AMERICAN PSYCHOLOGICAL ASSOCIATION

Psychological Assessment

ISSN: 1040-3590

2022, Vol. 34, No. 2, 176–187
https://doi.org/10.1037/pas0001072

Understanding Indecisiveness: Dimensionality of Two Self-Report Questionnaires and Associations With Depression and Indecision

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Indecisiveness is a prevalent and impairing symptom among individuals with major depressive disorder (MDD). However, the use of different self-report questionnaires and factor analysis methods in past research has been a barrier to understanding the nature of indecisiveness in depression. Addressing these barriers could help to elucidate the dimensionality and validity of indecisiveness questionnaires, which in turn would clarify the relation of indecisiveness to depression. In our study of an online sample of adults ($N = 602$), we administered two commonly used indecisiveness questionnaires, a depressive symptom questionnaire, and a behavioral task assessing indecision. Through confirmatory factor analysis, we found that the combined indecisiveness questionnaires were best characterized by a two-factor model, with one factor corresponding to straightforwardly worded items and the other corresponding to reverse-scored items. Based on post hoc analyses involving tests of discriminant validity, we think that these two factors represent indecisiveness and decision-making confidence, respectively. Indecisiveness, but not decision-making confidence, was strongly associated with depressive symptoms. Indecisiveness was also strongly associated with behavioral indecision, a finding that helps to validate indecisiveness as a construct. We posit that the assessment of indecisiveness could be enhanced by excluding the reverse-scored items because they appear to represent decision-making confidence, a distinct construct from indecisiveness. Excluding the reverse-scored items revealed a robust link between indecisiveness and depressive symptoms, highlighting the importance of targeting this symptom in depression research.

Public Significance Statement

Questionnaires that assess indecisiveness can likely be improved by only including straightforwardly worded items and removing reverse-scored items; the reverse-scored items seem to capture decision-making confidence, which is separate from indecisiveness. Indecisiveness, but not decision-making confidence, was strongly associated with symptoms of depression.

Keywords: depression, indecisiveness, indecision, decision-making, confirmatory factor analysis

Supplemental materials: https://doi.org/10.1037/pas0001072.supp

Indecisiveness is a symptom of major depressive disorder (MDD; American Psychiatric Association [APA], 2013). It is prevalent among diagnosed individuals (Mitchell et al., 2009) and negatively impacts treatment outcomes even after accounting for baseline depressive symptoms (Uher et al., 2012). It is also associated with impairment and distress in everyday functioning (e.g., interpersonal difficulties, diminished self-esteem, and quality of life; Ferrari, 1994; Germeijs & De Boeck, 2002; Taillefer et al., 2016). Given that indecisiveness characterizes many people with MDD and influences both treatment and functional outcomes, it is critical to understand

This article was published Online First October 14, 2021.
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We have no conflicts of interests to disclose. This research was supported by two funding sources at Washington University in St. Louis awarded to Haijing Wu Hallenbeck: The Spencer T. Olin Fellowship and a research grant from Department of Psychological & Brain Sciences.
The study data, materials, and analysis code and output are available at https://osf.io/g37xj/. The study was not preregistered.
Haijing Wu Hallenbeck played lead role in conceptualization, formal analysis, funding acquisition, investigation, methodology, project administration, visualization, writing of original draft and writing of review and editing. Thomas L. Rodebaugh played supporting role in formal analysis, methodology, resources and writing of review and editing. Renee J. Thompson played lead role in supervision, supporting role in conceptualization, funding acquisition, methodology, resources and writing of review and editing.
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the nature of indecisiveness in MDD. To do so, clarity is needed on which features compose indecisiveness and on whether indecisiveness is best understood as a unidimensional or multidimensional construct.

Indecisiveness has been defined as the tendency to experience difficulty making decisions across multiple life domains (e.g., career, relationships, health; Di Fabio et al., 2013; Germeijs & De Boeck, 2002; Osipow, 1999; Rassin, 2007). The two most widely used questionnaires broadly assess indecisiveness through a wide range of features; importantly, the features assessed by these questionnaires are represented in the only theory that seeks to explain indecisiveness that we are aware of (Rassin, 2007). These two questionnaires have the same name, the Indecisiveness Scale; we distinguish them by the following notations, the Indecisiveness Scale, Frost and Shows (IS-FS; Frost & Shows, 1993, later revised by Rassin et al., 2007) and Indecisiveness Scale, Germeijs and De Boeck (IS-GDB; Germeijs & De Boeck, 2002). The IS-FS was created for use in populations with obsessive-compulsive tendencies and the IS-GDB for use in career counseling. The two questionnaires assess several common features including: perceiving decision-making as difficult; taking a long time to make decisions; delaying decisions; avoiding decisions; worrying about decisions; and regretting decisions made. Each questionnaire contains unique features as well. The revised IS-FS assesses lacking confidence for making decisions and having anxiety about making decisions, whereas the IS-GDB assesses not knowing how to make decisions, leaving decisions to others, and changing decisions, resulting in each measure excluding features of indecisiveness that may prove important.

It is not clear whether the IS-FS and IS-GDB measure the same construct of indecisiveness, as they have also been found to have different factor structures. These divergent findings may be partly driven by the use of different analytic methods. Germeijs and De Boeck (2002) found that the IS-GDB was best characterized by a one-factor model, using a principal component analysis (PCA). PCA is better suited for data reduction rather than for determining the factor structure of a latent variable, however (e.g., Costello & Osborne, 2005). In contrast, Spunt et al. (2009) found the revised IS-FS was best characterized by a two-factor model, represented by aversive and avoidant indecisiveness, which corresponded to (a) report of finding making decisions unpleasant and (b) report of avoiding and finding decisions difficult. Both factors had a mix of straightforwardly worded and reverse-scored items. This solution was reached through an exploratory factor analysis (EFA) followed by a confirmatory factor analysis (CFA) in an independent sample. CFA is regarded as a strong, theory-driven test of factor structure (e.g., Brown, 2015).

Including items from both the IS-FS and IS-GDB would allow for a more comprehensive investigation of indecisiveness. In addition to examining whether the two questionnaires are assessing the same construct, the broader inclusion of indecisiveness features may elucidate more complex possibilities for its factor structure. We think that it is worth evaluating a three-factor structure that corresponds to cognitions (e.g., perceived difficulty), emotions (e.g., anxiety and regret), and behaviors (e.g., taking a long time to make decisions). This stems from the theory on indecisiveness, in which features of indecisiveness were conceptualized as falling under these three categories (Rassin, 2007); in fact, some researchers have focused on examining only one of these indecisiveness categories (e.g., emotions: Elaydi, 2006; behaviors: Potworowski, 2010). Moreover, bifactor models could be employed to further shed light onto dimensionality by comparing common versus unique variance of different factors (Holzinger & Swineford, 1937). They can also be used to evaluate factors that may be method-related; past research has demonstrated the importance of assessing the meaning of straightforwardly worded versus reverse-scored items, such as in the context of assessing social anxiety (e.g., Weeks et al., 2005). Research on indecisiveness would benefit from testing models based on both prior empirical work and theory, as well as using rigorous factor analysis methods (e.g., CFA; Brown, 2015).

Although there is no consensus on the dimensionality of indecisiveness, the relation of indecisiveness to depression has been studied. We use "depression" to refer to the broader literature on depression assessed categorically (e.g., MDD diagnoses) or dimensionally (e.g., symptom levels), and "depressive symptoms" specifically for research using self-reported depression measures. There is consistent evidence indicating that depressive symptoms are associated with increased indecisiveness in nonclinical samples. Depressive symptoms have positively correlated with scores on both the original and revised IS-FS (e.g., Di Schiena et al., 2013; Lauderdale et al., 2019; Rassin et al., 2007); the IS-GDB has not been used in the study of depression to the best of our knowledge. Depressive symptoms have also been positively associated with scores on three questionnaires tapping specific features of indecisiveness: delaying decisions and leaving decisions to others (e.g., Di Schiena et al., 2013; Leykin & DeRubeis, 2010; Umeh & Omari-Asor, 2011); regret about decisions (Leykin & DeRubeis, 2010; Schwartz et al., 2002); and avoiding decisions, brooding and anxiety about decisions, and lower confidence for making decisions (Leykin & DeRubeis, 2010).

