Journal of Studies in Social Sciences and Humanities
http://www.jssshonline.com/
Volume 8, No. 2, 2022, 171-181
ISSN: 2413-9270

Examining How Celebrity Admiration Influences Decision Making

Emilia Flint
E-mail: Emilia.Flint@bhsu.edu
Black Hills State University

John Calicchia
Bridgewater State University

Lynn E. McCutcheon
Editor, NAJP

Ho Phi Huynh
Texas A&M University-San Antonio

Abstract

The process of decision making has been examined for several years. Additionally, the link between intelligence and decision making has found a negative correlation between impulsivity and intelligence. While relatively new, the scientific study of attitudes toward celebrities adds a plethora of information regarding the link between cognitive measures and celebrity admiration. To date, there is no known study determining how decision making styles relate to intelligence as well as if there is a relationship between decision making styles and celebrity admiration. The main purpose of this study is to examine the psychometric properties of the General *Decision-making Scale* (GDMS) and find out if any relationship exists between celebrity admiration and decision making. We administered the *Celebrity Attitude Scale* (CAS-D), brief measures of crystallized and fluid intelligence, and the *General Decision-making Scale* (GDMS) to 143 college students. We compared the five subscales of the GDMS to the celebrity and intelligence measures. As expected, Rational decision-making was negatively correlated with Avoidant and Spontaneous decision-making styles. Avoidant and Spontaneous decision-making styles were positively related to each other. Avoidant decision-making was positively correlated with attitude toward one's favorite celebrity. Results were discussed and recommendations for further research were offered. These findings continue to contribute to the scientific conversation about influences on decision making.

Key words: Decision-making, intelligence, celebrity attitude

Introduction

The *General Decision-making Scale* (GDMS) was developed to measure the different ways in which adults make important decisions about their lives. Factor analysis of the scale revealed five types of decision-making styles (Scott & Bruce, 1995). The Rational style is typified by careful, logical planning ("My decision making requires careful thought"), whereas the Intuitive decision-maker relies heavily on inner feelings and intuition ("I generally make decisions that feel right to me"). The Dependent style is one of strong reliance on the judgments

of others ("I rarely make important decisions without consulting other people"). The Avoidant style is typified by putting off decisions as long as possible ("I often procrastinate when it comes to making important decisions"), and Spontaneous decision-makers make impulsive, spur-of-the-moment decisions ("I make quick decisions").

Research has generally confirmed the five-factor structure, and found the GDMS to be reliable and valid. Loo (2000), Baiocco et al. (2009), and Bavol'ar and Orosova (2015) all confirmed the five-factor structure found by Scott and Bruce (1995), and all three studies found that the Rational style correlated negatively with the Spontaneous style, as might be expected, because a rational thinker would take the time necessary to think about alternative solutions to life's problems. Riaz et al. (2012) found that Rational decision-making correlated positively with the Big Five measure of conscientiousness. Doe et al. (2017), Spicer and Sadler-Smith (2005) and Bayram and Aydemir (2017) found that the Rational style correlated negatively with the Avoidant and Spontaneous styles. Furthermore, the Avoidant and Spontaneous styles have been found to correlate positively with each other (Baiocco et al., 2009; Bayram & Aydemir, 2017: Doe et al., 2017; Spicer & Sadler-Smith (2005). Spicer and Sadler-Smith (2005) also found good test-retest reliability for all five styles.

The avoidant decision-making style involves persistent procrastination, and there is considerable research on people who procrastinate. For example, procrastinators show high stress (Eisenbeck et al., 2019; Rice et al., 2012; Sirois et al., 2003), high anxiety (Glick et al., 2014), low cognitive flexibility (Eisenbeck et al., 2019; Glick et al., 2014), and poor mental health overall (Ferrari, 2010; Stead et al., 2010).

Additional research is needed to validate the GDMS (Loo, 2000). To our knowledge, there has never been an attempt to determine how the decision-making styles relate to intelligence. We assumed that some decision-making styles would be related to crystallized and fluid intelligence, in accordance with Cattell's two-factor theory of intelligence (1987). Crystallized intelligence refers to an accumulation of wisdom, facts, and skills learned over one's life. Fluid intelligence is the ability to reason and think flexibly. There is evidence that people who score high on intelligence tests usually make rational decisions (Butler et al., 2017; Flouri et al., 2019; Stanovich, 2009). For example, Flouri et al. (2019) found that IQ scores were positively related to the quality of the decisions made by young adolescents. Baiocco et al. (2009) found that Rational decision-makers also tended to be high achievers in school. On the other hand, Stanovich (2009) found that the relationship between intelligence and rational thought was only .20 to .35, and some people who have higher than average IQ scores choose not to get vaccinated because of fears and phobias and/or a conspiricist worldview (Hornsey, 2020). Furthermore, anecdotes about intelligent people who make poor decisions are ubiquitous. These mixed findings show that Rational scores on the GDMS are unlikely to correlate very strongly with scores on our measures of crystallized and fluid intelligence.

