



The surprising relationship between indecisiveness and impulsivity



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ABSTRACT

We explore the relationship between indecisiveness and impulsivity using a variety of individual difference measures for each construct. We observe a positive, rather than negative, correlation between traditional measures of indecisiveness and impulsivity. Further analysis demonstrates that standard measures of indecisiveness are positively correlated specifically with dysfunctional impulsivity, and negatively correlated with functional impulsivity. Moreover, indecisiveness is positively and strongly associated specifically with impulsive urgency and lack of perseverance, but not with impulsive sensation-seeking or a lack of premeditation. Finally, we find that particular forms of indecisiveness, including maximizing due to 'high standards' and various 'perfectionistic' behaviors, do correlate negatively with standard measures of impulsivity. These findings provide insight into the multi-dimensional nature of both indecisiveness and impulsivity, and suggest divergent underlying mechanisms producing different forms of indecisive and impulsive behavior.

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1. Introduction

The capacity to make decisions quickly, confidently, and competently is important for personal and professional well-being. However, empirical research investigating (in)decisiveness and its relationship with other traits is relatively sparse. Indecisiveness has been defined as habitual difficulty making decisions across domains (Germeijs, Verschuere, & Soenens, 2006) and has been associated with hesitating to act (Frost & Shows, 1993). For the purposes of this paper, we focus on observable behaviors and define indecisiveness as frequent inability to make decisions confidently, quickly, and/or efficiently.

Indecisiveness and decisiveness have typically been measured through unidimensional self-report scales focusing on general decision-making tendencies (Frost & Shows, 1993; Germeijs & De Boeck, 2002; Webster & Kruglanski, 1994) or on a specific decision, such as a particular career choice (Cooper, Fuqua, & Hartman, 1984; Germeijs & De Boeck, 2002; Jones, 1989). Theoretical discussions suggest that indecisiveness and decisiveness are opposing traits (Van Matre & Cooper, 1984), rather than independent ones, and factor analyses on existing indecisiveness scales have identified factors containing both reverse-scored and regular items (e.g. Rassin, Muris, Franken, Smit, & Wong, 2007; Spunt, Rassin, & Epstein, 2009), suggesting that decisiveness and indecisiveness scales measure the same trait. Decision-making behaviors that prolong the decision process, such as buck-passing, procrastination and maximizing, have also been measured by self-report

(Mann, Burnett, Radford, & Ford, 1997; Schwartz et al., 2002), and are likely related to trait indecisiveness.

Theoretical explorations of indecisiveness remain limited. Trait indecisiveness has been related to high anxiety, low self-confidence and neuroticism (Germeijs & Verschuere, 2011; Germeijs et al., 2006). Additionally, Rassin, Muris, Booster, and Kolsloot (2008) identify several behavioral components of indecisiveness that are supported by experimental research. They cite evidence that indecisive individuals take longer to make decisions in a consumer choice task (Frost & Shows, 1993), and seek out more information before making a choice (Rassin et al., 2007) or focus their information search narrowly on the ultimately chosen option rather than on all possible options (Ferrari & Dovidio, 2001; Rassin et al., 2008). In addition, participants high in indecisiveness performed more poorly on a Stroop task (involving response competition) when feedback is absent, suggesting heightened sensitivity to uncertainty (Ferrari & Pychyl, 2007) and were more likely to interpret ambiguous stimuli as negative (Rassin & Muris, 2005), consistent with a relationship between indecisiveness and neuroticism.