Most research examining indecisiveness, including studies on depression, has used self-report questionnaires, which assess a person's perceptions of the *tendency* to be indecisive across situations and require a person to retrospectively recall his or her decision-making experiences. This may be problematic in the context of MDD, in which there are negative biases in memory (LeMoult & Gotlib, 2019) that could lead depressed individuals to over-report their indecisiveness. Research could be bolstered by behavioral approaches that assess in-the-moment decision-making and include an objective measurement of decision-making time (van Randenborgh et al., 2010). Because behavioral approaches are constrained to studying specific decision situations, they are thought to assess *indecision*, which is conceptually related to but distinct from indecisiveness (Di Fabio et al., 2013; Germeijs & De Boeck, 2002; Osipow, 1999). That is, *indecision* is specific to a situation, whereas *indecisiveness* generalizes across situations. Career indecision, for example, has been found to represent a separate latent variable from that of indecisiveness, and the two were positively correlated and showed discriminant validity (Germeijs & De Boeck, 2002). In addition to extending the preliminary findings that depressive symptoms are associated with higher indecision (van Randenborgh et al., 2010), taking a behavioral approach to assessing indecision would help to validate indecisiveness questionnaires, which has thus far been done sparingly and using hypothetical decisions (e.g., Frost & Shows, 1993).

In the present study, we administered the two self-report questionnaires that broadly assess indecisiveness (i.e., the revised IS-FS and the IS-GDB), a self-report questionnaire assessing depressive symptoms, and the behavioral indecision task by van Randenborgh et al. (2010) to a large sample of adults recruited online through two crowdsourcing platforms. Because these platforms can provide diverse samples of the U.S. population, including diversity in age and race/ethnicity, findings from studies have the benefit of being more generalizable than student samples (e.g., Buhrmester et al., 2011). Given our large sample size, we were also adequately powered to evaluate depression dimensionally and to understand its associations with indecisiveness and indecision.

Aim 1 was to investigate the dimensionality of the revised IS-FS and IS-GDB when combined. We used CFA to compare seven factor structures: Model 1: one-factor model (Germeijs & De Boeck, 2002); Model 2: two-factor model (i.e., aversive and avoidant; Spunt et al., 2009); Model 3: three-factor model (i.e., cognitive, affective, and behavioral; Rassin et al., 2007); Models 4 and 5: the corresponding bifactor models for Models 2 and 3; Model 6: a bifactor model with two method-related factors corresponding to items from the IS-FS versus IS-GDB; and Model 7: a bifactor model with two method-related factors corresponding to whether items were straightforwardly worded or reverse-scored. Models 1–5 were treated as competing hypotheses, and Models 6–7 were treated as possibilities to rule out.

Aim 2 was to examine the relations among depression, indecisiveness, and indecision. We hypothesized that depressive symptoms, indecisiveness, and indecision will be positively associated with one another. First, although depressive symptoms and indecisiveness have thus far been examined in a piecemeal fashion, depressive symptoms have been reliably associated with a wide range of indecisiveness features. This would likely mean that depressive symptoms will be related to indecisiveness regardless of indecisiveness' factor structure. Second, because we assessed indecision behaviorally and included an objective assessment (i.e., decision-making time), a positive association between indecision and indecisiveness would help to validate indecisiveness as a construct. Third, a positive association between indecision and depressive symptoms would help to clarify the nuances of decision-making difficulty in depression. It would show that this decision-making difficulty is represented in-the-moment as well as through a general tendency, and that the difficulty is both subjective and objective in nature.

Method

Participants

A total of 602 adults participated in the study. Participants were recruited online from Mechanical Turk (MTurk; $n = 301$) and Prolific Academic (ProA; $n = 301$), which was found to produce data similar or higher in quality to MTurk (Peer et al., 2017). The sample had an average age of 35.44 ($SD = 10.99$) years and was composed of approximately half men (50.2%) and women (48.8%). The racial/ethnic identity of the sample was: Caucasian (79.5%), Hispanic/Latinx (12.6%), Black/African American (10.7%), Asian/Asian American (4.2%), Other/Multiracial (4.2%), and Native American/Alaskan Native (1.5%). Inclusion criteria were: 18–77 years of age, live in the U.S., speak English as a primary language, have at least a 98% approval rate for completion of previous studies, and have access to headphones or earphones and a computer web camera (see indecision task below). Exclusion criterion was failure to pass the comprehension or either of the two attention checks (see Procedure below). A total of 57 participants ($n = 40$ from MTurk, $n = 17$ from ProA) were excluded for failure to pass the comprehension or attention checks and were not included in the final sample of 602 participants.

We used the Monte Carlo method (Brown, 2015) to conduct a priori power analyses to determine sample size. For a conservative estimate of sample size, one of the more complex models was used for all analyses.[1] This model assumed that indecisiveness was represented by three factors (i.e., cognitive, affective, and behavioral; Model 3 in Figure 1), which were each correlated with separate factors of depression and indecision (correlated with each other). For the population values, all factor loadings and correlations were set at .4, to represent relatively weak associations. Sample sizes of 400, 500, 600, 700, and 800 resulted in good coverage values (all .91–.95) and statistical power (all .99–1.00). Parameter biases and standard error biases were as follows: all $\leq 9.0\%$ for $N = 400$, all $\leq 7.5\%$ for $N = 500$, all $\leq 6.2\%$ for $N = 600$, all $\leq 6.3\%$ for $N = 700$, and all $\leq 5.0\%$ for $N = 800$. We balanced parameter precision with study feasibility and chose a target sample size of 600, which seemed adequately powered to detect significant effects.

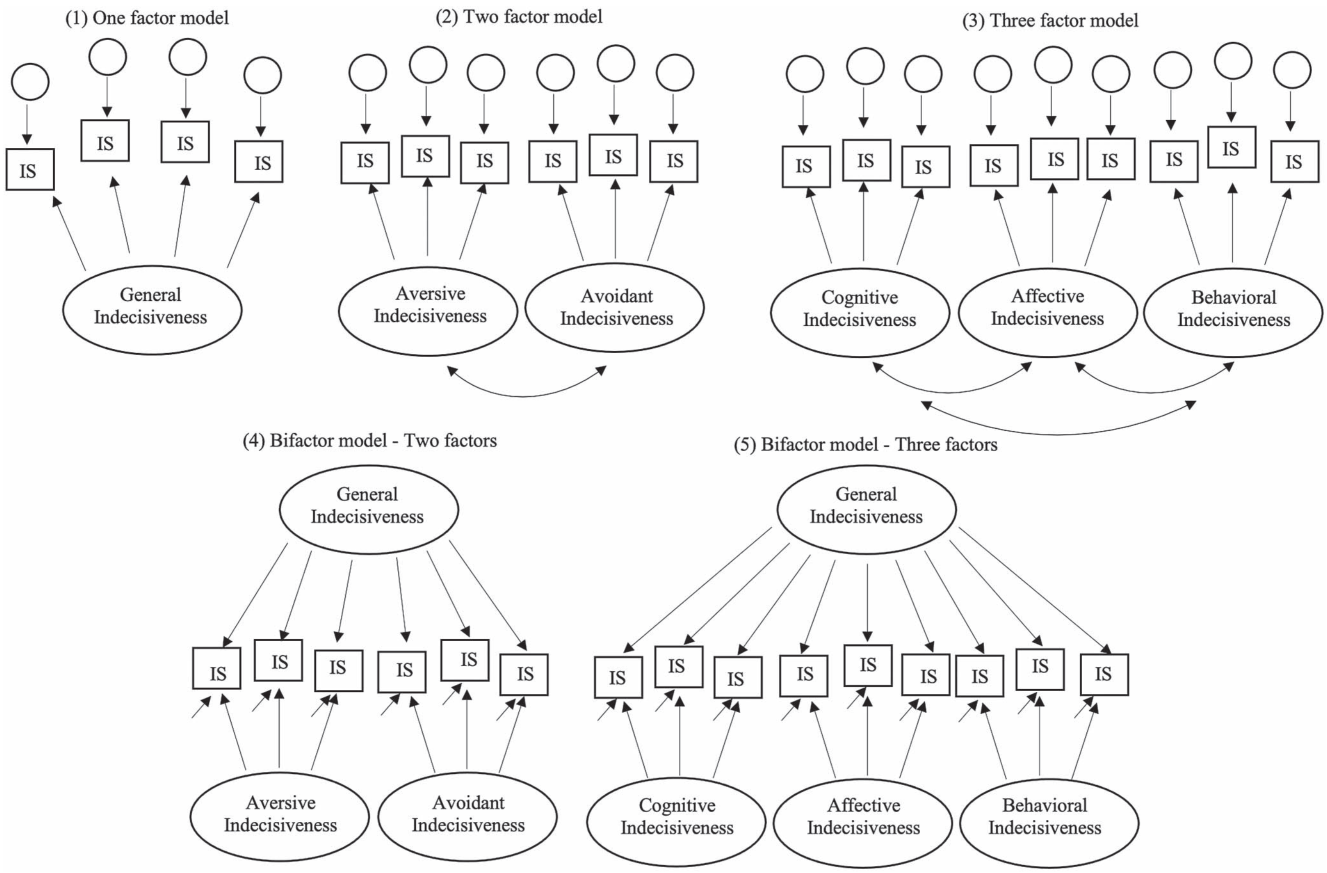
Procedure

Participants provided informed consent and completed the main portion of the study, which involved the indecisiveness, depression, and indecision measures administered in a randomized order across participants. To address concerns that studies from crowdsourcing platforms have been contaminated by low-quality responses driven by internet robots (i.e., bots; Bai, 2018), one comprehension check and two attention checks were included. The comprehension check occurred during the indecision task and asked participants to write a brief open-ended response about what they were being asked to do; acceptable responses included something about making decisions. The two attention checks, which asked participants to select a certain rating, occurred during the indecisiveness and depression self-report measures.