Based on our literature review we made the following predictions about GDMS subscale scores:

1) Rational decision-making will correlate positively with scores on a fluid measure of intelligence, the *Advanced Reasoning Skills Test* (ARST).
2) Rational decision-making will correlate positively with scores on a 30-item vocabulary test, (Vocab), a crystallized measure of intelligence.
3) Spontaneous decision-making (impulsivity) will correlate negatively with a behavioral measure of impulsivity (length of time to complete the survey), providing further evidence for the validity of the former.
4) Rational decision-making will correlate negatively with Avoidant and Spontaneous decision-making.

5) Avoidant and Spontaneous decision-making styles will correlate positively with each other.

Decision-making and Celebrity Admiration

Over the course of several years, McCutcheon and colleagues (Aruguete, Huynh, et al., 2019; Griffith et al., 2013; Maltby et al., 2002; Maltby & McCutcheon, 2001; McCutcheon et al., 2002; McCutcheon et al., 2004) have measured degrees of admiration for a favorite celebrity. They created scale items to measure the *extent* to which individuals admired their favorite celebrities. To date more than 85 published articles have used the *Celebrity Attitude Scale* (CAS) in one form or another, and studies have validated its reliability and its convergent and external validities (for example, see Griffith et al., 2013, & Brooks, 2018, for a review).

The CAS consists of three subscales. *Entertainment-Social* (ES) is reflected in agreement with items like "I love to talk with others who admire my favorite celebrity," A second level of celebrity worship is characterized by more *Intense-Personal* (IP) feelings, defined by items like "I have frequent thoughts about my celebrity, even when I don't want to." The third level, labeled *Borderline-Pathological* (BP), is exemplified in items like: "If I were lucky enough to meet my favorite celebrity, and he/she asked me to do something illegal as a favor I would probably do it."

Early research using the *Celebrity Attitude Scale* showed that persons who were strongly attached to their favorite celebrities tended to score low on several cognitive measures. Specifically, scores on the CAS were inversely related to scores on measures of creativity, the information subscale on an IQ test (crystallized intelligence), and a test of critical thinking. On two of the three CAS subscales (IP, BP) scores were negatively related to a measure of cognitive flexibility (Martin et al., 2003). In a follow-up study, scores on the CAS were negatively related to the same measure of cognitive flexibility in two samples, one comprised of college students, the other comprised of adults (Maltby et al., 2004). Another study found that an increase in level of education was accompanied by a decline in CAS scores (McCutcheon et al., 2004).

More recently, scores on a test of critical thinking correlated negatively with one of the subscales of the CAS (IP; McCutcheon et al., 2012). The CAS also correlated negatively with scores on an analytic thinking task based on logical syllogisms, some of which were logically valid but factually untrue (McCutcheon et al., 2014). Aruguete, Gillen, and colleagues (2019) found that CAS scores correlated negatively with an environmental knowledge quiz and a vocabulary test. In accordance with Cattell's two-factor theory of intelligence, it was found that crystallized and fluid intelligence measures were weakly, negatively correlated with CAS scores. Linear regression showed that celebrity worship predicted lower performance on the cognitive tests even after controlling for demographic variables, material wealth, and self-esteem (McCutcheon et al., 2021).

Thus, it appears as though cognitive attitudes and abilities are negatively related to the tendency to admire one's favorite celebrity. What remains elusive is a firm explanation for why this is so. To answer this question, we turned to how people make important decisions. The *General Decision-making Scale* (GDMS; Scott & Bruce, 1995) was developed and validated in an effort to identify different styles of decision-making. To our knowledge there has never been an attempt to determine the relationship between decision-making styles and the extent of one's admiration for a favorite celebrity.

Four studies have linked impulsivity to scores on the CAS (Aruguete, Huynh, Collisson et al., 2019; Maltby et al., 2001; Maltby et al., 2011; McCutcheon et al., 2014). In each of them, participants who tended to be impulsive also tended to score high on the CAS, especially the most problematic/addictive subscale of the CAS (McCutcheon et al., 2014).

Impulsivity is nearly synonymous with a Spontaneous decision-making style, and it is

negatively correlated with cognitive ability (Cathcart & Liedtke, 1969; Eska & Black, 1971; Frierson, 1975; Messer, 1970; Spinella, 2004). In two studies, participants who reflected on the items presented on an IQ test scored higher than those who answered impulsively (Eska & Black, 1971; Frierson, 1975). In another, impulsive responders scored lower in math achievement than reflective responders (Cathcart & Liedtke, 1969). Controlling for IQ, impulsive responders earned lower grades than controls (Spinella, 2004).

