that had recently occurred.		0.69		0.88	0.37
7. I was able to put off-task things out of my mind and work on this task (R).		0.80		0.96	0.34
8. I struggled to focus on the task as my mind was occupied with other thoughts.		0.78		0.96	0.34

Note. $N_{w/i\ (pilot)} = 908$, $N_{b/w(pilot)} = 227$. ICC: Intra-class correlation. Higher scores indicate state orientation. R: indicates action-oriented statements that were reverse-scored before mean calculation

(1998), translated into Turkish by Sümer and Sümer (2003), and employed by Sümer et al. (2005). Participants rated their agreement on the statement (e.g., I see myself as someone who does things efficiently) on a 5-point (1 = *disagree strongly*, 5 = *agree strongly*) scale. Reliability analysis revealed the ω value of 0.78 in the present study.

Main study participants and procedure

We recruited our sample by approaching psychology undergraduates and students enrolled in psychology courses offered by the psychology department. In exchange for course credit, 192 students agreed to participate. However, we removed 27 participants from the data due to inconsistencies between pre- and post-task descriptions (e.g., participants provided different task descriptions or forgot the task they described in the pre-task assessment, $N = 4$), and missing assessments as a result of task-related (i.e., task cancellation, postponement, and no task to be delivered in the following two weeks, $N = 7$) or participant-related (i.e., careless responding, $N = 2$; non-delivery of a survey for one or more waves of measurement, $N = 14$) factors. Ultimately, our final sample consisted of 165 participants (138 women) with a mean age of 21.35 years ($SD = 3.82$). Among them, the majority were psychology students ($N = 129$), followed by students from sociology ($N = 13$) and other programs ($N = 23$). Furthermore, there were 43 freshmen, 24 sophomores, 80 juniors, and 18 seniors in the sample.

To estimate the minimum detectable effect size, we conducted a power analysis by following the procedure outlined in Arend and Schäfer (2018) and using the R package SIMR (Green & MacLeod, 2016). Our results indicated that the minimum detectable standardized within-person association with 80% power was 0.127, given that alpha = 0.05 and intra-class correlation (ICC) = 0.40. We obtained contact information from participants to administer biweekly surveys and reminder messages, using a procedure similar to that of our pilot study. However, this time we requested that participants describe a task that they were required to complete within two weeks. Participants then completed the anticipated task difficulty scale for this task. Two weeks later, they were asked to complete a two-part questionnaire. In the first part, participants again described the same task and indicated whether they had completed it. Those who had not completed the task indicated the reason and proceeded to the second part. Participants who had completed the task rated the experienced task difficulty, task-related affect, and ASO-T scales. In the second part, participants described another task that they would complete within the following two weeks and rated the task difficulty assessment for this new task. This process was repeated to obtain four longitudinal within-person measurements, which were collected in five waves. We excluded participants from the e-mail and messaging application groups if they did not respond to a measurement wave. This decision was made to maintain a complete dataset, as missing responses during the second, third, and fourth waves would result in incomplete data for two measurement points.

Main study measures

Anticipated and experienced task difficulty

Anticipated task difficulty was assessed using the 4-item task difficulty dimension from the Task-Goal Attribute Questionnaire by Steers (1976), tailored to represent a specific academic task. Participants rated the extent to which they anticipated difficulty in completing their tasks on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). An illustrative item from the scale is: "This task will require a great deal of effort from me to complete it." Experienced task difficulty was measured using the same scale but captured participants' retrospective perceptions, (e.g., This task required a great deal of effort from me to complete it). Reliability analysis revealed the ω values were 0.79 and 0.76 for anticipated and experienced task difficulty, respectively.

Task-related action-state orientation

Task-related action-state orientation was assessed using the scale details of which were previously outlined in the Pilot Study. The ω values for hesitation and preoccupation were 0.87 and 0.85, respectively.

Task-related positive and negative affect

Task-related positive and negative affect were assessed using the scale previously detailed in the Pilot Study. The ω values for positive affect and negative affect were 0.77 and 0.81, respectively.