In order to better understand what produces observable indecisive behavior in an individual, we can explore relationships between indecisiveness and other personality measures related to decision-making. For example, while impulsivity is defined in a variety of ways, both theoretical reviews and self-report measures of impulsivity frequently emphasize initiating actions quickly, on the spur of the moment and without forethought, as key aspects of the trait (e.g., Parker & Bagby, 1997; Patton, Stanford, & Barratt, 1995; Reynolds, Ortengren, Richards, & de Wit, 2006; Whiteside & Lynam, 2001). This starkly contrasts with the difficulty initiating action that characterizes many manifestations of indecisiveness. Similarly, high impulsivity (measured by self-

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report) has been associated with impulsive decision-making behavior as measured by faster reaction times (and more errors) during cognitive tasks (Dickman, 1990; Edman, Schalling, & Levander, 1983; Gerbing, Ahadi, & Patton, 1987). This likewise contrasts with the association of high indecisiveness with longer reaction times during decision-making tasks (Frost & Shows, 1993). Based on this research, it follows that indecisiveness and impulsivity might represent opposite poles of a unidimensional decision-making continuum, with decisiveness located between these sub-optimal extremes. Self-regulation or cognitive control provides a potential mechanism for producing these opposing traits: excessive cognitive control could produce indecisiveness, while insufficient cognitive control produces impulsivity.

An alternative possible relationship between indecisiveness and impulsivity is suggested by research in clinical psychology. Notably, both indecisiveness and impulsivity have been linked to obsessive-compulsive disorder (Frost & Shows, 1993; Lochner & Stein, 2006), in which compulsive behaviors develop as an attempt to ameliorate negative emotions arising from obsessive thoughts. In a similar vein, indecisive and impulsive behaviors may arise as alternative attempts to avoid feelings of anxiety or regret that may arise for some people in the process of engaging with a decision. This might suggest a positive relationship between the constructs.

To our knowledge, only two prior studies provide data concerning the association between impulsivity and indecisiveness (Rassin et al., 2007; Webster & Kruglanski, 1994). Rassin et al. (2007) examined a college-aged population, employing an indecisiveness measure that had been validated among adults (Frost & Shows, 1993) and an adolescent measure of decision impulsivity (ADMQ; Mann, Harmoni, & Power, 1989), yielding a negative but not significant correlation between impulsivity and indecisiveness. However, we note that adolescent and adult decision-making differs in many cognitive and behavioral respects (e.g., Reyna & Farley, 2006) and metrics designed for adolescents may not be comparable to metrics designed for adult populations. Webster and Kruglanski (1994) used the control (versus impulsiveness) subscale of the Multidimensional Personality Questionnaire (Tellegen, 1982) and the decisiveness subscale of the Need For Closure scale that they were in the process of validating, yielding a positive but not significant correlation between impulsivity and indecisiveness. However, we note that this study relied on a reverse coding of a measure of behavioral restraint as a proxy for impulsivity, which may have limited their ability to detect a relationship between these constructs.

In light of the sparse data and contradictory results from previous literature relating impulsivity and indecisiveness, and in light of the idiosyncratic measures used in these studies, the question appears to remain open. Thus, our first study sought to simply determine whether there is evidence for a systematic relationship between impulsivity and indecisiveness, using standard measures of these constructs.

2. Study 1

In our first study we sought to determine whether indecisiveness and impulsivity would be negatively correlated (consistent with the notion that the two traits represent opposite and maladaptive extremes of decision-making underpinned by differences in cognitive control), positively correlated (consistent with the notion that both are consequences of difficulty engaging with or regulating the affective response to decisions), or not significantly correlated (consistent with the null results discussed in Section 1).

2.1. Method

2.1.1. Participants

We recruited 119 undergraduate participants (85 female, mean age = 21.3, $SD = 2.97$) through a university subject pool to complete an online survey that included the present study and tasks used for validating the Decision Behavior Inventory that will be reported elsewhere.

2.1.2. Measures

2.1.2.1. Indecisiveness scale. Participants completed the IS (Frost & Shows, 1993), a 15-item scale that reliably measures general indecisiveness. Sample items are evaluated on a five-point scale and include “I often worry about making the wrong choice” and “I find it easy to make decisions” (reverse-scored).