Degree of celebrity admiration is also related to some of the same mental problems faced by persons who habitually avoid making decisions until the last minute (procrastinators). Celebrity admiration has

been associated with low levels of cognitive flexibility (Maltby, Day, McCutcheon, Martin et al., 2004; Martin et al., 2003; Shabahang et al., 2019), high levels of anxiety (Maltby et al., 2001; Maltby et al., 2011), and poor mental health (Maltby, Day, McCutcheon, Gillett et al., 2004; Maltby et al., 2003; Zsila et al., 2020).

To further validate the GDMS we administered it along with the *Celebrity Attitude Scale* (CAS), a vocabulary test (Vocab), and the *Advanced Reasoning Skills Test* (ARST).

Based on our literature review we made the following predictions about GDMS subscale scores and their correlation with CAS scores:

6) Scores on Rational decision-making will correlate negatively with CAS scores.

7) Scores on Spontaneous decision-making (impulsivity) will correlate positively with CAS scores.

8) Scores on a behavioral measure of Spontaneous decision-making (impulsivity) (length of time to complete the present survey) will correlate negatively with scores on the CAS.

9) Scores on Avoidant decision-making will correlate positively with CAS scores.

Method

Participants

An a priori power analysis using the GPower computer program (Erdfelder et al., 1996) indicated that a total sample size of 128 (assuming equal group sample sizes) would be needed to detect a moderate effect size of d = .5 (Cohen, 1988) with 80% power using an independent t-test with alpha at .05, two tails.

We recruited 195 participants from universities located in four states: Georgia (n = *82*), South Dakota (n = 40), Texas (n = 44), and Massachusetts (n = 29). Of these, 52 failed to complete one or more of the study measures, or had high numbers of contradictory responses on the CAS-D and were removed from subsequent analyses. Our final sample consisted of 143 participants: 108 females, 30 males, and five who did not respond. The mean age for the total sample was M = 22.00, SD = 6.18. The majority were White (n = 76, 53.1%), followed by Latinx (n = 29, 20.3%), African-American (n = 25, 17.5%), American Indian or Alaska native (n = 5, 3.5%), Asian/Pacific Islander (n = 3, 2.1%), and five who did not respond. A minimal amount of course credit was awarded to each participant.

Measures

The GDMS measures five styles of decision-making. Each style is measured by five items, with "strongly disagree" equal to 1, and "strongly agree" equal to 5. High scores on each sub-scale indicate persons who tend to use that particular style frequently to make decisions. Scott and Bruce (1995), Thunholm (2004), and Avsec (2012) found alpha coefficients above .71 for each subscale; Gambetti et al., (2022) found alphas between .72 and .87 across the five subscales; and Spicer and Sadler-Smith (2005) recorded alphas between .67 and .87 for two samples. Coefficient alphas for the five subscales in the present study ranged from .74 to .80. The overall alpha of the scale was .74.

The *Celebrity Attitude Scale* (*CAS*) contains 23 items and has been shown to have good psychometric properties over a lengthy period of time (Aruguete et al., 2019; Griffith et al., 2013; Hitlan et al., 2021; Maltby et al., 2003; Maltby & McCutcheon, 2001; McCutcheon et al., 2020; McCutcheon et al., 2002; Zsila et al., 2018). We used a version of the CAS in which 10 of the 23 items were reverse-scored, called the CAS-D. Sample items include "My friends and I like to discuss what my favorite celebrity has done," "I love to talk with others who admire my favorite celebrity," "When something good happens to my favorite celebrity I do not feel like it happened to me" (reversed), and "I am not obsessed with details of my favorite celebrity's life" (reversed). The response format for the *CAS* is a 5-point scale, ranging from 1(*strongly disagree*) to 5(*strongly agree*). High scores (after reversing scores on 10 of the items) indicate a strong attachment to one's favorite celebrity. Across several studies, total scale Cronbach's alpha values ranged from .84 to .94 (Griffith et al., 2013; McCutcheon et al., 2004). Cronbach's alpha for the total CAS-D in the current study was .84.

Vocabulary Test (Vocab) consists of 30 stimulus words randomly selected from an online quiz prepared

by *Encyclopaedia Britannica* (2017). Each stimulus word is followed by four possible one-word definitions, of which one is correct. Examples of stimulus words and their correct definitions that we used are: vain-conceited, amorphous-shapeless, and elucidate-explain. We pilot tested Vocab with a sample of 35 university students. Based on the results (mean correct = 12.54, *SD* = 4.70), we substituted three new words (futile, condone, jargon) for the three most frequently missed words on the pilot version, and retested with a larger and better educated sample. The result was a mean of 23.10 and an *SD* of 6.11. In the present study, we imposed a time limit of six minutes. The purpose of the Vocabulary test was to serve as a brief measure of crystallized intelligence (Aruguete et al., 2019). Previous studies have used a vocabulary test as a brief substitute for a battery of crystallized measures (De keersmaecker & Roets, 2017; Pennycook et al., 2013) because vocabulary scores correlate highly with several other crystallized measures, but minimally with measures of fluid intelligence (Jackson, 1984).