Data analysis

Pilot study

In the development and evaluation of the ASO-T scale, we followed guidelines for creating measures of state personality traits (Horstmann & Ziegler, 2020). We used Mplus 8 (Muthén & Muthén, 1998–2017) to conduct multilevel confirmatory factor analysis (MCFA) and evaluate the factor structure of ASO-T. MCFA allowed us to examine the level-specific (i.e., within- and between-person) and simultaneous model estimations. To obtain a larger sample size for MCFA, we combined data from both the pilot and main

studies, resulting in a dataset with 908 responses from 227 participants. We used a robust maximum likelihood estimator (MLR) and calculated Satorra-Bentler scaled chi-square values for the nested model comparisons (Satorra & Bentler, 2001). Before the factor analyses, we examined the intraclass correlation coefficients (ICCs) of the items to determine the proportion of within- and between-person variances. To compute coefficient ω at both within- and between-person levels, we followed the procedure outlined in Lai (2021). We opted for model-based ω over Cronbach's α because ω does not make the essential tau equivalence assumption and provides more accurate estimates (Flora, 2020).

In evaluating the model fit, we considered both exact and relative fit indicators because the chi-square test is sensitive to large sample sizes. Following standard guidelines (Hox et al., 2017; Hu & Bentler, 1999), we used the root-mean-square error of approximation (RMSEA) < 0.08, the comparative fit index (CFI) > 0.90, the Tucker-Lewis index (TLI) > 0.90, and the standardized root mean square residual (SRMR) < 0.08 to infer an acceptable model fit.

However, relying solely on the conventional cutoff criteria may not be an ideal way of model evaluation unless the tested model is similar in structure to the model the cutoff criteria are derived from (West et al., 2023). Moreover, in the context of overall MCFA model evaluation, global fit indices may perform sub-optimally in detecting misspecifications in the between-person part of a model (Hsu et al., 2015; Padgett & Morgan, 2021).

To address these issues, we performed two additional model inspections. First, we assessed the level-specific model fit using the partial saturation technique outlined in Ryu and West (2009). In addition to the simultaneous estimation of within- and between-person components in the MCFA, we separately analyzed each component by specifying the hypothesized factor structure at one level and a saturated model at the other level. This approach allowed us to evaluate the model fit information at each level of analysis. Second, we followed the approach described in McDonald (2010) and examined the residual correlations of models for large values (e.g., > 0.10). This inspection complemented the global fit evaluation by helping to identify any significant misspecifications in the MCFA that needed to be addressed (McDonald & Ho, 2002).

We aimed to reduce the number of items in ASO-T for future uses given that long questionnaires may increase the responding burden and in turn, lead to insufficient effort in responding in studies that use repeated assessments (Eisele et al., 2022; Fisher & To, 2012). This procedure also enabled us to locate and drop poor-performing or redundant items. We conducted an MCFA with 12 items, inspecting modification indices to identify sources of poor fit such as cross-loadings and correlated item residuals. After the item selection, we evaluated the model fit of the two-factor MCFA with hesitation and preoccupation dimensions and compared it to the one-factor model in which all items load on a single task-related ASO. We then analyzed the partially saturated two-factor models and examined model fit at each level. Lastly, we investigated the cross-level isomorphism of the ASO-T since the between-level component of ASO-T represents aggregates of within-person characteristics. Stapleton et al. (2016) referred to such constructs as configural cluster constructs for which cross-level isomorphism serves as a construct validation by ensuring that the construct has a similar interpretation across levels of analysis (Tay et al., 2014). To test cross-level isomorphism, we constrained factor loadings of items to be equal across within- and between-person levels and compared it to the unconstrained model. A nonsignificant chi-square difference test indicated that the factor loadings are invariant across levels, which would signify a strong metric isomorphism (Tay et al., 2014).

To investigate the validity of ASO-T at the between-person level, we first aggregated the two ASO-T dimensions and then computed the correlations between aggregated ASO-T dimensions and trait measurements. Furthermore, we examined the validity of ASO-T at the within-person level by computing the correlations of within-person ASO-T with the corresponding within-person measurements.

Main study

We employed multilevel path analyses to test our hypotheses. All hypotheses were tested in a single model. Before the model tests, we computed ICCs to estimate the proportion of variance at the within- and between-person levels for the dependent and mediating variables. Additionally, we estimated the internal consistency of the measures using model-based ω values. To examine whether the study measures capture distinct constructs, we performed a five-factor confirmatory factor analysis (CFA) where all items were loaded onto their respective factors. We ran the CFA models using the "TYPE = COMPLEX" command in Mplus, which accounts for the non-independence of the data by providing corrected standard errors. We opted for this approach over MCFA because it addresses the clustering in a less complex way (i.e., MCFA would require us to identify between- and within-person parts, which would make the model overly complex, given the 24 items), and it is less affected by small cluster size (McNeish et al., 2017). Moreover, controlling for the nested structure rather than modeling it in both levels was consistent with our goal of testing the distinctiveness of the study measures to be used in a within-person-only model. We compared the five-factor model to two alternative four-factor models. The first four-factor alternative model (comparison model A) was specified by loading

ASO-T dimensions onto a single factor, and the second four-factor alternative model (comparison model B) was constructed by loading task-related positive and negative affect onto a single factor.