2.1.2.2. Urgent impulsivity. Participants completed the 12-item Urgency dimension of the UPPS Impulsive Behaviors Scale (Whiteside, Lynam, Miller, & Reynolds, 2005). This scale characterizes “the tendency to experience strong impulses, frequently under conditions of negative affect” (Whiteside & Lynam, 2001). For example, the urgency subscale contains such items as “sometimes I do things on impulse that I later regret,” evaluated on a five-point scale.

2.1.3. Procedure

Participants completed an online informed consent document, and those who elected to participate completed measures in an individually randomized order. All questions within each measure were randomized for each participant. Following completion of the survey, all participants received \$15 credited to their university ID cards.

2.2. Results

Mean values were computed for indecisiveness and impulsivity for each participant (indecisiveness $M = 2.99$, $SD = .51$; impulsivity $M = 2.75$, $SD = .68$) following the scoring laid out by the authors of each scale (Frost & Shows, 1993; Whiteside et al., 2005). No significant correlations were observed with age ($r = .008$, $p = .934$ for indecisiveness, $r = -.103$, $p = .266$ for impulsivity) and no sex differences were observed ($t(116) = -1.03$, $p = .303$ for indecisiveness; $t(116) = -.032$, $p = .974$ for impulsivity). A parametric (Pearson) correlation revealed that indecisiveness and impulsivity were positively correlated with one another, $r = .312$, $p = .001$. Both scales exhibited good reliability (Chronbach's $\alpha = .85$ for 12 Urgent Impulsivity items, $\alpha = .71$ for 15 Indecisiveness items).

2.3. Discussion

We observed an initially counterintuitive finding: indecisiveness and at least one form of impulsivity are positively related to one another, and do not appear to be opposing tendencies. It is worth noting that items on the urgency subscale of impulsivity emphasize impulsive behaviors that appear as maladaptive affective responses (e.g., “When I feel bad I will often do things I later regret in order to make myself feel better now”), much like several items on the Indecisiveness Scale (e.g., “I become anxious when making a decision”). This suggests the possibility that both impulsivity and indecisiveness may reflect emotionally reactive decision behaviors. Indeed, research suggests that neuroticism exhibits the strongest correlation among the Big Five traits with a measure of indecisiveness (Germeijs & Verschuere, 2011). To better understand these findings, we next investigated the relationship between indecisiveness and impulsivity using a greater variety of measures.

3. Study 2

The goal of Study 2 was to replicate the finding of Study 1 that impulsivity and indecisiveness are positively related, and extend these findings by differentiating which aspects of each construct are driving this effect. Because impulsivity is a complex construct and a variety of scales have been developed to measure its various facets, we were interested in determining for which measures of impulsivity the positive relationship with indecisiveness would hold. In addition, we wanted to explore the relationship between impulsivity and alternative measures of

indecisiveness, and to determine whether this relationship also appears in participants' reports of their actual decision behaviors. We speculated that indecisiveness, like impulsivity, may manifest itself in distinct ways, and that various subtypes of indecisiveness may exhibit different relationships with various subtypes of impulsivity. For instance, some varieties of both indecisiveness and impulsivity may be characterized by a desire to avoid negative affect arising from decision difficulty (as we speculate in Section 2.3). In contrast, we would expect that indecisiveness arising from an excessive need for information or deliberation would be negatively related to impulsivity that arises from haste or thoughtlessness.

3.1. Method

3.1.1. Participants

We recruited 190 adult participants (126 female, mean age = 34.43, $SD = 11.19$) from a university-administered subject pool drawn from readers of Craigslist.

3.1.2. Measures

3.1.2.1. Indecisiveness. Participants completed Frost and Shows (1993) Indecisiveness Scale, described in Section 2.1.2. For this sample, Chronbach's $\alpha = .86$.

3.1.2.2. Need for closure. Participants completed the decisiveness subscale of the Need for Closure Scale (NFCS-D; Webster & Kruglanski, 1994). This scale consists of seven items that measure decisiveness, such as "I usually make important decisions quickly and confidently," evaluated using a six-point scale. For clarity of exposition when comparing with measures of indecisiveness, we reverse-coded the NFCS-D so that higher scores indicate greater indecisiveness. Chronbach's $\alpha = .80$ for this measure.