Advanced Reasoning Skills Test (ARST; Aruguete et al., 2012; McCutcheon et al., 2012). The ARST is a 25-item, multiple-choice, measure of fluid intelligence consisting of 15 items from the *Scottsdale Test of Critical Thinking*, six items developed by Aruguete et al. (2012), two items adapted from *The Elements of Reasoning* (Conway & Munson, 2000), and two items adapted from the *California Critical Thinking Skills Test* (Facione, 1990). In two previous studies (McCutcheon et al., 2003; 2014), the mean number of correct answers ranged from 16.27 (SD = 4.54) to 17.57 (SD = 3.72). Appendix A contains three sample items. In the present study we imposed a time limit of 20 minutes.

Procedure

Following IRB approval, participants were recruited by the authors of the present study to participate in a study of "how people make decisions." Each of the measures described above was presented in random order via Qualtrics to prevent a systematic order effect. The CAS-D was used as a screening device to delete data from persons who were not paying close attention to the content of the items. The rationale was that it seems highly unlikely that persons who strongly agree with the positively worded items would also strongly agree with the negatively worded items. It also seems highly unlikely that the opposite would occur. Before we reverse-scored the 10 negatively worded items on the CAS-D ,we deleted all data from persons whose scores more or less contradicted each other on three pairs of items on the CAS-D. These item pairs were 5 and 14, 2 and 10, and 3 and 11. For example, item 5 reads "When something good happens to my favorite celebrity I do not feel like it happened to me," and item 14 reads "When something bad happens to my favorite celebrity I feel like it happened to me." We defined a contradiction as scores of either a 4 or a 5 on one item in each pair and a 1 or a 2 on the other item in each pair. As a consequence of this screening device, we deleted data from 52 potential participants, leaving us with a pool of 143 participants. After data were collected participants were given more information about the study's aims.

Results

Our first hypothesis was that Scores on Rational decision-making will correlate positively with scores on the ARST. Table 1 shows that the correlation between ARST scores and scores on Rational decision-making was $r(135) = .14$, $p = .100$. Our second hypothesis was that scores on Rational decision-making will correlate positively with scores on Vocab, a crystallized measure of intelligence. Table 1 shows that this correlation coefficient, $r(135) = .08$, $p = .137$ was also not significant.

Hypothesis three was that scores on Spontaneous decision-making (impulsivity) will correlate negatively with a behavioral measure of impulsivity, providing further evidence for the validity of the former. We found a correlation coefficient of $r(139) = -.07$, $p = .405$ between the two.

Hypothesis four was that scores on Rational decision-making would correlate negatively with scores on the Avoidant and Spontaneous decision-making styles. Table 1 shows that Rational decision-making did correlate negatively with both $r(132) = -.28$, $p = .001$ and $r(134) = -.34$, $p = .001$, respectively.

Our fifth hypothesis was that Scores on Avoidant and Spontaneous decision-making styles would

correlate positively with each other. Table 1 shows that they did correlate positively $r(135) = .29$, $p = .001$.

Hypothesis six was that scores on Rational decision-making would correlate negatively with total CAS scores. Table 1 shows that they did not correlate negatively $r(130) = .12$, $p = .171$.

Hypothesis seven was that scores on Spontaneous decision-making (impulsivity) would correlate positively with CAS scores. Table 1 shows that they did not correlate positively $r(149) = .01$, $p = .405$.

Hypothesis eight was that a behavioral measure of Spontaneous decision-making (impulsivity; length of time to complete the present survey) would correlate negatively with total scores on the CAS. We found a correlation coefficient of $r(135) = -.03$, $p = .704$, between the two.

Our ninth hypothesis was that Avoidant decision-making would correlate positively with CAS scores. Table 1 shows that they did correlate positively $r(130) = .17$, $p = .058$.