We specified the hypothesized associations in the within-person model and estimated the variances and covariances of the variables that had both within- and between-person components (i.e., the ASO-T dimensions and task-related positive and negative affect) in the between-person model. We also estimated the covariance between task-related positive affect and negative affect and the covariance between hesitation and preoccupation in the within-person part of the model. To examine the role of task-related deviations from an individual's average task difficulty ratings on the task-related affect, we centered task difficulty around the person-mean. Finally, we employed 20,000 resampled Monte Carlo simulations to compute confidence intervals for the indirect effects (Selig & Preacher, 2008).

Results

Item selection and factor analysis of task-related action-state orientation

We conducted a two-factor MCFA with 12 items to examine items for refinement of ASO-T. The model fit of this initial model was poor, $\chi^2(107) = 793.140$, $p < .001$; RMSEA = 0.084; CFI = 0.909; TLI = 0.888; $SRMR_{w/i}$ = 0.149; $SRMR_{b/w}$ = 0.240. We examined modification indices for sources of poor fit and removed two items from each dimension. The 12-item ASO-T and the details of item selection are provided in online supplementary materials.

Table 2 shows the model fit information of MCFAs of tested models. The results revealed that the two-factor model with eight items provided a good fit for the data. By contrast, the model fit of the one-factor model was poor. The MCFA results of the partially saturated models showed that both the saturated between-level and the saturated within-level models displayed an acceptable fit to the data. The comparison of the two-factor model with the loadings-constrained model indicated that two-factor ASO-T displays cross-level isomorphism, Δscaled X^2 (8) = 8.55, $p = .38$. Lastly, we examined the residual correlations between the items. The residuals ranged between–0.08 and 0.07 for the within-person model and–0.06 and 0.09 for the between-person model. Altogether, these results indicated that two-factor ASO-T shows factorial validity.

The ICC values of ASO-T items ranged between 0.24 and 0.37, which indicated that a significant proportion of variance in ASO-T items is accounted for by both between- and within-person levels (see Table 1). These results provide initial support for the within-person conceptualization of ASO-T. Table 1 also displays item factor loadings obtained from two-factor MCFA. The factor loadings ranged between 0.64 and 0.86 for the within-person model and 0.87 and 0.99 for the between-person model. The model-estimated correlations between hesitation and preoccupation were 0.76 and 0.91 for the within-person and between-person models, respectively.

Reliability and validity of the task-related action-state orientation

The ω values for hesitation were 0.90, 0.86, and 0.69 for overall, within-person, and between-person models, respectively. The ω estimations for preoccupation were 0.89, 0.84, and 0.72 for overall, within-person, and between-person models, respectively.

Table 3 shows the descriptive statistics and correlations of ASO-T dimensions with within- and between-person variables used to assess validity. Consistent with the

Table 2 The results of confirmatory factor analyses

	χ^2	df	RMSEA	CFI	TLI	$SRMR_{w/i}$	$SRMR_{b/w}$
Pilot study							
One-factor model	591.309	40	0.123	0.839	0.775	0.118	0.180
Two-factor model	190.195	38	0.066	0.956	0.935	0.039	0.026
Between-saturated model	103.729	19	0.070	0.975	0.927	0.039	0.018
Within-saturated model	38.203	19	0.033	0.994	0.984	0.012	0.034
Constraints imposed model	193.380	46	0.059	0.957	0.948	0.044	0.125
Main study							
Five-factor model	699.039	198	0.062	0.930	0.918	0.070	
Comparison model A	1039.572	202	0.079	0.882	0.866	0.074	
Comparison model B	1591.601	202	0.102	0.805	0.777	0.122	