3.1.2.3. Maximizing. Participants completed the 13-item Maximization Scale (MS; Schwartz et al., 2002). Using a seven-point scale, maximizing is measured by items that describe specific behaviors, such as "Renting videos is really difficult; I'm always struggling to pick the best one." A possible negative relationship between indecisiveness and impulsivity might be understood in terms of maximizing behavior: indecisive individuals may prolong the decision process in order to feel that they are getting decisions exactly right. The MS has been shown more recently to be decomposable into three subscales (Nenkov, Morrin, Ward, Schwartz, & Hulland, 2008), each of which may underlie different aspects of indecisiveness. The 'high standards' dimension consists of three items exemplifying the desire to select the best option (e.g., "I never settle for second best"). The three items of the 'alternative search' dimension characterize the need to explore other options, regardless of one's current level of satisfaction (e.g., "When I am in the car listening to the radio, I often check other stations to see if something better is playing, even if I am relatively satisfied with what I am listening to"). Finally, the 'decision difficulty' dimension is made up of three items that describe having trouble selecting one item from a variety of options (e.g., "When shopping I have a hard time finding clothing I really love"). Chronbach's $\alpha = .65$ for alternative search, $.77$ for decision difficulty, and $.73$ for high standards. We expected that the positive relationship between standard measures of impulsivity and indecisiveness would replicate for the decision difficulty and possibly the alternative search dimensions—which seem to reflect difficulty engaging with or committing to a decision—but that a negative correlation would hold for the high standards dimension, which seems to reflect a tendency to over-think decisions.

3.1.2.4. Decision Behaviors Inventory. Participants completed a novel measure of behavioral indecisiveness, the Decision Behaviors Inventory (DBI; Fox, Barkley-Levenson, & Tsai, in preparation). The version of the

inventory employed here (see Appendix A) consists of 18 items describing different decision behaviors, and was generated with the goal of encompassing a variety of consumer choices that adult participants were likely to have experienced. The DBI consists of three subscales of indecisiveness as measured by distinct clusters of behavior that were identified through factor analysis: A dimension of 'neurotic' indecisive behavior characterized by difficulty choosing when presented with a variety of options (e.g., "I'm the last of my group to decide what to order in restaurants"), a 'perfectionistic' dimension characterized by excessive information-seeking before choosing (e.g., "When I make a big electronics purchase, I spend days or weeks thoroughly researching the options before choosing"), and a 'lackadaisical' dimension characterized by a lack of concern with advanced preparation (e.g., "When I receive an invitation for a future event such as a party or wedding, I respond yes or no right away" [reverse-scored]). Each subscale exhibited good reliability in the present sample: Chronbach's $\alpha = .75$ for seven 'neurotic' items, $\alpha = .72$ for five 'perfectionistic' items, and $\alpha = .71$ for six 'lackadaisical' items. In addition, we included four impulsive decision behaviors (e.g. "When I go shopping for clothing I end up bringing home at least one item I never wear") that make up a reliable impulsive behavior subscale (Chronbach's $\alpha = .77$ for four items) that can be related to other measures of impulsivity and indecisiveness in the current study. All items were scored on a five-point scale from "never or almost never" to "always or almost always".

3.1.2.5. Barratt Impulsiveness Scale. Participants completed the revised version of the Barratt Impulsiveness Scale (BIS; Patton et al., 1995). This scale has been validated and revised to differentiate impulsiveness from other related traits, such as anxiety and extraversion (Patton et al., 1995). The BIS consists of 29 items (e.g. "I am restless at the theater or lectures;" "I buy things on impulse") rated using a four-point scale. Chronbach's $\alpha = .85$ for this measure.