Table 1. *Means, (SD)s, and Correlations between Study Variables*

Measures	Mean (SD)	1	2	3	4	5	6	7	8	9	10
1 CAS-ES	27.68 (6.27)	--									
2 CAS-IP	15.88 (5.12)	.55**	--								
3 CAS-BP	8.56 (2.74)	.59**	.54**	--							
4 CAS-Tot	51.63 (11.56)	.90**	.82**	.77**	--						
5 GDMS-R	19.47 (3.33)	.18*	.10	-.01	.12	--					
6 GDMS-I	19.00 (3.33)	.21*	.07	.03	.13	.39**	--				
7 GDMS-D	18.82 (3.96)	.18*	-.01	-.04	.09	-.19*	.18*	--			
8 GDMS-A	15.07 (4.67)	.12	.09	.17*	.17*	-.28**	.02	.27**	--		
9 GDMS-S	14.17 (3.77)	-.07	.02	-.10	-.01	-.34**	.10	-.11	.29**	--	
10 ARST	13.13 (4.31)	-.13	-.27**	-.14	-.21*	.14	-.13	.17*	-.12	-.11	--
11 Vocab	14.20 (5.03)	-.05	-.33**	-.18*	-.19*	.08	.03	.09	-.03	-.07	.50**

R = Rational, I = Intuitive, D = Dependent, A = Avoidant, S = Spontaneous

* = $p < .05$; ** = $p < .01$

Discussion

Main Results

Our first two hypotheses, that Rational decision-making would correlate positively with scores on the ARST, a fluid measure of intelligence and with scores on Vocabulary, a crystallized measure of intelligence, both failed to achieve significance. One possible explanation is that both measures were difficult even for college students, with low means and small standard deviations. Perhaps the low spread of scores served to reduce the size of the correlation coefficients. A replication of our study using easier cognitive measures may result in a larger spread of scores and significant relationships between Rational decision-making and cognitive tests.

Hypotheses four and five were both concerned with subscales of the GDMS and how they correlated with each other. Previous studies showed that scores on Rational decision-making correlated negatively with Avoidance and Spontaneous decision-making (Baiocco et al., 2009; Bavol'ar & Orosova, 2015; Bayram & Aydemir, 2017; Doe et al., 2017; Loo, 2000; Spicer & Sadler-Smith, 2005), just as we found. Hypothesis five, our finding of a positive correlation between Avoidance and Spontaneous scores, was also supported by earlier research (Baiocco et al., 2009; Bayram & Aydemir, 2017; Doe et al. 2017; Spicer & Sadler-Smith, 2005).

Hypotheses six and seven, namely that total CAS scores would be correlated negatively with Rational decision-making and positively with Spontaneous decision-making, were not upheld. It should be noted that scores on Rational decision-making reflected self-report data, that is, how individuals perceive their tendencies to decide things rationally. The line of research triggered by Tversky and Kahneman (1974) has shown that we humans are far less rational than was commonly believed several decades ago. On the other hand, actual performance on measures of rational/cognitive thinking does show negative correlations with CAS scores, as indicated in our Table 1 and previous research cited below. Total CAS scores (Hypothesis 9) were found to be positively related to GDMS-Avoidance scores as predicted. As noted earlier, persons who avoid making decisions often have been found to have high levels of stress (Eisenbeck et al., 2019; Rice et al., 2012; Sirois et al., 2003), and anxiety (Glick et al., 2014), low levels of cognitive flexibility (Eisenbeck et al., 2019; Glick et al., 2014), and they often suffer from poor mental health overall (Ferrari, 2010; Stead et al., 2010). These same symptoms are often found in those who score high on the CAS (e.g., Maltby et al., 2003; Maltby et al., 2011; Martin et al., 2003).

Hypotheses 3 and 8 were designed to determine if scores on a behavioral measure of decision-making (length of time to complete the present survey) would correlate negatively with scores on GDMS-Spontaneous and total scores on the CAS. Though both correlation coefficients were negative, they fell far short of statistical significance. These results are somewhat disconcerting, since the ultimate goal of any psychological test is to predict actual behavior. We recommend that other researchers find ways to test the validity of the GDMS.

Incidental Findings

Table 1 shows some results that are peripheral to our main findings, but consistent with previous studies. For example, the pattern of negative correlations between the CAS and the two cognitive measures is consistent with the results of several previous studies (Aruguete et al., 2020; Maltby et al., 2004: McCutcheon et al., 2003; McCutcheon et al., 2012; McCutcheon et al., 2014; McCutcheon et al., 2021). The mean score per item among the three subscales of the CAS is highest for CAS-ES, as is typical for virtually every study in which scores have been recorded for each of the subscales (e.g., Griffith et al., 2013; McCutcheon et al., 2003; McCutcheon et al., 2012). We found that mean scores per item were lower for GDMS-Avoidant and GDMS-Spontaneous as compared to the other three GDMS subscales, just as they were for each of the previous studies of the GDMS that we cited earlier (Baiocco et al., 2009; Bavol'ar & Orosova, 2015; Bayram & Aydemir, 2017; Doe et al., 2017; Gambetti et al., 2022; Loo, 2000; Spicer & Sadler-Smith, 2005). El Othman et al. (2020) found a similar pattern except that only GDMS-Avoidant scores were lowest. We found it interesting that GDMS-Rational correlated

positively, albeit weakly, with CAS-ES, but not the other two CAS subscales. We argue that those who admire celebrities for their entertainment value are more or less rational people.