Participants who successfully completed the study were compensated \$1.50 (MTurk) and \$1.65 (ProA)—the latter corresponds with the ProA minimum compensation rate of \$6.00/hr. In addition, 15 participants won a \$5 e-gift card to Target or Walmart (see indecision task below). After outliers representing unusually long durations (i.e., >1,000 min, perhaps due to inactivity on Qualtrics; $n = 23$ or 7.6% of the MTurk sample; $n = 0$ of the ProA sample) were excluded, the average times were 18.45 min ($SD = 7.52$, min = 7.93, max = 55.00) and 19.84 min ($SD = 9.34$, min = 7.65, max = 111.48) for MTurk and ProA, respectively; this

[1] Due to an oversight, depression in the power analysis model was modeled as a single factor with all 20 CES-D indicators when it should have been modeled as a higher-order factor with four lower-order factors. A post hoc power analysis of the Aim 2 final model revealed that $N = 602$ was adequately powered (coverage = .94–.96, power = 1.00, parameter and standard error biases $\leq$ 2.7%) to detect significant associations among indecisiveness (i.e., straightforwardly worded and reverse-scored factors), depression (higher-order), and indecision (one-factor). Additionally, due to testing multiple models in Aim 1, we ran post hoc power analyses that were based on the ability to discriminate between model fit (i.e., RMSEA) of nested models (MacCallum et al., 1996; Preacher & Coffman, 2006). Our sample size of $N = 602$ was adequately powered (power $\geq$ .99) to detect small differences in RMSEA (.01) in our Aim 1 nested models (i.e., Models 2–9 nested under Model 1, and Model 3 nested under Model 2).

Figure 1
Competing Indecisiveness Measurement Models Tested in Aim 1



Note. IS = Indecisiveness Scale; FS = Frost and Shows; GDB = Germeijs & De Boeck. The actual number of IS indicators (in boxes) in each model is 33; not all IS indicators are shown due to space limitations. For the breakdown of how specific IS indicators load onto different factors, refer to Supplemental Materials S1.

difference was marginally significant, $t(577) = -1.96$, $p = .05$. This protocol was approved by a university institutional review board.

Measures

Indecisiveness

To assess indecisiveness, we administered two self-report questionnaires. The first questionnaire was the revised IS-FS (Rassin et al., 2007; Spunt et al., 2009), which has 11 items (six reverse-scored) that are answered on a 5-point scale (1 = *strongly disagree,* 5 = *strongly agree*). In our sample, the items had good internal consistency ($\alpha = .88$). The second questionnaire was the IS-GDB (Germeijs & De Boeck, 2002), which has 22 items (11 reverse-scored) that are answered on a 7-point scale (0 = *strongly disagree,* 6 = *strongly agree*). We reverse-scored the positively worded items so that higher scores indicate higher indecisiveness, which is more conceptually straightforward and parallel with the scoring for the revised IS-FS. In our sample, IS-GDB items had high internal consistency ($\alpha = .94$). Both measures have good convergent and discriminant validity (e.g., positive associations with neuroticism but not extraversion; Di Fabio & Palazzeschi, 2012; Germeijs & Verschueren, 2011). Because the IS-GDB was developed partly based on the IS-FS, there are four items with almost identical wording. Supplemental Materials S1 contains a complete list of items from both questionnaires.

Depressive Symptoms

We assessed depressive symptoms using the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which was developed for use in the general population. The CES-D has 20 items (four reverse-scored) that ask about a range of symptoms and emotions experienced over the past week. The items are answered on a 4-point scale (0 = *rarely or none of the time*, 3 = *most or all of the time*). Scores of 16 or greater represent those at risk of having clinical depression (Radloff, 1977). The CES-D does not have an item assessing decision-making difficulty, so associations between depressive symptoms and indecisiveness or indecision were not driven by items similar in content. In our sample, the items had high internal consistency ($\alpha = .94$).

Indecision

We assessed indecision using the behavioral task by van Randenborgh et al. (2010). In this task, participants make four decisions (randomly presented) about "the next part of the study," which never occurs but serves to provide the impression that they will soon experience the consequences of their decisions. For each of the four decisions, participants choose between two options, about which they can first view up to 15 pieces of information (for each option). Pieces of information about the two options are presented in alternating order and are presented one-by-one, advanced by participants; which of the two options presented first was counterbalanced. After the first three pieces of information are presented, participants can choose to end viewing information and to make the decision at any time; if participants view all 30 pieces of information, they make their decision at the end.

The four decisions concern: (a) the role to assume in the next part of the study (i.e., whether to play a role of a boss or employee), given that they would be working with a partner; (b) the task to work on (i.e., whether to work on improving the organization of a hospital or the schedule of a sales manager); (c) the additional reward they would be entered into a raffle for (i.e., which of two cafes they prefer a gift card for); and (d) an aversive stimulus they would be exposed to (i.e., a mildly unpleasant sound or taste). Upon debriefing, all participants indicated that they thought the "next part of the study" would happen (van Randenborgh et al., 2010); thus, they likely believed that their decisions had real consequences.

This task has three outcome measures for each of the four decisions: decision-making difficulty (self-report), decision-making confidence (self-report), and decision-making time (objective measurement). Decision-making difficulty and confidence are assessed immediately after each decision is made using a 7-point scale (1 = *not at all*, 7 = *very much*). *Decision-making difficulty* is assessed with the item "The decision was difficult." *Decision-making confidence* is assessed as the average of three items: "I am confident that I made the right decision," "My strategies for decision-making were adequate," and "I feel competent to put the decision into action." In our sample, the internal consistencies of the items were good (αs = .87–.91). *Decision-making time* was recorded as the total time spent viewing pieces of information.

We adapted this task in two ways.[2] First, because the task was in German, the 30 pieces of information for each decision were translated into English. We used guidelines for adapting measures for cross-cultural research (Guillemin et al., 1993; Sousa & Rojjanasrirat, 2011), which specify using multiple translators for each stage of the translation process: doing initial translations from the source language (German) to the target language (English), doing back-translations from the target language to the source language, and coming to a consensus on the final items in the target language. Four advanced graduate students fluent in German and English served as the translators. Second, the task needed to be adapted for online administration to people from a broad geographic distribution. We modified the two options for the reward decision: As part of a raffle, participants could choose whether they would like an e-gift card from Target or Walmart (instead of two local cafes). We also modified an option for the aversive stimulus decision: In lieu of being administered an unpleasant taste, participants could choose to look at an unpleasant photo; the other option of listening to an aversive sound was not modified.

To ensure that the English translations and modified decision options were comparable to the original task, we conducted pilot testing ($N = 29$; a separate sample from $N = 602$ in the main study) via MTurk that followed the pilot testing procedures in van Randenborgh et al. (2010). After completing the modified task, participants rated the valence of the pieces of information for each decision option (−3 = *negative*, +3 = *positive*). Similar to van Randenborgh et al. the mean valence of the two options within a decision did not differ between each other for all four decisions, ts(28) < 1.43, ps > .16, and neither of the two options within a decision was chosen more often than the other, χ^2s(1) < 2.80, ps > .10. The mean valence of the reward decision options and aversive stimulus decision options were positive ($M = 1.11$, $SD = 0.80$) and negative ($M = -0.24$, $SD = 1.43$), respectively. Participants likely believed that their decisions had real consequences because the majority (75.9%) indicated that they thought that the partner task would occur. The four decisions and the corresponding pieces of information are included in Supplemental Materials S2 and can also be accessed at https://osf.io/g37xj/.

Analysis Plan

We calculated descriptive statistics using SPSS Statistics for Macintosh Version 25.0. We used Mplus Version 8.3 (Muthén & Muthén, 1998-2017) to run CFA for both aims of the study. The study data and the Mplus code and output for our models can be accessed at https://osf.io/g37xj/. Because our measures involve self-report ratings on a Likert-type scale (except for decision time from the indecision task), the models were fitted with the robust weighted least squares estimator (WLSMV), which is optimal for categorical data and can also accommodate continuous data (Brown, 2015). WLSMV is capable of handling nonnormal distributions of frequencies of data in different categories (i.e., of different Likert-type ratings).