3.1.2.6. UPPS Impulsive Behaviors Scale. Participants completed all four subscales of the UPPS (Whiteside et al., 2005): urgency (as described in Section 2.1.2), (lack of) premeditation, (lack of) perseverance, and sensation-seeking. All items are scored on a five-point scale. The 11-item premeditation subscale measures the extent to which participants think before acting, and is scored so that higher scores reflect a lack of premeditation (e.g. "I usually think carefully before doing anything" [reverse-scored]). The ten-item perseverance scale is scored so that higher scores reflect a lack of perseverance or follow-through on tasks (e.g. "Once I start a project, I almost always finish it" [reverse-scored]). Finally, sensation-seeking is measured by a twelve-item subscale (e.g. "I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional"). Chronbach's $\alpha = .93$ for urgency, $.91$ for premeditation, $.88$ for perseverance, and $.93$ for sensation-seeking.

3.1.2.7. Functional and dysfunctional impulsivity. Participants completed the Functional and Dysfunctional Impulsivity Scales (Dickman, 1990). These scales were developed to address the complex relationship observed between impulsivity and cognitive functioning: although impulsivity has been shown to impair performance in complex cognitive tasks, impulsivity can actually confer a benefit in cognitive tasks for which rapid responding is required. This research concluded that functional and dysfunctional impulsivity are two distinct traits, one (functional impulsivity, 11 items) in which participants behave impulsively in situations that call for swift action (e.g. "I am good at taking advantage of unexpected opportunities, where you have to do something immediately or lose your chance") and a second (dysfunctional impulsivity, 12 items) in which participants behave impulsively in situations that require greater deliberation (e.g. "I often make up my mind without taking the time to consider the situation from all angles"). Items are evaluated on a three-point scale. Chronbach's $\alpha = .80$ for functional impulsivity and $.85$ for dysfunctional impulsivity.

3.1.3. Procedure

Participants provided informed consent online, and completed the DBI before completing all remaining measures in an individually randomized order. This design ensured that participants' recollection of their decision behavior frequencies was not biased by their responses to more evaluative measures. The order of all questions within each measure was randomized. Following completion of the survey, all participants received a \$10 Amazon.com online gift card.

3.2. Results

Because this study recruited a wider age range than Study 1, we investigated the effects of age on the collected measures. Age correlated negatively with IS ($r = -.254, p < .001$), NFCS-D ($r = -.168, p = .021$), maximizing ($r = -.210, p = .004$), sensation seeking ($r = -.263, p < .001$), and neurotic indecisiveness ($r = -.216, p = .003$). Therefore, partial correlations controlling for the effect of age on the relationships between impulsivity and indecisiveness are reported in Table 1.

The overall positive correlation between indecisiveness and impulsivity remained robust for two different indecisiveness measures. The IS again exhibits a strong positive correlation with UPPS-urgency, and the NFCS-D (reverse-scored to reflect indecisiveness) exhibits the same relationship. Both indecisiveness measures are also positively correlated with the UPPS lack of perseverance subscale and with the BIS. These findings confirm the strong positive relationship between traditional measures of indecisiveness and particular measures of impulsivity. However, for other dimensions of impulsivity the positive relationship with indecisiveness is weaker (lack of premeditation) or nonexistent (sensation-seeking). Most tellingly, functional and dysfunctional impulsivity displayed opposing relationships with measures of indecisiveness: dysfunctional impulsivity consistently exhibited a positive relationship with indecisiveness, whereas functional impulsivity exhibited a negative relationship. From these findings, we see that standard measures of indecisiveness are positively correlated with particular dimensions of impulsivity (urgency and lack of perseverance) and that they are also uniquely associated with a dysfunctional rather than functional form of impulsivity.