Research Implications

Findings from this study encourage the ongoing research related to decision making, intelligence, and celebrity admiration. Examining influences on decision making has relevance in mental health treatment and prevention (Eisenbeck et. al., 2019; Rice et. al., 2012; Sirois et al., 2003). Understanding what influences decision making also has implications for health, wellness, and social cause participation (e.g. vaccination, exercise, participating in protests).

Limitations and Conclusions

Our study was limited by the fact that the results were correlational, thus firm causal conclusions are impossible. As a general rule, our results provide strong evidence to support the patterns of relationships previously obtained using the GDMS. On the other hand, attempts to correlate GDMS scale scores (especially Rational) with objective measures of cognitive ability and a measure of celebrity admiration did not succeed very well, and the attempts to link spontaneous decision-making to behavioral criteria failed. In our opinion, much more research on the validity of the GDMS is sorely needed. Future research might explore the small correlations between CAS-Entertainment and the Rational, Intuitive, and Dependent subscales of the GDMS to determine if they replicate.

References

Aruguete, M. S., Gillen, M. M., McCutcheon, L. E., & Bernstein, M. J. (2019). Disconnection from nature and interest in mass media. *Applied Environmental Education and Communication.* Doi:10.1080/1533015x.2019.1597662

Aruguete, M. S., Goodboy, A. K., Jenkins, W. J., Mansson, D. H., & McCutcheon, L. E. (2012). Does religious faith improve test performance? *North American Journal of Psychology*, *14*(1), 185-196.

Aruguete, M. S., Huynh, H., Collisson, B., McCutcheon, L., Piotrowski, C. (2019). Stacking up with the stars: Relative deprivation and excessive admiration of celebrities. *Psychological Reports*, 1-14. Doi:10.1177/00332941198336765

Aruguete, M. S., Huynh, H., McCutcheon, L. E., Browne, B.L., Jurs, B., & Flint, E. (2019). Are measures of life satisfaction linked to admiration of celebrities? *Mind and Society.*

Avsec, A. (2012). Do emotionally intelligent individuals use more adaptive decision-making styles? *Studia Psychologia, 54,* 209-220. http://biumetalelement.cejsh-0a1012d8-34db-4dla-a772-b810678611a1

Baiocco, R., Laghi, F., & D'Alessio, M. (2009). Decision-making style among adolescents: Relationship with sensation seeking and locus of control. *Journal of Adolescence, 32,* 963-976.

Bavol'ar, J., & Orasova, O. (2015). Decision-making styles and their associations with decision-making competencies and mental health. *Judgment and Decision Making, 10*(1), 115-122.

Bayram, N., & Aydemir, M. (2017). Decision-making styles and personality traits. *International Journal of Recent Advances in Organizational Behaviour and Decision Sciences, 3*(1), 905-915.

Brooks, S. K., (2018). FANatics: Systematic literature reviews of factors associated with celebrity worship, and suggested directions for future research. *Current Psychology.* [on-line]. Available: https//DOI.org/10.1007/s12144-018-9978-4

Butler, H., Pentoney, C., & Bong, M. P. (2017). Predicting real-world outcomes: Critical thinking ability is a better predictor of life decisions than intelligence. *Thinking Skills and Creativity, 25.* Doi:10.1016/j.tsc.2017.06.005

Cathcart, W. G., & Liedtke, W. (1969). Reflectiveness/impulsiveness and mathematical achievement. *The Arithmetic Teacher, 16,* 565-567.

Cattell, R. B. (1987). *Intelligence: Its structure, growth, and action.* New York: Elsevier.

Conway, D. A., & Munson, R. (2000). *The elements of reasoning* (3rd ed.). Belmont, CA: Wadsworth.

De Keersmaeker, J., & Roets, A. (2017). 'Fake news': Incorrect but hard to correct. The role of cognitive ability on the impact of false information on social impressions. *Intelligence, 65*, 107-110. https: //doi.org/10.1016/j.itell.2017.10.005

Doe, R., Castillo, M. S., & McKinney, A. B. (2017). Work personality and decision making styles among working and non-working students. *Open Journal of Social Sciences, 5*. 286-297. https://doi.org/10.4236/jss.2017.56024

Eisenbeck, N., Carreno, D. F., & Ucles-Juarez, R. (2019). From psychological distress to academic procrastination: Exploring the role of psychological inflexibility. *Journal of Contextual Behavioral Science, 13*, 103-108.

El Othman, R., El Othman, R., Hallit, R., Obeid, S., & Hallit, S. (2020). Personality traits, emotional intelligence and decision-making styles in Lebanese universities medical studies. *BMC Psychology, 8.* https://Doi:org/10.1186/s40359-020-00406-4

Encyclopaedia Britannica (15th ed.). (2017). United States: Benton Foundation.