To address *Aim 1*, which was to investigate the dimensionality of the revised IS-FS and IS-GDB, we ran CFAs to test seven measurement models of indecisiveness. These were: Model 1: one-factor model; Model 2: two-factor model with aversive and avoidant factors; Model 3: three-factor model with cognitive, affective, and behavioral factors; Models 4 and 5: the corresponding bifactor models for Models 2 and 3; Model 6: a bifactor model with two specific factors corresponding to IS-FS and IS-GDB items; and Model 7: a bifactor model with two specific factors corresponding to straightforwardly worded and reverse-scored items. Models 1–5 were treated as competing hypotheses and are shown in Figure 1; Models 6–7 were treated as possibilities to rule out. The hypothesized item-factor pairings for Models 2–5 are specified in Supplemental Materials S1. In all CFAs, error variances between identical or similarly worded indecisiveness items (e.g., the item "I find it easy to make decisions" is in both the revised IS-FS and the IS-GDB) were allowed to correlate. In all bifactor CFAs, correlations between general and specific factors were set to zero. In evaluating fit, we considered the χ^2, the comparative fit index (CFI; Bentler, 1990) and the Tucker–Lewis Index (TLI; Bentler, 1990), the root mean square error of approximation (RMSEA; Steiger, 1990), and the standardized

[2] Adapted from the indecision task (in German) with permission from Annette van Randenborgh, who emailed the task upon the first author's request (personal communication, February 14, 2018).

root mean square residual (SRMR; Hu & Bentler, 1999). We defined adequate or acceptable fit as CFI/TLI between .90 and .95 (Bentler, 1990), RMSEA between .06 and .10 (MacCallum et al., 1996), and SRMR near .08 (Hu & Bentler, 1999), with lower RMSEA/SRMR and higher CFI/TLI values considered good. If appropriate, relative model fit was assessed using χ^2 difference tests.

To address *Aim 2*, which was to examine the relations among indecisiveness, depressive symptoms, and indecision, we used CFA and evaluated model fit using the same fit indices above. Our hypothesized model is presented in Figure 2. Indecisiveness was modeled based on the best-fitting measurement model from Aim 1. Depressive symptoms and indecision were modeled based on knowledge from existing literature. With regard to depressive symptoms, the CES-D has been reliably shown to have a four-factor structure, with factors corresponding to depressive affect, positive affect, somatic symptoms, and interpersonal problems (Shafer, 2006); higher-order and bifactor versions of the four-factor model also fit well (e.g., Gomez & McLaren, 2015). Because our aim was to test associations with overall depressive symptoms and not with individual factors, we chose to model depressive symptoms through a higher-order model—that is, a higher-order factor of depressive symptoms (to which associations with indecisiveness and indecision were tested) under which there were four lower-order factors with CES-D items as indicators. With regard to indecision, the creators of the behavioral task did not seek to comprehensively assess indecision or test its factor structure (van Randenborgh et al., 2010). They found, however, that the exact decision situation (out of four) did not reliably impact the three outcome measures of decision-making difficulty, confidence, and time, and they chose to average these outcomes across the decision situations for their main mediation analyses. We took a similar approach in modeling indecision; that is, we averaged decision-making difficulty, confidence, and time across the four decision situations and used these three averages as indicators loading onto indecision as a single factor.

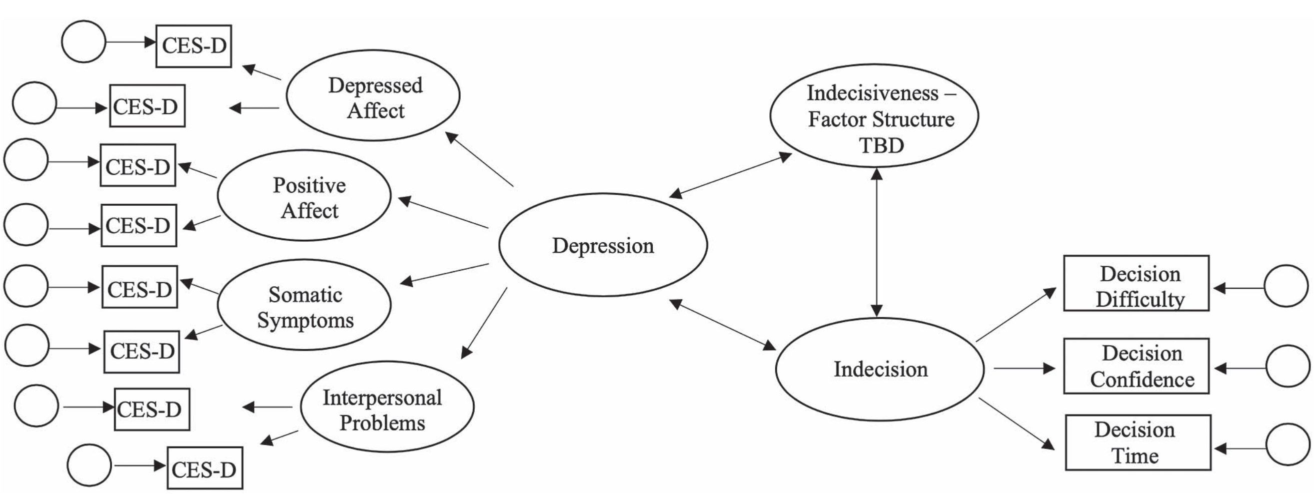
Because this study recruited participants from two different crowdsourcing platforms, we ran multiple-groups CFA to evaluate measurement invariance for the final model from Aims 1 and 2. We also examined whether the two groups differed on demographic and study measures. The procedures and results for these analyses can be found in Supplemental Materials S3. Lastly, because we tested an array of indecisiveness measurement models in Aim 1, we ran EFAs to see how well a fully exploratory approach would map onto our CFA findings. The EFA procedures and results can be found in Supplemental Materials S4.

Results

Descriptive Statistics

Mean scores for the two indecisiveness questionnaires (revised IS-FS: $M = 29.97$, $SD = 8.82$; IS-GDB: $M = 52.42$; $SD = 25.24$) fell around the mid-point of the full range of scores possible. The mean score on the depressive symptom questionnaire (CES-D: $M = 18.78$, $SD = 13.63$) was slightly above the clinical cut-off point, indicating that the participants as a group may be at higher risk for depression than the general population. For the indecision task, after averaging across the four decision situations, the means and standard deviations indicate that participants erred on the side of finding decisions to be relatively easy to make (decision difficulty: $M = 2.96$, $SD = 1.45$) and that they were fairly confident in their decision-making (decision confidence: $M = 5.62$, $SD = 0.98$); the majority of participants took under a minute on average to make each decision (decision time: $M = 23.40$ s, $SD = 22.97$). Together, the mean composite scores and standard deviations across these measures suggest good range and variability of scores in the sample.

Figure 2
Planned Aim 2 Model



Note. The best measurement model from Aim 1 will be used for the Indecisiveness factor. CES-D = Center for Epidemiologic Studies Depression Scale. The actual number of CES-D indicators (in boxes) in the model is 20; not all CES-D indicators are shown due to space limitations. Depressed affect had CES-D items 3, 6, 9, 10, 14, 17, and 18. Positive affect had CES-D items 4, 8, 12, and 16. Somatic symptoms had CES-D items 1, 2, 5, 7, 11, 13, and 20. Interpersonal problems had CES-D items 15 and 19.

Aim 1 CFAs for Indecisiveness

Fit indices for the seven measurement models for indecisiveness are presented in Table 1. Models 1–5 were conceptualized as competing hypotheses: (a) the one-factor model, (b) the two-factor model with avoidant and aversive factors, (c) the three-factor model with cognitive, affective, and behavioral factors, and (d) and (e) the bifactor versions of the two-factor and three-factor models. None of these five models met criteria for acceptable model fit on any goodness-of-fit index. Model 6 was a bifactor model with one factor representing items from the IS-FS and the other factor representing items from the IS-GDB; this model met criteria for acceptable model fit on only the SRMR. Model 7 was a bifactor model with one factor representing straightforwardly worded items and the other factor representing reverse-scored items. Model 7 met criteria for acceptable model fit on all goodness-of-fit indices; additionally, the χ^2 test of model fit was considerably smaller than those of the other models, and covariance coverage was always .99 or higher. Because Model 7 was the only one with acceptable fit,[3] we did not examine its relative fit with the other models. The poor fit of Model 6 and the acceptable fit of Model 7 suggests that the revised IS-FS and IS-GDB are indeed measuring the same construct, when the straightforwardly worded and reverse-scored items are accounted for.

The standardized factor loadings and standard errors for Model 7 are presented in Table 2. The variance explained by each factor was calculated by summing the squared factor loadings for that factor, dividing by the sum of all squared factor loadings, and multiplying by 100 (Reise et al., 2013). The general factor accounted for 58.2%, the straightforwardly worded specific factor accounted for 17.9%, and the reverse-scored specific factor accounted for 23.8% of the total variance. Because the variance accounted for by the general factor did not exceed 60% of the total variance, the items are not thought to reflect unidimensionality (Reise et al., 2013). Rather, the specific factors appear to be capturing meaningful variance above and beyond the general factor. The meaning of these specific factors was further investigated below.