To begin exploring whether distinct behavioral patterns within indecisiveness exhibit unique relationships with impulsivity, we examined the correlation of MS and its subscales with measures of impulsivity. As predicted, the original unidimensional MS (Schwartz et al., 2002) exhibits strong positive correlations with BIS and urgency, and a weak positive correlation with dysfunctional impulsivity, echoing the results above. However, when we break down the MS into its components (Nenkov et al., 2008), we find that the high standards and

decision difficulty subscales exhibit diverging associations with impulsivity. Like other measures of indecisiveness, decision difficulty exhibits a strong positive correlation with BIS, urgency and lack of premeditation. High standards, in contrast, exhibits the opposite relationship with BIS and lack of premeditation, and has no significant relationship with urgency. Moreover, we observe a strong dissociation in the correlation of these dimensions with functional and dysfunctional impulsivity: whereas decision difficulty is negatively associated with functional impulsivity and positively associated with dysfunctional impulsivity, this pattern is reversed for high standards.

Correlations between subscales of the DBI and measures of impulsivity reflect the multifaceted nature of indecisiveness. The correlations between 'neurotic' indecisiveness and measures of impulsivity are similar to those observed with standard measures of indecisiveness: Like the IS and NFCS-D, 'neurotic' behaviors exhibit positive correlations with urgency, lack of perseverance, BIS and dysfunctional impulsivity, and a negative correlation with functional impulsivity. In addition, these indecisive behaviors are also highly positively correlated with the impulsive behaviors subscale. However, other subtypes of indecisiveness exhibit markedly different relationships with impulsivity. 'Perfectionistic' behaviors have no relationship with urgency, and are negatively, rather than positively, correlated with lack of premeditation, lack of perseverance, and dysfunctional impulsivity. Meanwhile, 'lackadaisical' indecisive behaviors exhibit no significant relationship with urgency or with either functional or dysfunctional impulsivity; instead, this dimension correlates positively with lack of premeditation and especially with lack of perseverance. Each DBI subscale is also positively correlated with a different combination of the established measures of indecisiveness ('neurotic' with IS, NFCS-D and MS, 'perfectionistic' with MS, and 'lackadaisical' with IS and NFCS-D but negatively with MS high standards), suggesting that each dimension characterizes distinct aspects of indecisiveness.

We observed no differences between male and female participants in their mean responses on the IS, NFCS-D, BIS, MS, UPPS, Functional and Dysfunctional Impulsivity scales, or the neurotic, perfectionistic and lackadaisical dimensions of the DBI. Women had significantly higher mean scores than men on the DBI impulsive behavior subscale ($M = 2.6, SD = .88$ for women; $M = 2.3, SD = .94$ for men, $t(188) = 2.26, p = .025$). However, semi-partial correlations controlling for the effect of gender on DBI impulsivity did not alter the significance levels of the correlations reported in Table 1.

3.3. Discussion

Correlational analyses revealed a number of distinct relationships between different measures of impulsivity and indecisiveness. In

Table 1
Correlations between measures of indecisiveness and impulsivity.

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. IS	–																
2. NFCS-D	.83**	–															
3. Maximizing	.46**	.49**	–														
4. Max: High standards	–.12	.13	.52**	–													
5. Max: Decision difficulty	.63**	.69**	.80**	.14	–												
6. Max: Alt. search	.35**	.35**	.88**	.35**	.52**	–											
7. DBI: Neurotic	.41**	.44**	.52**	.15*	.53**	.42**	–										
8. DBI: Perfectionistic	.11	.16†	.42**	.35**	.32**	.31**	.16†	–									
9. DBI: Lackadaisical	.17†	.17†	–.07	–.20*	.04	–.07	–.15†	–.27**	–								
10. Urgency	.52**	.45**	.42**	–.01	.41**	.41**	.38**	–.10	.02	–							
11. Lack of premeditation	.23**	.18†	–.22*	–.47**	–.08	–.11	–.03	–.42**	.30**	.27**	–						
12. Lack of perseveration	.49**	.49**	.08	–.44**	.34**	.07	.22*	–.18†	.29**	.35**	.58**	–					
13. Sensation seeking	–.11	–.10	.24**	.24**	–.01	.33**	.20*	.03	.22*	.07	–.07	–					
14. BIS	.52**	.46**	.36**	–.19*	.41**	.38**	.46**	–.23*	.11	.70**	.48**	.57**	.21*	–			
15. Functional impulsivity	–.56**	–.60**	–.20*	.21*	–.46**	–.06	–.17†	–.05	–.04	–.18†	.07	–.25**	.45**	–.13	–		
16. Dysfunctional impulsivity	.40**	.35**	.14†	–.26**	.26**	.16†	.26**	–.30**	.07	.55**	.51**	.48**	.04	.69**	–.16†	–	
17. DBI: Imp. behaviors	.41**	.39**	.54**	.20*	.45**	.51**	.60**	.09	–.10	.52**	.07	.22*	.25**	.48**	–.14	.29**	–