Eska, B., & Black, K. N. (1971). Conceptual tempo in young grade-school children. *Child Development, 42*, 505-516.

Facione, P. A. (1990). *California Critical Thinking Skills Test – Form A.* Millbrae, CA: California Academic Press.

Ferrari, J. R. (2010. *Still procrastinating: The no regrets guide to getting it done.* New Jersey: Wiley and Sons.

Flouri, E., Moulton, V., & Ploubidis, G. B. (2019). The role of intelligence in decision-making in early adolescence. *British Journal of Developmental Psychology, 37*(1), 101-111.

Frierson, H. T. (1975). Differences associated with conceptual tempo on academic achievement, IQ, and internal-external control measures. *Dissertation Abstracts International, 36*, 1861a.

Gambetti, E., Zucchelli, M. M., Nori, R., & Giusberti, F. (2022). Default rules in investment decision-making: Trait anxiety and decision-making styles. *Financial Innovation, 8.23.* https://Doi.org/10.1186/s40854-021-00329-y

Glick, D. M., Millstein, D. J., & Orsilla, S. M. (2014). A preliminary investigation of the role of psychological inflexibility in academic procrastination. *Journal of Contextual Behavioral Science,3*(2), 81-88. https://doi.org/10.1016/jcbs.2014.04.002

Griffith, J., Aruguete, M., Edman, J., Green, T., & McCutcheon, L. E. (2013). The temporal stability of the tendency to worship celebrities. *SAGE Open, April-June, 3*, 1-5. Doi: 10.1177/2158244013494221

Hitlan, R. T., McCutcheon, L. E., Volungis, A., Joshi, A., Clark, C. B., & Pena, M. (2021). Social desirability and the Celebrity Attitude Scale. *North American Journal of Psychology, 23*(1), 105-114.

Hornsey, M. J. (2020). Why facts are not enough: Understanding and managing the motivated rejection of science. *Current Directions in Psychological Science, 29*(6), 583-591. Doi: 10.1177/09637211420969364

Jackson, D. N. (1984). *Multidimensional Aptitude Battery manual*. Port Huron, MI: Research Psychologists Press.

Loo, R. (2000). A psychometric evaluation of the General Decision-making Scale inventory. *Personality and Individual Differences, 29*(5), 895-905. https://doi.org/10.1016/S0191-8869(99)00241-x

Maltby, J., Day, L., McCutcheon,L. E., Martin, M. M., & Cayanus, J. L. (2004). Celebrity worship, cognitive flexibility, and social complexity. *Personality and Individual Differences, 37*, 1475-1482.

Maltby, J., Day, L., McCutcheon, L. E., Gillett, R., Houran, J., & Ashe, D. D. (2004). Personality and coping: A context for examining celebrity worship and mental health. *British Journal of Psychology, 95*, 411-428.

Maltby, J., Houran, J., & McCutcheon, L. E. (2003). A clinical interpretation of attitudes and behaviors associated with celebrity worship. *Journal of Nervous and Mental Disease, 191*, 25-29.

Maltby, J., & McCutcheon, L. E. (2001). Correlations between scores on attitudes toward celebrities and authoritarianism. *Psychological Reports, 88*, 979-980.

Maltby, J., McCutcheon, L. E., & Lowinger, R. J. (2011). Brief report: Celebrity worshipers and the five-factor model of personality. *North American Journal of Psychology, 13*(2), 343-348.

Martin, M. M., Cayanus, J. L., McCutcheon,L. E., & Maltby, J. (2003). Celebrity worship and cognitive flexibility, *North American Journal of Psychology, 5*, 75-80.

McCutcheon, L. E., Ashe, D. D., Houran, J., & Maltby, J. (2003). A cognitive profile of individuals who tend to worship celebrities. *Journal of Psychology, 137*(4), 309-322.

McCutcheon, L. E., Green, T. D., Besharat, M. A., Edman, J. L., Wenger, J. L., & Shabahang, R. (2020). Values of college students in Iran and the United States who admire celebrities. *Psychological Reports*, DOI: 10.1177/0033294119898119

McCutcheon, L. E., Griffith, J. D., Aruguete, M. S., & Haight, E. (2012). Cognitive ability and celebrity worship revisited. *North American Journal of Psychology,14*(2), 383-392.

McCutcheon, L. E., Lange, R., & Houran, J. (2002). Conceptualization and measurement of celebrity worship. *British Journal of Psychology, 93*, 67-87.

McCutcheon, L. E., Lowinger, R., Wong, M., & Jenkins, W. (2014). Is analytic thinking related to celebrity worship and disbelief in religion? *North American Journal of Psychology,16*(3), 453-462.

McCutcheon, L. E., Maltby, J., Houran, J., & Ashe, D. D. (2004). *Celebrity worshippers: Inside the minds of stargazers*. Baltimore: PublishAmerica.