Aim 2 CFA for Relations Among Indecisiveness, Depression, and Indecision

The resulting bifactor model of indecisiveness from Aim 1 (i.e., Model 7) was included in a larger CFA with depression (represented as a higher-order model with four lower-order factors) and indecision (represented by one factor with three indicators corresponding to average scores). This model had acceptable fit, with $\chi^2(1436) = 6015.66$, $p < .001$, CFI = .91, TLI = .90, RMSEA = .07, and SRMR = .07; covariance coverage was always .98 or higher. The lower-order factors of depression had significant loadings onto the higher order of depression (depressive affect = .97, positive affect = .64, somatic symptoms = .97, interpersonal problems = .88, all $ps < .001$). All factor loadings for each factor were significant ($ps < .05$), except for IS-GDB item 4 on the reverse-scored factor of indecisiveness.

The correlations among indecisiveness, depression, and indecision for this model are depicted in Figure 3, Panel A. The general factor of indecisiveness, depression, and indecision were strongly associated with one another, which is consistent with our hypotheses. Of note, the straightforwardly worded factor of indecisiveness was also strongly associated with depression. If the straightforwardly worded and reverse-scored specific factors were truly capturing method-related variance only, one would not expect to see strong, significant correlations with substantive factors (i.e., depression, indecision). Despite showing good model fit, bifactor models tend to overfit the data (e.g., Murray & Johnson, 2013), which could result in substantive variance getting pulled from a general factor to a specific factor. To better investigate what the straightforwardly worded and reverse-scored factors of indecisiveness represent, the following two CFAs were conducted.

Post Hoc Aim 2 CFAs for Relations Among Indecisiveness, Depression, and Indecision

In one CFA, the straightforwardly worded specific factor of indecisiveness was removed, leaving the general factor and reverse-scored specific factor. This bifactor model allowed us to see whether potential overfitting would still happen without the straightforwardly worded factor; if not, the reverse-scored factor could be considered to represent method-related variance. In the second CFA, the bifactor structure was removed, and indecisiveness was instead represented by two correlated factors, straightforwardly worded and reverse-scored. Because the general factor is not part of the picture, both factors in this model would be expected to reflect substantive variance. The two models had acceptable fit: $\chi^2(1454) = 6265.62$, $p < .001$, CFI = .91, TLI = .90, RMSEA = .07, and SRMR = .08 for the first model, and $\chi^2(1470) = 6326.80$, $p < .001$, CFI = .91, TLI = .90, RMSEA = .07, and SRMR = .08 for the second model. In both models, all factor loadings were significant at $p < .05$, and covariance coverage was always .98 or higher. From both models, when the indecisiveness factor was evaluated on its own (i.e., as a measurement model), it had acceptable fit; these fit indices were added to Table 1 and labeled under indecisiveness Models 8 and 9.

The correlations among indecisiveness, depression, and indecision for the two models are depicted in Figure 3, Panels B and C. In the model containing bifactor indecisiveness (reverse-scored specific factor; Model 8), the reverse-scored factor had significant correlations with depression and indecision, although much smaller in magnitude compared to those involving the general factor of indecisiveness; these smaller correlations could be viewed in support of the reverse-scored factor as capturing primarily method-related variance. In the model containing two-factor indecisiveness (straightforwardly worded and reverse-scored; Model 9), the straightforwardly worded factor had significant, strong correlations with depression and indecision, whereas the reverse-scored factor had a significant, strong correlation with indecision and a significant, comparatively smaller correlation with depression; these correlations reflect initial convergent and discriminant validity between the two factors.

Although both models had acceptable model fit and had correlations that made sense within the context of the model, we think that the model with two-factor indecisiveness (straightforwardly worded

[3] Similar to our initial findings, only Models 7, 8, and 9 had acceptable model fit across all fit indices (CFIs = .93-.94, all TLIs = .92–.93, all RMSEAs = .09, and all SRMRs = .04–.05) and significant factor loadings ($ps < .01$) in a second set of CFAs in which we kept the IS-FS version and dropped the IS-GDB version of similarly worded items.

Table 1
Fit Indices for Indecisiveness Measurement Models in Aim 1

Model	χ^2	CFI	TLI	RMSEA	SRMR
Initially planned models					
1. One-factor model	9301.79	.73	.70	.17	.12
2. Two-factor model (aversive, avoidant)	9289.31	.73	.70	.17	.12
3. Three-factor model (cognitive, affective, behavioral)	9266.14	.73	.70	.17	.12
4. Bifactor version of two-factor model (aversive, avoidant)	7641.66	.78	.74	.16	.09
5. Bifactor version of three-factor model (cognitive, affective, behavioral)	8541.74	.75	.71	.17	.10
6. Bifactor model with two specific factors (revised IS-FS, IS-GDB)	6211.28	.82	.79	.14	**.08**
7. Bifactor model with two specific factors (straightforwardly worded, reverse-scored)	2529.07	**.94**	**.93**	**.09**	**.04**
Additional post hoc models					
8. Bifactor model with one specific factor (reverse-scored)	2973.84	**.92**	**.91**	**.09**	**.05**
9. Two-factor model (straightforwardly worded, reverse-scored)	2980.68	**.92**	**.92**	**.09**	**.05**

Note. CFI = comparative fit index; TLI = Tucker-Lewis incremental fit index; RMSEA = root mean square of approximation; SRMR = standardized root mean residual. IS-FS = Indecisiveness Scale, Frost and Shows; IS-GDB = Indecisiveness Scale, Germeijs and De Boeck. All χ^2 values for test of model fit were statistically significant at $p < .001$. Values in bold indicate acceptable model fit based on goodness-of-fit guidelines.

and reverse-scored; Model 9) is the better conceptual model.[4] Upon revisiting the reverse-scored items themselves (listed in the bottom half of Table 2; e.g., "I like to be in a position to make decisions," "Once I make a decision, I feel fairly confident that it is a good one"), these items seem to capture a sense of decision-making confidence rather than reflect items that are the opposite of indecisiveness. In contrast, the straightforwardly worded items (listed in the top half of Table 2; e.g., "When making a decision, I feel uncertain," "I often worry about making the wrong decision") seem to more purely capture indecisiveness. Thus, we viewed both of these factors as substantive rather than method-related.

To further test the hypothesis that the reverse-scored items reflect decision-making confidence, we ran a CFA that allowed for a test of discriminant validity based on multiple criteria. In this CFA, instead of modeling indecision as a single factor with three indicators corresponding to average scores on decision-making difficulty, decision-making confidence, and decision-making time, these three constructs were modeled as their own factors, each with indicators corresponding to individual ratings instead of averages. This model had acceptable fit, $\chi^2(2532) = 8696.24$, $p < .001$, CFI = .90, TLI = .90, RMSEA = .06, and SRMR = .08. Supporting our hypothesis, the reverse-scored factor had a stronger correlation with decision-making confidence ($r = .54$; $p < .001$) than it did with decision-making difficulty ($r = -.18$, $p < .001$) and time ($r = -.20$, $p < .001$). In contrast, the straightforwardly worded factor had a stronger correlation with decision-making difficulty ($r = .66$, $p < .001$) than it did with decision-making confidence ($r = -.37$, $p < .001$) and time ($r = .04$, $p = .26$).

Discussion

Indecisiveness, depression, and indecision have been studied in the literature in a piecemeal fashion, leaving questions open about the dimensionality and validity of indecisiveness and its exact relation to depression. Although research has demonstrated a consistent link between aspects of indecisiveness and depressive symptoms (e.g., Leykin & DeRubeis, 2010; Rassin et al., 2007), our understanding of indecisiveness has been confounded by different features assessed in self-report questionnaires and by different factor analysis methods to investigate dimensionality. Additionally, limited studies have administered behavioral tasks of indecision to help validate indecisiveness. No study to date had assessed both indecisiveness and indecision in the context of depression, which would help to clarify the nuances of this type of decision-making difficulty.

In a large adult sample, we used two widely administered indecisiveness questionnaires, the revised IS-FS and IS-GDB, to comprehensively capture features of indecisiveness and to investigate the dimensionality of these measures (*Aim 1*). We tested the relations among indecisiveness, depressive symptoms, and indecision (*Aim 2*). When combined, the revised IS-FS and IS-GDB were best represented by two factors corresponding to straightforwardly worded and reverse-scored items (Model 9). We think that these factors represent indecisiveness and decision-making confidence, respectively; in line with this conceptualization, indecisiveness was strongly positively associated with depressive symptoms and with indecision.