Note. † $p < .05$, * $p < .01$, ** $p < .001$.

particular, we observed that the positive relationship between indecisiveness and impulsivity holds specifically for dysfunctional impulsivity. In contrast, functional impulsivity is negatively and strongly correlated with standard measures of indecisiveness. This finding supports the notion that indecisive and impulsive behaviors both arise as maladaptive responses to the need for deliberation – the same individuals may in some instances respond too quickly when faced with a deliberative decision (resulting in high impulsivity scores) and in other instances hesitate or delay (resulting in high indecisiveness scores). Furthermore, we observed that standard measures of impulsivity are generally positively related to the decision difficulty subscale of the MS, but negatively related to the high standards subscale. This finding suggests that one motivation for decision delay (reluctance to engage with decisions) may share a common cause with the tendency to sometimes make hasty decisions, whereas another motivation for decision delay (deliberating in order to optimize one's choices) may reflect an opponent process with the tendency to act rashly, manifesting as a negative correlation.

These disparate motivations for indecisiveness are highlighted by the distinct behavioral clusters identified using the DBI. Like traditional evaluative measures of indecisiveness, classic forms of indecisive behavior (as captured by the DBI 'neurotic' subscale) correlate positively with standard forms of impulsivity (BIS, urgency, and dysfunctional impulsivity). However, other forms of indecisive behavior (as captured by the DBI 'perfectionistic' subscale, which reflects a desire to optimize choice by delaying it) in fact exhibit the more intuitive negative relationship with impulsivity.

4. General discussion

In this paper we document an initially surprising positive association between indecisiveness and impulsivity. Our findings suggest that classical measures of indecisiveness and impulsivity can be viewed as two sides of the same coin. Both indecisiveness and impulsivity are maladaptive behavioral responses to difficulty engaging with a decision. We surmise that these distinct responses arise from a common desire to avoid negative affect that some individuals experience when making choices. When these individuals are given the opportunity to make unrestricted selections, they may behave in an impulsive manner, hastily choosing in order to avoid unpleasant deliberation over opportunity costs (i.e. thinking about what one must give up in order to obtain the target object or experience). However, when presented with a restricted choice between two or more items, the same individuals may struggle to resolve a tradeoff between each option (i.e., getting mired in an approach-approach or avoidance-avoidance conflict). This interpretation is supported by the association between decision difficulty and a variety of negative emotions, such as vulnerability and worry, which has been documented previously (Milgram & Tenne, 2000). Similarly, studies have independently found that both indecisiveness and urgent impulsivity are associated with neuroticism (Germeijs & Verschuere, 2011; Whiteside & Lynam, 2001), which is characterized by feelings of anxiety and distress, and compulsiveness (Frost & Shows, 1993; Lochner & Stein, 2006), which is a pathological behavioral attempt to ameliorate negative emotions or sensations. To explore this potential mechanism, future studies might investigate the relationship between indecisiveness/impulsivity and response latency during restricted and unrestricted choices, and might test whether that relationship is mediated by negative affect experienced during decision-making.