McCutcheon, L., Wong, M., Black, J., Maynard, D., Frey, R., & Rich, G. (2014). Does 'irresponsibility' predict the addictive level of celebrity worship? *North American Journal of Psychology, 16*(3), 519-530.

McCutcheon, L. E., Zsila, A., & Demetrovics, Z. (2021). Celebrity worship and cognitive skills revisited: applying Cattell's two-factor theory of intelligence in a cross-sectional study. *BMC Psychology, 9*, 174. https://Doi.org/10.1186/s40359-021-00679-3

Messer, S. B. (1970). The effect of anxiety over intellectual performance on reflection and impulsivity in children. *Child Development, 41*, 723-735.

Pennycook, G., Cheyne, J. A., Koehler, D. J., & Fugelsang, J. A. (2013). Belief bias during reasoning among religious believers and skeptics. *Psychonomic Bulletin Review, 20*, 806-811. https://doi.org/10.103758/s13423-013-0394-3

Riaz,M. N., Riaz, M. A., & Betool, N. (2012). Personality types as predictors of decision-making styles. *Journal of Behavioral Sciences, 22*, 99-114. http://pu.edu.pk/images/journal/doap/PDF-FILES/abstract%20.no.%208

Rice, K. G., Richardson, C. M., & Clark, D. (2012). Perfectionism, procrastination, and psychological distress, *Journal of Counseling Psychology*, doi:10.1037/a0026643

Scott, S. G., & Bruce, R. A. (1995). Decision-making style: The development and assessment of a new measure. *Educational and Psychological Measurement, 55*(5), 818-831.

Shabahang, R., Besharat, M. A., Nikoogoftar, M., & Sheykhangafshe, F. B. (2019). Role of cognitive flexibility & emotional regulation problems in prediction of celebrity worship among university students. *Knowledge & Research in Applied Psychology, 20*(1), 13-25.

Sirois, F. M., Melia-Gordon, M. L., & Pychyl, T. A. (2003). "I'll look after my health, later": An investigation of procrastination and health. *Personality and Individual Differences, 35*(5), 1167-1184. https://doi.org/10.1016/s0191-8869(02)00326-4

Spicer, D. P., & Sadler-Smith, E. (2005). An examination of the general decision making style questionnaire in two UK samples. *Journal of Managerial Psychology, 20*(2),137-149. Doi10.1108/02683940510579777

Spinella, M. (2004). Neurobehavioral correlates of impulsivity: Evidence of prefrontal involvement. *International Journal of Neuroscience, 114*, 95-104.

Stanovich,K. E. (2009). *What intelligence tests miss. The psychology of rational thought.* New Haven, CT: Yale University Press.

Stead, R., Shanahan, M. J., & Neufeld, R. W. (2010). "I'll go to therapy eventually": Procrastination, stress, and mental health. *Personality and Individual Differences, 49*(3), 175-180. https://doi.org/10.1016/j.paid.2010.03.028

Thunholm, P. (2004). Decision-making style: Habit, style, or both? *Personality and Individual Differences, 36*, 931-944. https://doi.org/10.1016/s0191-8869(03)00162-4

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4), 1124-1131. Doi:10.1126/science.185.4157.1124

Zsila, A., McCutcheon, L. E., & Demetrovics, Z. (2018). The association of celebrity worship with problematic Internet use, maladaptive daydreaming, and desire for fame. *Journal of Behavioral Addictions.* Doi: 10.1556/2006.7.2018.76

Zsila, A., Orosz, G., McCutcheon, L. E., & Demetrovics, Z. (2020). A lethal imitation game? Exploring links among psychoactive substance use, self-harming behaviors and celebrity worship. *Addictive Behaviors Reports*, *12*, 1-9. https:/doi.org/10.1016/j.abrep.2020.100319

Appendix A

Sample Items from the *Advanced Reasoning Skills Test* (ARST)

1) If Bryan is taller than Kevin, and Kevin is taller than Garrett, Which of the following can Sara conclude with absolute certainty?

A. Bryan is taller than Garrett. C. Kevin is taller than Bryan.

B. Bryan is taller than Sara. D. Kevin is taller than Sara.

2) "All Mercurians tell lies," means the same thing as:

A. If anyone is Mercurian, then that person is a liar.

B. If anyone is a liar, then that person is a Mercurian.

C. There is at least one person who is a Mercurian who lies.

D. People don't lie unless they are Mercurian.

3) Consider this argument: "Person A is shorter than person R. Person Y is shorter than person A, but person M is shorter than person Y. Therefore, person Y is shorter than person J." What information must be added to require that the conclusion be true, assuming that all premises are true?

A. Person A is taller than J. C. Person J is taller than A.

B. Person R is taller than J. D. Person J is taller than M.