In *Aim 1*, we tested five competing hypotheses for the factor structure of the revised IS-FS and IS-GDB: Model 1: one-factor model; Model 2: two-factor model (i.e., aversive and avoidant); Model 3: three-factor model (i.e., cognitive, affective, and behavioral); and Models 4 and 5: the corresponding bifactor models for Models 2 and 3. None of these models fit well. These findings are inconsistent with the research evidence for a one-factor model (Germeijs & De Boeck, 2002) and a two-factor model with aversive and avoidant factors (Spunt et al., 2009); however, these studies used only one indecisiveness questionnaire, likely missing important features of the construct. These findings also do not support the

[4] Reading speed during the indecision task was ruled out as a confound for the associations between indecision and the other latent variables. Average reading speed during task instructions was added as a covariate by regressing indecision onto reading speed (a latent variable with one indicator), effectively partialling out the effect of reading speed from indecision. Correlations with indecision remained significant and were similar in magnitude (*r*s with straightforwardly worded factor = .78, reverse-scored factor = −.69, depression factor = .75, all *p*s < .001) to the correlations in the model without reading speed.

Table 2
Indecisiveness Bifactor Model With Straightforwardly Worded and Reverse-Scored Factors (Model 7) From Aim 1

Item	General factor		Specific factor	
	Factor loading	*SE*	Factor loading	*SE*
Straightforwardly worded specific factor				
FS1. I try to put off making decisions.	.69	.03	.40	.04
FS8. I become anxious when making a decision.	.82	.02	.18	.04
FS9. I often worry about making the wrong decision.	.80	.02	.18	.04
FS10. After I have chosen or decided something, I often believe I've made the wrong choice or decision.[a]	.61	.03	.50	.04
FS11. It seems that deciding on the most trivial thing takes me a long time.	.65	.03	.48	.04
GDB2. It is hard for me to come to a decision.	.76	.02	.43	.03
GDB3. I don't know how to make decisions.	.44	.04	.78	.04
GDB5. I would characterize myself as an indecisive person.	.72	.03	.50	.03
GDB8. While making a decision, I feel uncertain.	.77	.02	.45	.03
GDB9. It takes me a long time to weigh pros and cons before making a decision.	.64	.03	.36	.04
GDB11. I delay deciding.	.75	.02	.42	.04
GDB13. I try to avoid making a decision.	.70	.03	.51	.03
GDB15. I tend to leave decisions to someone else.	.66	.03	.55	.03
GDB18. I often reconsider my decision.	.66	.03	.44	.04
GDB20. After making a decision, I can't get it out of my mind.	.60	.03	.54	.03
GDB21. After I have decided something, I believe I took the wrong decision.[a]	.60	.03	.62	.03
Reverse-scored specific factor				
FS2. I always know exactly what I want.	−.32	.04	.64	.02
FS3. I find it easy to make decisions.[b]	−.55	.03	.62	.02
FS4. I like to be in a position to make decisions.	−.45	.04	.49	.03
FS5. Once I make a decision, I feel fairly confident that it is a good one.	−.57	.03	.40	.03
FS6. I usually make decisions quickly.[c]	−.42	.04	.59	.03
FS7. Once I make a decision, I stop worrying about it.[d]	−.46	.03	.53	.03
GDB1. I find it easy to make decisions.[b]	−.71	.02	.48	.03
GDB4. I know which steps to take when making a decision.	−.46	.03	.32	.03
GDB6. I don't hesitate much when I have to make a decision.	−.56	.03	.64	.02
GDB7. While making a decision, I feel certain.	−.63	.03	.55	.02
GDB10. I make decisions quickly.[c]	−.47	.03	.55	.03
GDB12. I don't postpone making decisions to a later date.	−.45	.03	.60	.02
GDB14. I don't avoid situations where decisions have to be made.	−.57	.03	.45	.03
GDB16. I cut the knot myself in a decision instead of leaving the decision to others.	−.43	.03	.52	.02
GDB17. Once I have taken a decision, I stick to that decision.	−.47	.03	.46	.03
GDB19. Once I have made a decision, I stop worrying about it.[d]	−.51	.03	.52	.02
GDB22. After making a decision, I don't regret the decision.	−.50	.03	.58	.02

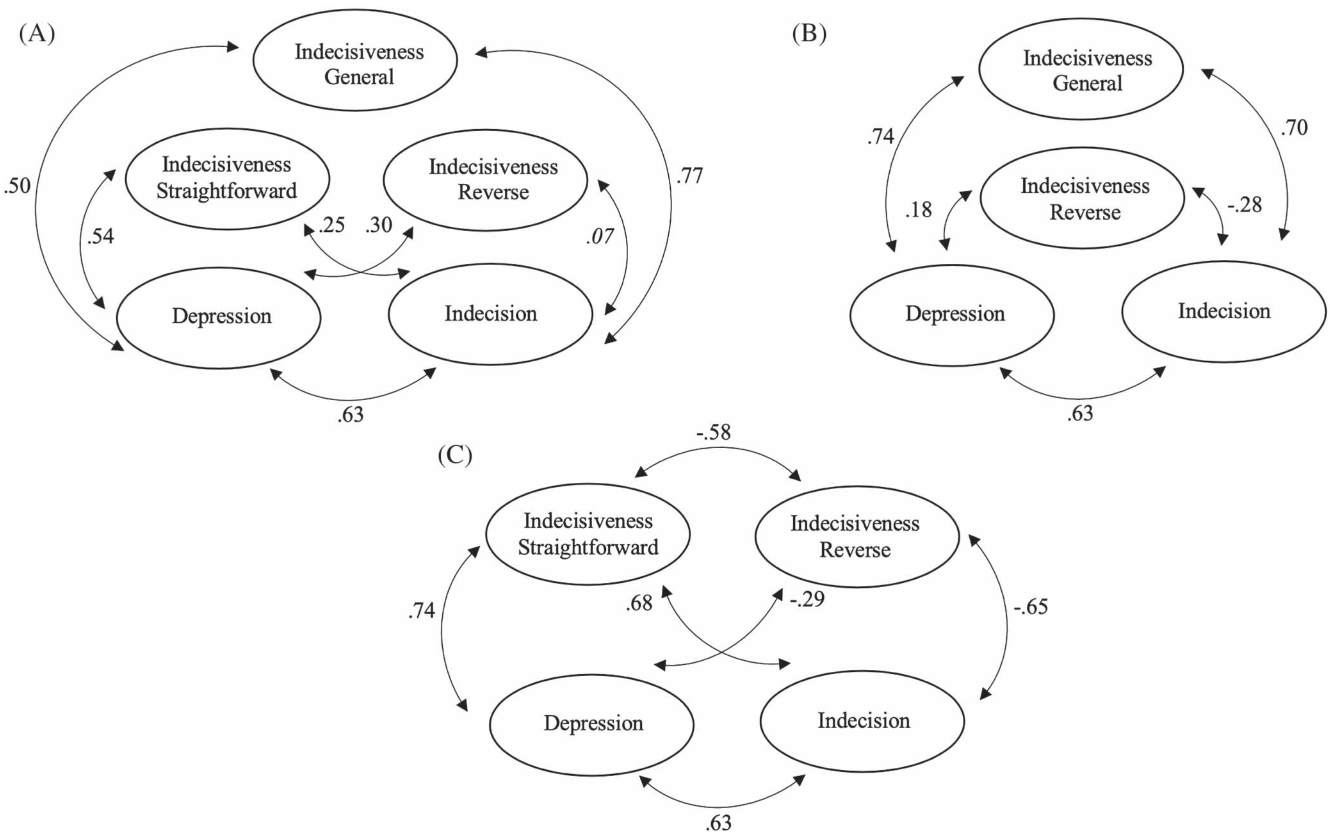
Note. Factor loadings are standardized, and all were significant at $p < .001$. The specific factor column refers to either the straightforwardly worded factor or the reverse-scored factor, depending on the item. Items loading onto the reverse-scored factor were not reverse-scored prior to the confirmatory factor analysis (CFA). Items that share the same superscripts have identical or very similar wording; the error variances for these items were allowed to correlate in the CFA model. FS = Indecisiveness Scale, Frost and Shows; GDB = Indecisiveness Scale, Germeijs and De Boeck.

three-factor conceptualization (cognitions, emotions, and behaviors) consistent with indecisiveness theory (Rassin, 2007).

Our final two models in Aim 1 were intended to rule out method-related factors: Model 6: A bifactor model with two factors corresponding to items from the revised IS-FS versus IS-GDB; and Model 7: A bifactor model with two factors corresponding to whether items were straightforwardly worded or reverse-scored. The latter had acceptable fit, and its straightforwardly worded and reverse-scored factors captured a substantial proportion (i.e., over 40%) of the total variance. This finding highlights the importance of evaluating factor structure based on how items have been worded and scored. Critically, reverse-scored items may represent the opposite of the construct of interest, as these items are intended, or they may represent a substantive construct that is different from the construct of interest. For example, the reverse-scored items in one social anxiety questionnaire did seem to be the opposite of social anxiety (Rodebaugh et al., 2004), whereas the reverse-scored items in a different social anxiety questionnaire were thought to better represent extraversion and were therefore recommended to be excluded from the assessment of social anxiety (Rodebaugh et al., 2007). Which explanation fits better depends to some extent on how general, straightforwardly worded, and reverse-scored factors are associated with other constructs, which was explored in Aim 2.