Note. $N_{w/i\ (pilot)} = 908$, $N_{b/w(pilot)} = 227$. $N_{w/i\ (main)} = 660$, $N_{b/w(main)} = 165$. SRMR value for the analyses of the main study refers to the overall SRMR. The error variance between two items of the negative affect scale was set free in the confirmatory factor analyses of the main study. Comparison model A: Model in which task-related action-state orientation items are loaded onto a single factor. Comparison model B: Model in which positive and negative affect items are loaded onto a single factor. Df: degrees of freedom, RMSEA: root-mean-square error of approximation, CFI: comparative fit index, TLI: Tucker-Lewis index, SRMR: standardized root mean square residual

Table 3 Descriptive statistics and raw correlations among variables of the pilot study

	1	2	3	4	5	6	7	8	9	10
Within-person variables										
1. Hesitation (ASO-T)		0.71**	−0.36**	0.29**	0.39**					
2. Preoccupation (ASO-T)	0.84**		−0.43**	0.38**	0.49**					
3. Positive affect	−0.40**	−0.42**		−0.23**	−0.45**					
4. Negative affect	0.39**	0.52**	−0.12		0.32**					
5. Depletion	0.51**	0.60**	−0.53**	0.40**						
Between-person variables										
6. Hesitation (ACS)	0.31*	0.26*	−0.46**	−0.12	0.28*					
7. Preoccupation (ACS)	0.24	0.33**	−0.17	0.29*	0.33**	0.02				
8. Procrastination	0.42**	0.38**	−0.42**	−0.07	0.39**	0.65**	0.18			
9. Thought occurrence	0.04	0.27*	0.10	0.39**	0.05	−0.09	0.40**	−0.07		
10. Conscientiousness	−0.33**	−0.32*	0.37**	−0.07	−0.24	−0.54**	0.01	−0.67**	−0.02	
$Mean_{w/i}$	3.32	3.17	2.57	2.18	4.77					
$SD_{w/i}$	1.07	1.02	0.88	0.97	1.61					
$Mean_{b/w}$	3.32	3.17	2.57	2.18	4.77	4.42	5.27	2.46	3.27	3.51
$SD_{b/w}$	0.78	0.78	0.64	0.66	1.25	2.51	2.57	0.69	0.74	0.67

$N_{w/i} = 248$, $N_{b/w} = 62$. The values below the diagonal show the associations between aggregated within-person variables and between-person variables. The values above the diagonal display the relationships among within-person variables. ASO-T: task-related action-state orientation scale, ACS: Action control scale, SD: standard deviation

Table 4 Descriptive statistics and raw within-person correlations among variables of the main study

	1	2	3	4	5	6
1. Anticipated task difficulty						
2. Experienced task-difficulty	0.55**					
3. Task-related positive affect	−0.03	0.13**				
4. Task-related negative affect	0.40**	0.40**	−0.22**			
5. Task-related hesitation	0.17**	0.11**	−0.42**	0.42**		
6. Task-related preoccupation	0.15**	0.05	−0.50**	0.44**	0.73**	
Mean	4.75	4.40	2.57	2.36	3.44	3.31
SD	1.29	1.35	0.97	1.04	1.09	1.08

Note. $N_{w/i} = 660$, $N_{b/w} = 165$. SD: standard deviation, $^{**}p < .01$

predictions of the Action Control Theory, hesitation was significantly and negatively correlated with positive affect, preoccupation was significantly and positively correlated with negative affect, and both dimensions were significantly correlated with depletion at the within-person level. At the between-person level, the aggregated hesitation dimension of ASO-T was significantly correlated with the hesitation dimension of the ACS, and the aggregated preoccupation dimension of the ASO-T was significantly correlated with the preoccupation dimension of the ACS. As expected, procrastination was significantly and positively correlated with the aggregated hesitation, and thought occurrence was significantly and positively correlated with the aggregated preoccupation. The magnitude of the correlations was within the expected range. Lastly, both hesitation and preoccupation were significantly but modestly correlated with conscientiousness. Altogether, these results confirm our expectations and provide initial support for the construct validity of ASO-T.

Hypothesis tests

Table 4 displays the descriptive statistics and correlations among the study variables. The ICC scores for task-related positive affect, task-related negative affect, task-related hesitation, and task-related preoccupation were 0.46, 0.38, 0.37, and 0.41, respectively, confirming the necessity of a multilevel approach. The results are again in support of the view that ASO displays both between- and within-person variation. The CFAs revealed that the five-factor model, where anticipated task difficulty and other variables are modeled, provided an acceptable fit to the data and a better fit than the two comparison models (see Table 2). Altogether, the results indicated the distinctiveness of the study measures.