Furthermore, we note that this positive relationship between conventional measures of impulsivity and indecisiveness obscures a more nuanced story when one examines the relationship between subscales of these constructs. In particular, we find that 'perfectionistic' indecisiveness does, in fact, exhibit a negative relationship with impulsivity, albeit with a type of impulsivity (lack of premeditation) that is not distilled in many measures of this construct. Both perfectionism and premeditation are related to depth of evaluation, suggesting that

whereas a neurotic preference to avoid engaging with decisions may underlie some forms of both indecisiveness and impulsivity, a desire to optimize decision outcomes may lead to excessive contemplation before choosing, manifesting as a striking lack of impulsivity. This is consistent with Kruglanski et al.'s (2000) observation that assessment (the critical evaluation of alternatives to select the best) is negatively related to both decisiveness and functional impulsivity.

The present research provides a first step to understanding the complex relationship between impulsivity and indecisiveness. While choices that are excessively or insufficiently deliberative are commonly labeled as impulsive or indecisive, multiple mechanisms may actually underlie each construct and yield distinct behavioral subtypes. Negative affect that some people experience during choice may drive certain forms of both impulsivity and indecisiveness, while excessive assessment prior to choice may produce another, non-impulsive type of indecisiveness. Future studies are needed to test these and other potential mechanisms underlying different types of indecisive and impulsive behaviors.

Appendix A. Decision Behaviors Inventory and Impulsive Behavior Subscale

Decision Behaviors Inventory.

Directions: For each of the behaviors listed below, please indicate whether it applies to you: (1) Never or almost never, (2) Occasionally, (3) Sometimes, (4) Often, (5) Always or almost always.

1. When I'm hungry I stand in front of the refrigerator for a while trying to figure out what I want.
2. When I make a big electronics purchase (e.g., laptop, digital camera) I spend days or weeks thoroughly researching the options before choosing.
3. When facing a complex project, I put off getting started until the deadline is looming.
4. I'm the last of my group to decide what to order in restaurants.
5. I try on more than one outfit in the morning before I pick one I like.
6. I know what movie or movies I want to rent before I go to the store or online. (R)
7. When I receive an invitation for a future event such as a party or wedding, I respond yes or no right away. (R)
8. I like to "sleep" on things before making an important decision.
9. When someone gives me a gift card for credit with an online merchant (e.g., iTunes, Amazon), it takes me more than one visit to the web site to choose what to spend it on.
10. When it is up to me to make weekend social plans I figure things out several days in advance. (R)
11. When planning a vacation I buy tickets and book rooms at least a month in advance. (R)
12. Before I purchase a gift I browse multiple stores and/or web sites.
13. If I'm at a restaurant where they serve food family-style (where people share dishes), I let other people in my group choose all of the dishes.
14. Before I finalize my decision to purchase an expensive item, like a car or nice piece of furniture, I go to see it at least a couple of times.
15. When I go on vacation I write out a detailed itinerary in advance and I stick to it. (R)
16. When I go on a business trip or vacation I use virtually all of the items that I packed into my suitcase. (R)
17. When I am unsure which color or style of a product to purchase I find out which is most popular.
18. When I go out for ice cream, frozen yogurt, or gelato, I try tasting samples before choosing.

Scoring directions:

'Neurotic' Indecisiveness: Items 1, 3, 4, 5, 13, 17, 18.

'Perfectionistic' Indecisiveness: Items 2, 8, 9, 12, 14.

'Lackadaisical' Indecisiveness: Items 6, 7, 10, 11, 15, 16.

Impulsive Behaviors:

1. When I go to a mall I buy things “on impulse” and later regret having bought them.
2. When I go shopping for food I end up buying things I hadn't planned to buy because they look good.
3. When I go shopping for clothing I end up bringing home at least one item I never wear.
4. When I go on vacation I come back with some souvenirs and gifts that I later throw away.

Appendix B. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.paid.2015.10.030>.

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