In *Aim 2*, we took the bifactor model of indecisiveness with straightforwardly worded and reverse-scored factors (Model 7) and tested its relations with depressive symptoms and indecision. Although this model had acceptable fit in the context of this broader model, a strong correlation between the straightforwardly worded factor and depressive symptoms suggested that the model might have overfit the data, a tendency common in bifactor models (e.g., Murray & Johnson, 2013). Thus, two post hoc models were run—a bifactor model with a reverse-scored factor only (Model 8) and a two-factor model with straightforwardly worded and reverse-scored factors (Model 9). Both models had acceptable fit, and correlations with depressive symptoms and indecision suggested that the reverse-scored items of indecisiveness represented method-related variance in the former model and represented a substantive factor of decision-making confidence in the latter model.

Figure 3
Aim 2 Findings



Note. (A) Model with bifactor indecisiveness—general, straightforwardly worded, and reverse-scored factors (Model 7). (B) Model with bifactor indecisiveness—general and reverse-scored factors (Model 8). (C) Model with two-factor indecisiveness—straightforwardly worded and reverse-scored factors (Model 9). All correlations are standardized and significant at $p < .001$ with the exception of one nonsignificant correlation (italicized). In all three models, items loading onto the reverse-scored factor were not reverse-scored prior to the confirmatory factor analysis (CFA). In (A) and (B), correlations between general and specific factors were set to zero, due to the bifactor structure. Lower-order factors and indicators are omitted due to space limitations.

We argue in favor for the latter, two-factor model (Model 9) as the better conceptual model, in which the straightforwardly worded and reverse-scored factors reflect substantive factors corresponding to indecisiveness and decision-making confidence, respectively. First, in the original bifactor model (Model 7), the straightforwardly worded and reverse-scored factors captured a substantial proportion of the total variance. Second, in supplementary EFAs for the indecisiveness measurement model, two factors emerged, corresponding to straightforwardly worded and reverse-scored items (i.e., consistent with Model 9; see Supplemental Materials S4). Third, in an additional post hoc model, the straightforwardly worded and reverse-scored factors showed good discriminant validity across multiple criteria (i.e., decision-making difficulty, confidence, and time from the indecision task). Fourth, this conceptualization is consistent with the broader literature in which indecisiveness and decision confidence are separate yet related constructs. Decision confidence has been negatively associated with indecisiveness (e.g., Rassin et al., 2007) and has its own correlates such as a greater ability to persuade others to support a choice (Sniezek & Van Swol, 2001). Moreover, decision confidence has been touted as a fundamental aspect of decision-making (e.g., for perceptual decisions; Desender et al., 2018).

In the final model with indecisiveness and decision-making confidence (Model 9), there were robust associations among indecisiveness, depressive symptoms, and indecision, which support our hypotheses. First, using a comprehensive assessment of indecisiveness, we replicated the link between indecisiveness and depressive symptoms. In fact, this association may have been stronger in our study ($r = .74$) than in past studies (e.g., Pearson $r = .54$; Di Schiena et al., 2013) because error variance as well as variance related to decision confidence were parsed out. In contrast to indecisiveness, depressive symptoms had a much smaller correlation with decision confidence, highlighting again the discriminative validity between indecisiveness and decision confidence.

Next, the positive association between indecisiveness and indecision further validates indecisiveness as a construct, showing that a greater tendency to be indecisive (i.e., higher indecisiveness) was linked to greater indecision during in-the-moment decision-making. Validation of indecisiveness with indecision had been done infrequently and only through hypothetical decision scenarios (e.g., Frost & Shows, 1993). Successfully adapted for our study, the van Randenborgh et al. (2010) behavioral indecision task used (perceived to be) real decisions for participants and assessed their ratings of decision-making difficulty and confidence immediately after decisions were made.

Lastly, the positive association between depressive symptoms and indecision demonstrates that depression is not only characterized by a self-reported tendency to be indecisive (i.e., reflect increased indecisiveness) but also by increased indecision assessed by both self-reported and objective measures. The van Randenborgh et al. (2010) indecision task provided an objective measure of decision-making time in addition to self-report measures of decision-making difficulty and confidence. It is therefore unlikely that depressed individuals are self-reporting increased indecisiveness on questionnaires simply due to negative biases in retrospective recall (LeMoult & Gotlib, 2019). Moreover, our findings build on van Randenborgh et al.'s study that evaluated the three indecision outcomes separately; in a CFA model involving latent variables, depressive symptoms were positively related to indecision for which decision-making difficulty, confidence, and time were all modeled as indicators.

An alternative interpretation to the strong associations we found among indecisiveness, depressive symptoms, and indecision is that they are reflective of one latent variable representing general distress. For example, it is possible that indecisiveness items were conflated with depressive symptoms (e.g., "After I have decided something, I believe I took the wrong decision" could be pulling for feelings of guilt as a depressive symptom). It may also be more accurate to view indecisiveness and indecision as the trait and state versions of the same construct, respectively, rather than two constructs. These possibilities highlight the complexity of assessing indecisiveness. In the present study, we tried to select the best available measures and to model them appropriately based the extant literature involving both theory and empirical work. That is, we selected self-report questionnaires that were validated and contained items represented in theory (e.g., for indecisiveness; Rassin, 2007). In addition, we provided evidence that our adaptation of the behavioral indecision task was comparable to the original task (van Randenborgh et al., 2010). Given the conceptual distinction made between indecisiveness and indecision in the decision-making literature, we chose to model these separately, similar to other researchers. Additional studies are needed to further investigate how to best model the latent construct of indecisiveness in the context of studying psychopathology and its correlates (e.g., depression, anxiety, neuroticism).

Although this study had several strengths (e.g., use of CFA, comprehensive indecisiveness assessment, and inclusion of a behavioral indecision task with subjective and objective outcomes), its primary limitation was the inclusion of participants from two sample sources, MTurk and ProA. Although the two samples differed on some demographic and study measures, the multiple-groups CFA findings suggest that the final models from both aims had largely equivalent factor structures across the two samples (see Supplemental Materials S3). It will be critical to see if future research replicates the distinction between indecisiveness and decision-making confidence, with tests of convergent and discriminant validity involving other constructs (e.g., behavioral inhibition system/behavioral activation system [BIS/BAS]). If so, this would mirror a pattern in the decision-making literature in which the scope of self-report questionnaires is being narrowed. For example, Cheek and Goebel (2020) examined maximizing, the tendency to make the best possible decision after considering all options, and found that the decision-making difficulty items represented indecisiveness and should be excluded from the assessment of maximizing. A similar approach with indecisiveness, in which the reverse-scored items are excluded, could enhance measurement precision.

In sum, we found evidence for a two-factor structure of indecisiveness corresponding to the straightforwardly worded items and reverse-scored items from the revised IS-FS and IS-GDB questionnaires (i.e., Indecisiveness Scales by Frost & Shows and by Germeijs & De Boeck, respectively). This study expands the literature by illustrating that the straightforwardly worded and reverse-scored items may better represent indecisiveness and decision-making confidence, respectively. These findings underscore the importance of assessing the meaning of reverse-scored items in self-report questionnaires and may help to increase the precision of indecisiveness assessment in future research. After decision-making confidence was accounted for, indecisiveness as well as indecision showed strong associations with depressive symptoms. It will be important for researchers to continue to elucidate the nature of indecisiveness in depression, in the service of improving our treatments and enhancing functioning and quality of life for depressed individuals.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Bai, H. (2018, August 8). *Evidence that a large amount of low quality responses on MTurk can be detected with repeated GPS coordinates* [blog post]. https://www.maxhuibai.com/blog/evidence-that-responses-from-repeating-gps-are-random

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238

Brown, T. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). Guilford Press.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, *6*(1), 3–5. https://doi.org/10.1177/1745691610393980

Cheek, N. N., & Goebel, J. (2020). What does it mean to maximize? "Decision difficulty," indecisiveness, and the jingle-jangle fallacies in the measurement of maximizing. *Judgment and Decision Making*, *15*(1), 7–24.

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, *10*(7), 1–9. https://doi.org/10.7275/jyj1-4868

Desender, K., Boldt, A., & Yeung, N. (2018). Subjective confidence predicts information seeking in decision making. *Psychological Science*, *29*(5), 761–778. https://doi.org/10.1177/0956797617744771

Di Fabio, A., & Palazzeschi, L. (2012). Incremental variance of the core self-evaluation construct compared to fluid intelligence and personality traits in aspects of decision-making. *Personality and Individual Differences*, *53*, 196–201. https://doi.org/10.1016/j.paid.2012.03.012

Di Schiena, R., Luminet, O., Chang, B., & Philippot, P. (2013). Why are depressive individuals indecisive? Different modes of rumination account for indecision in non-clinical depression. *Cognitive Therapy and Research*, *37*(4), 713–724. https://doi.org/10.1007/s10608-012-9517-9

Elaydi, R. (2006). Construct development and measurement of indecisiveness. *Management Decision*, *44*(10), 1363–1376. https://doi.org/10.1108/00251740610715696

Fabio, A. D., Palazzeschi, L., Asulin-Peretz, L., & Gati, I. (2013). Career indecision versus indecisiveness: Associations with personality traits and emotional intelligence. *Journal of Career Assessment*, *21*(1), 42–56. https://doi.org/10.1177/1069072712454698

Ferrari, J. R. (1994). Dysfunctional procrastination and its relationship with self-esteem, interpersonal dependency, and self-defeating behaviors.