Table 5 displays the path coefficients for the hypothesized model. Hypothesis 1 proposed that task-related positive affect mediates the association of task difficulty with (a) hesitation and (b) preoccupation. The results showed that, although slightly below the critical significance value, the relationship between task difficulty and positive affect is not

Table 5 The results of multilevel path analysis

	Positive affect		Negative affect		Hesitation		Preoccupation	
	estimate	SE	estimate	SE	estimate	SE	estimate	SE
Anticipated task difficulty	-0.05	0.03	0.24***	0.03				
Positive affect					-0.48***	0.06	-0.57***	0.05
Negative affect					0.23***	0.05	0.18***	0.04
R^2	0.01		0.08		0.25		0.33	
Experienced task difficulty	0.02	0.03	0.27***	0.04				
Positive affect					-0.48***	0.06	-0.57***	0.05
Negative affect					0.23***	0.05	0.18***	0.04
R^2	0.001		0.11		0.25		0.33	

Note. ***p <.001

significant, b = -0.05, SE = 0.03, p =.08. The relationship of task-related positive affect with hesitation, b = -0.48, SE = 0.06, p <.001, and preoccupation, b = -0.57, SE = 0.05, p <.001 was significant. Given the non-significant association between task difficulty and task-related positive affect, we did not proceed with Monte Carlo calculations for confidence intervals of indirect effects. The results did not provide support for Hypothesis 1.

Hypothesis 2 proposed that task-related negative affect mediates the association of task difficulty with (a) hesitation and (b) preoccupation. The results showed a significant and positive association between task difficulty and task-related negative affect, b = 0.24, SE = 0.03, p <.001. The association of task-related negative affect with hesitation, b = 0.23, SE = 0.05, p <.001, and preoccupation, b = 0.18, SE = 0.04, p <.001, was also significant. Therefore, to test Hypothesis 2, confidence intervals around the indirect effects were calculated by 20,000 resamples Monte Carlo simulation. The results revealed that the indirect association between task difficulty and hesitation through task-related negative affect was significant, coefficient = 0.055, 95%CI[0.028, 0.086]. Similarly, the indirect association between task difficulty and preoccupation through task-related negative affect was significant, coefficient = 0.044, 95%CI[0.021, 0.069]. Altogether, these results confirmed Hypothesis 2.

Hypothesis 3 predicted (a) a stronger association of hesitation with positive affect than negative affect, and (b) a stronger association of preoccupation with negative affect than positive affect. To test Hypothesis 3a, we imposed an equality constraint on the path from negative affect to hesitation (0.23) and the absolute value of the path from positive affect to hesitation (0.48) and inspected for model fit reduction. A significant model fit reduction, signified by a significant chi-squared difference, indicated that the two paths are not equal in magnitude. The results showed that model fit was significantly worse for the constrained model, Δscaled X^2 (1) = 7.32, p =.007, which confirms Hypothesis 3a. Hypothesis 3b was rejected given the stronger association of preoccupation with positive affect than negative affect. Altogether, results provide partial support for Hypothesis 3.

Table 5 also shows the results of the multilevel path model for the experienced task difficulty. Although there were differences in the magnitude of the relationships, the patterns of significance in this model were the same as the model that included anticipated task difficulty. These results highlight that anticipated and experienced task difficulty perceptions operate similarly in their relationships with task-related affect.

Discussion

Among the elements of Action Control Theory, ASO has arguably drawn the greatest scholarly interest. However, while numerous studies across psychology disciplines have explored the implications of action versus state orientation on self-regulatory functioning (Koole et al., 2023), a predominant focus has been on individual differences in ASO. Consequently, there remains a notable gap in understanding context-specific, episodic shifts in ASO. Addressing this, the current study examined associations between task-related action-state orientation (ASO-T) and task-related antecedents with an episodic, within-person framework. Our findings largely support the hypothesized relationships, which we elaborate on in subsequent sections, discussing their research implications and limitations.