Personality and Individual Differences, *17*(5), 673–679. https://doi.org/10.1016/0191-8869(94)90140-6

Frost, R. O., & Shows, D. L. (1993). The nature and measurement of compulsive indecisiveness. *Behaviour Research and Therapy*, *31*(7), 683–692. https://doi.org/10.1016/0005-7967(93)90121-A

Germeijs, V., & De Boeck, P. (2002). A measurement scale for indecisiveness and its relationship to career indecision and other types of indecision. *European Journal of Psychological Assessment*, *18*(2), 113–122. https://doi.org/10.1027//1015-5759.18.2.113

Germeijs, V., & Verschueren, K (2011). Indecisiveness and big five personality factors: Relationship and specificity. *Personality and Individual Differences*, *50*, 1023–1028. https://doi.org/10.1016/j.paid.2011.01.017

Gomez, R., & McLaren, S. (2015). The center for epidemiologic studies depression scale: Support for a bifactor model with a dominant general factor and a specific factor for positive affect. *Assessment*, *22*(3), 351–360. https://doi.org/10.1177/1073191114545357

Guillemin, F., Bombardier, C., & Beaton, D. (1993). Cross-cultural adaptation of health-related quality of life measures: Literature review and proposed guidelines. *Journal of Clinical Epidemiology*, *46*(12), 1417–1432. https://doi.org/10.1016/0895-4356(93)90142-N

Holzinger, K. J., & Swineford, F. (1937). The bifactor method. *Psychometrika*, *2*(1), 41–54. https://doi.org/10.1007/BF02287965

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternative. *Structural Equation Modeling*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Lauderdale, S. A., Martin, K. J., & Moore, J. (2019). Aversive indecisiveness predicts risks for and symptoms of anxiety and depression over avoidant indecisiveness. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *37*, 62–83. https://doi.org/10.1007/s10942-018-0302-x

LeMoult, J., & Gotlib, I. H. (2019). Depression: A cognitive perspective. *Clinical Psychology Review*, *69*, 51–66. https://doi.org/10.1016/j.cpr.2018.06.008

Leykin, Y., & DeRubeis, R. J. (2010). Decision-making styles and depressive symptomatology: Development of the decision styles questionnaire. *Judgment and Decision Making*, *5*(7), 506–515.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*(2), 130–149. https://doi.org/10.1037/1082-989X.1.2.130

Mitchell, A. J., McGlinchey, J. B., Young, D., Chelminski, I., & Zimmerman, M. (2009). Accuracy of specific symptoms in the diagnosis of major depressive disorder in psychiatric out-patients: Data from the MIDAS project. *Psychological Medicine*, *39*(7), 1107–1116. https://doi.org/10.1017/S0033291708004674

Murray, A. L., & Johnson, W. (2013). The limitations of model fit when comparing the bi-factor versus higher-order models of human cognitive ability structure. *Intelligence*, *41*(5), 407–422. https://doi.org/10.1016/j.intell.2013.06.004

Muthén, L. K., & Muthén, B. O. (1998-2017). *Mplus user's guide* (8th ed.).

Osipow, S. H. (1999). Assessing career indecision. *Journal of Vocational Behavior*, *55*(1), 147–154. https://doi.org/10.1006/jvbe.1999.1704

Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology*, *70*, 153–163. https://doi.org/10.1016/j.jesp.2017.01.006

Potworowski, G. A. (2010). *Varieties of indecisive experience: Explaining the tendency to not make timely and subtle decisions* [Doctoral dissertation]. Unpublished manuscript.

Preacher, K. J., & Coffman, D. L. (2006). *Computing power and minimum sample size for RMSEA* [Computer software]. http://www.quantpsy.org/rmsea/rmsea.htm

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385–401. https://doi.org/10.1177/014662167700100306

Rassin, E. (2007). A psychological theory of indecisiveness. *Netherlands Journal of Psychology*, *63*, 1–11. https://doi.org/10.1007/BF03061056

Rassin, E., Muris, P., Franken, I., Smit, M., & Wong, M. (2007). Measuring general indecisiveness. *Journal of Psychopathology and Behavioral Assessment*, *29*, 61–68. https://doi.org/10.1007/s10862-006-9023-z

Reise, S. P., Scheines, R., Widamin, K. F., & Haviland, M. G. (2013). Multidimensionality and structural coefficient bias in structural equation modeling: A bifactor perspective. *Educational and Psychological Measurement*, *73*(1), 5–26. https://doi.org/10.1177/0013164412449831

Rodebaugh, T. L., Woods, C. M., & Heimberg, R. G. (2007). The reverse of social anxiety is not always the opposite: The reverse-scored items of the social interaction anxiety scale do not belong. *Behavior Therapy*, *38*(2), 192–206. https://doi.org/10.1016/j.beth.2006.08.001

Rodebaugh, T. L., Woods, C. M., Thissen, D. M., Heimberg, R. G., Chambless, D. L., & Rapee, R. M. (2004). More information from fewer questions: The factor structure and item properties of the original and brief fear of negative evaluation scale. *Psychological Assessment*, *16*(2), 169–181. https://doi.org/10.1037/1040-3590.16.2.169

Schwartz, B., Ward, A., Monterosso, J., Lyubomirsky, S., White, K., & Lehman, D. R. (2002). Maximizing versus satisficing: Happiness is a matter of choice. *Journal of Personality and Social Psychology*, *83*(5), 1178–1197. https://doi.org/10.1037/0022-3514.83.5.1178

Shafer, A. B. (2006). Meta-analysis of the factor structures of four depression questionnaires: Beck, CES-D, Hamilton, and Zung. *Journal of Clinical Psychology*, *62*(1), 123–146. https://doi.org/10.1002/jclp.20213

Sniezek, J. A., & Van Swol, L. M. (2001). Trust, confidence, and expertise in a judge-advisor system. *Organizational Behavior and Human Decision Processes*, *84*(2), 288–307. https://doi.org/10.1006/obhd.2000.2926

Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: A clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice*, *17*(2), 268–274. https://doi.org/10.1111/j.1365-2753.2010.01434.x

Spunt, R. P., Rassin, E., & Epstein, L. M. (2009). Aversive and avoidant indecisiveness: Roles for regret proneness, maximization, and BIS/BAS sensitivities. *Personality and Individual Differences*, *47*(4), 256–261. https://doi.org/10.1016/j.paid.2009.03.009

Steiger, J. H. (1990). Structural model equation and modification: An interval estimation approach. *Multivariate Behavioral Research*, *25*(2), 173–180. https://doi.org/10.1207/s15327906mbr2502_4

Taillefer, S. E., Liu, J. J. W., Ornstein, T. J., & Vickers, K. (2016). Indecisiveness as a predictor of quality of life in individuals with obsessive and compulsive traits. *Journal of Obsessive-Compulsive and Related Disorders*, *10*, 91–98. https://doi.org/10.1016/j.jocrd.2016.07.002

Uher, R., Perlis, R. H., Henigsberg, N., Zobel, A., Rietschel, M., Mors, O., & McGuffin, P. (2012). Depression symptom dimensions as predictors of antidepressant treatment outcome: Replicable evidence for interest-activity symptoms. *Psychological Medicine*, *42*(5), 967–980. https://doi.org/10.1017/S0033291711001905

Umeh, K., & Omari-Asor, L. (2011). Emotional vulnerability and coping styles for resolving decisional conflict. *The Journal of Psychology*, *145*(4), 297–312. https://doi.org/10.1080/00223980.2011.565381

van Randenborgh, A., de Jong-Meyer, R., & Hüffmeier, J. (2010). Rumination fosters indecision in dysphoria. *Journal of Clinical Psychology*, *66*(3), 229–248. https://doi.org/10.1002/jclp.20647

Weeks, J. W., Heimberg, R. G., Fresco, D. M., Hart, T. A., Turk, C. L., Schneier, F. R., & Liebowitz, M. R. (2005). Empirical validation and psychometric evaluation of the Brief Fear of Negative Evaluation Scale in patients with social anxiety disorder. *Psychological Assessment*, *17*(2), 179–190. https://doi.org/10.1037/1040-3590.17.2.179

Received March 28, 2021
Revision received June 28, 2021
Accepted July 29, 2021 ▪