Both the pilot and main studies revealed meaningful task-related fluctuations in ASO within individuals. In the pilot study, ASO-T dimensions exhibited significant and expected correlations with task-related positive affect, negative affect, and regulatory depletion. Supporting Action Control Theory, task-related hesitation was negatively associated with task-related positive affect, suggesting a connection between hesitation and low positive affect. In contrast, task-related preoccupation was positively associated with task-related negative affect. Moreover, the main study underscored that a significant portion of the variance

in hesitation (63%) and preoccupation (59%) stemmed from within-person changes, surpassing the variance accounted for by stable ASO-T levels. Furthermore, the results highlighted substantial context-specific variability, evidenced by confirmation of anticipated relationships between ASO-T dimensions and task-related affect.

These findings align with Action Control Theory's conceptualization of ASO as both an individual difference variable *and* a state influenced by dispositional and situational factors (Kuhl, 1992). The Action Control Theory emphasizes that the activation of action- or state-oriented regulatory modes can arise from stable individual differences in ASO or situational factors contingent on context or person. Our study complements this perspective by adopting an event-based, within-person methodology. In doing so, we address Diefendorff et al.'s (2018) call and confirm their predictions regarding the existence of a substantial within-person component in ASO. Furthermore, our results resonate with research indicating that constructs traditionally viewed as stable individual differences, such as personality (Fleeson, 2001) and dispositional goal orientation (Yeo et al., 2009), also exhibit meaningful within-person fluctuations.

Contrary to Hypothesis 1, the results did not support significant mediated associations between task difficulty and ASO-T through task-related positive affect. The association between task difficulty and task-related positive affect did not attain statistical significance, indicating that the anticipation of task difficulty did not diminish task-related positive affect. This result was unexpected, given previous findings demonstrating that increased task difficulty tends to diminish positive emotions (Layborun et al., 2022; Tanaka & Murayama, 2014), as well as Action Control Theory's theoretical stance linking challenging situations with diminished positive affect (Jostmann & Koole, 2007). Importantly, analyses incorporating retrospective task difficulty ratings yielded a parallel pattern of results, dismissing one potential explanation for the non-significant link between task difficulty and positive affect.

One plausible explanation for these findings could be the mismatch between the negatively valenced nature of task difficulty, typically perceived as undesirable, and the positive affect associated with the task. The independent relation perspective on affect posits that positive and negative affect are distinct dimensions with separate origins and correlates (Watson & Tellegen, 1985). Supporting this perspective, Watson (1988) utilized a within-person design with daily data collection and discovered stronger associations between positively valenced activities and positive affect compared to negative affect. Conversely, the association between negatively valenced activities and negative affect was stronger than that with positive affect. A similar pattern emerged in the study by Kennedy-Moore et al. (1992), indicating stronger associations between valence-congruent activities and affect. Consequently, the incongruence between task difficulty's negative valence and positive affect might explain the absence of significant association.

Alternatively, individual differences in ASO may have a moderating role in the relationship between task difficulty perceptions and positive affect, offering another potential explanation. Specifically, perceptions of task difficulty may be associated with lower positive affect among participants with higher decision-related state orientation but not for participants with decision-related action orientation. While the moderating role of dispositional differences in ASO was beyond the scope of the present study, this perspective highlights an intriguing avenue for future exploration. Finally, the design characteristics of the study may play a role. The retrospective nature of task-related affect ratings, wherein participants recalled their emotional responses to specific tasks, could introduce bias. Considering research suggesting superior recall for negative as opposed to positive affective experiences (Baumeister et al., 2001), potential inaccuracies in recalling positive task-related affect could be at play. This underscores the need for further research employing varied methodological approaches to comprehensively test these relationships.

Hypothesis 2 , which proposed a mediated relationship between task difficulty and ASO-T through negative affect, found support in our findings. Anticipations of task difficulty were associated with task-related hesitation and preoccupation via heightened task-related negative affect. These results align with Action Control Theory's propositions, emphasizing the impact of situational factors and affective processes on episodic shifts in ASO (Koole et al., 2023; Kuhl, 1984). Specifically, challenging or self-threatening situations disrupt seamless regulatory functioning, prompting a state orientation marked by an excessive focus on intentions and intrusive, action-inhibiting thoughts (Kuhl, 1984). In this context, the regulation of positive and negative affect plays an important role in activating or inhibiting ASO (Baumann et al., 2007; Kuhl, 2000). Consistent with these assertions, both the correlations and model tests indicate that negative affect stemming from task difficulty perceptions correlates with task-related state orientation. Notably, while not serving as a mediating mechanism, task-related positive affect also emerged as a significant predictor of ASO-T. Collectively, these outcomes address the call by Koole and Kuhl (2008) for research examining situational antecedents of ASO. Task-related affect appears integral to understanding state orientation, with task-related negative

affect also serving as an intermediary mechanism linking task difficulty to ASO-T.

Hypothesis 3 posited a stronger association between hesitation and positive affect than negative affect, as well as a stronger link between preoccupation and negative affect than positive affect. This hypothesis found partial support. Specifically, positive affect exhibited a stronger correlation with both hesitation and preoccupation than negative affect did. Put differently, task-related positive affect was more strongly associated with a task-related state orientation than task-related negative affect. This pattern of results aligns with ASO research that manipulates task characteristics to induce demand perception and explores the link between action versus state orientation and positive affect (Friederichs et al., 2020; Kuhl & Kazén, 1999). Specifically, positive affect triggered by academic tasks displayed a stronger association with state orientation than did negative affect. Nonetheless, the findings also revealed that, as a perception of demand, task difficulty did not correlate with task-related positive affect. This underscores the need for further investigation into situational determinants of task-related positive affect, which could be linked to specific task attributes (e.g., monotony) or broader perceptions of demand (e.g., academic overload).

Furthermore, in response to a specific academic task, hesitation and preoccupation exhibit a notable overlap, arguably more pronounced than their dispositional conceptualizations. This substantial overlap is underscored by a strong correlation (r=.71) between the two constructs. Kuhl's (1981) research offers insights supporting the notion that, when confronted with challenging situations, both preoccupation and hesitation components function in tandem. Specifically, this study revealed that exposing participants to failure and directing their attention to it induced a state-oriented preoccupation, which, in turn, led to challenges in initiating a subsequent task (i.e., state-oriented hesitation). Consequently, the observed similarities in the relationship patterns of the two forms of ASO-T and task-related affect may be due to this pronounced overlap. Unlike individual differences in ASO, distinct forms of task-related state orientation manifest a closer similarity, as evidenced by their analogous associations with task-related affect. However, it is important to note that the results of the factor analysis pointed out a two-factor structure. This suggests that though closely related, task-related hesitation and preoccupation are distinct constructs. Therefore, a potential aim for future research could be to explore antecedents or outcomes that specifically relate to task-related preoccupation versus hesitation.

Several limitations to this study warrant consideration when interpreting the findings. First, in striving for a more ecologically valid assessment of ASO-T and affect, the study relied on retrospective ratings concerning academic tasks completed over the preceding two weeks. This approach might introduce biases stemming from recall errors. Future research might adopt designs employing more frequent assessments, such as daily data collection, to ascertain the robustness of these results. Second, both the measurement of task-related affect and ASO-T occurred within the same data collection period. This raises concerns about potential spurious relationships due to common method variance, emphasizing the need for studies that separate the assessment of these constructs temporally. Third, the study sample primarily comprised female undergraduate students, many of whom were studying psychology. To enhance the generalizability of the findings, future research should include more diverse samples and contexts, such as workplaces. Fourth, the study was conducted in Turkey, highlighting the need for future replication research to assess the robustness and generalizability of the findings. Lastly, while the present study focused on exploring antecedents linked to ASO-T, it did not delve into the outcomes associated with ASO-T. This represents a promising avenue for subsequent research, offering insights into the consequences of ASO-T and enriching our understanding of its broader nomological network.

Conclusion

Employing an event-based, within-person methodology, this study demonstrated that ASO exhibits meaningful within-person variability, as evidenced by its substantive associations with the examined constructs. Furthermore, the findings highlighted task-related affect as a factor strongly correlated with ASO-T, while task difficulty emerged as an antecedent influencing ASO-T through its association with task-related negative affect. In doing so, this research advances prior studies on ASO by empirically supporting a conceptual framework that portrays ASO as a time- and context-sensitive construct. Concurrently, the results make notable contributions to Action Control Theory by confirming the relationships among situational factors, affective states, and ASO within its state interpretation.

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Data availability The data that support the findings of this study are openly available at https://osf.io/8pu75/. Demographic details of the participants were omitted from the data to maintain anonymity.

Declarations

Ethical approval This study follows the ethical standards of APA and received approval (protocol #01114) from the Institutional Review Board at Ege University.

Submission The authors declare this is an original submission that has not been published before and that is not currently under review elsewhere.

Preregistration This study was not preregistered.

Conflict of interest The authors declare they know of no conflicts of interest associated with this publication.

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