

TESTING FOR GENDER DIFFERENCES IN DELAY DISCOUNTING OF
DIFFERENT COMMODITIES USING A UNIVERSITY SAMPLE

TESTE DE DIFERENÇAS DE GÊNERO NA DEPRECIÇÃO POR ATRASO DE
DIFERENTES BENS USANDO UMA AMOSTRA DE UNIVERSITÁRIOS

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ABSTRACT

Many studies have investigated how individuals discount delayed outcomes, but few, if any, have explicitly studied whether gender differences exist in discounting. The present study employed a university sample to complete a delay-discounting task that included the commodities of cigarettes, money (two amounts), the ideal body image, and the perfect mate. Significant gender differences were observed in discounting \$100,000 and ideal body image, with females displaying a greater degree of discounting than males. Factor analyses on the measures of delay discounting across the different commodities yielded a similar factor structure between genders, suggesting that although the genders may sometimes differ in how they discount particular consequences, these differences are likely linked to state, not trait, variables.

Keywords: Delay discounting; Gender differences; Money, Body Image, Factor analysis; College sample

RESUMO

Muitos estudos investigaram como indivíduos depreciam pagamentos atrasados, mas poucos, se alguém o fez, estudaram explicitamente se existem diferenças de gênero na depreciação. O presente estudo solicitou a uma amostra de universidade para completar uma tarefa de depreciação, que inclui bens como cigarros, dois valores em dinheiro, imagem corporal ideal e o par perfeito. Diferenças de gênero significativas foram observadas para a depreciação de US\$100,00 e imagem corporal ideal, com as mulheres exibindo um maior grau de depreciação do que os homens. A análise fatorial das medidas de depreciação com atraso entre os diferentes bens resultou em uma estrutura similar de fatores entre os gêneros, sugerindo que ainda que os gêneros possam às vezes diferir em como eles depreciam consequências específicas, essas diferenças estão ligadas a variáveis de estado, não de traço.

Palavras-chave: Depreciação por atraso; Diferenças de gênero; Dinheiro, Imagem corporal, Análise fatorial; Amostra de universitários.

Within behavioral psychology, impulsiveness can be defined as accepting a smaller, sooner reinforcer over a larger, later one (e.g., see Logue, 1995). One measure of impulsiveness is known as delay discounting, which occurs when an organism will accept smaller and smaller amounts of some rewarding consequence as the delay to obtaining the full amount increases. For instance, if someone owed you \$100, but would not be able to pay you for one month, you might be willing to take \$95 today rather than waiting a month

for the full amount. If so, then the delay of one month has decreased the subjective value of \$100 by at least five percent. Further, if the person was unable to pay you for five years, you might be willing to take \$50 today rather than waiting that long for the full amount. How “steeply” people discount refers to how quickly the outcome loses value as its delivery is delayed. Delay discounting can be seen in action in the case of lottery winners. Specifically, many lottery winners in the United States will opt to take a smaller,

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lump-sum amount in winnings immediately rather than having their full jackpot paid out to them over many years (e.g., Baker, Johnson, & Bickel, 2003).

Delay discounting has received much research attention, partially because it is a multifaceted measure. It can be used as a behavioral measure of impulsivity (e.g., Fields, Collins, Leraas, & Reynolds, 2009) or as a measure of subjective value (e.g., the magnitude effect; Chapman, 1996, Thaler, 1981). Discounting has also been associated with certain psychological disorders (e.g., pathological gambling; see Petry, 2005, for a discussion) and may have implications for decision-making in a variety of venues (e.g., making government policy decisions; see Hardisty & Weber, 2009).

Much of the research on delay discounting has focused on the “rate” at which people discount (i.e., how “steeply” they discount). However, it is important to note that the rate of discounting is a behavioral measure. That is, the rate of discounting is determined by responses made to concurrently available options when the amount of the smaller, sooner consequence and/or the delay to the larger, later consequence is manipulated. Likewise, much of the research on discounting in humans has employed hypothetical, rather than actual, reinforcers (see Madden & Bickel, 2010, for a review). This practice has been propagated by research that has suggested that rates of discounting do not differ between real and hypothetical rewards (e.g., Lagorio & Madden, 2005; Madden, Begotka, Raiff, & Kastern, 2003; Madden, Raiff, Lagorio, Begotka, Mueller, Hehli, & Wegener, 2004; but see Hinvest & Anderson, 2010).

Delay discounting, as a behavior-analytic measure, has been extensively researched using between-subject designs (see Madden & Bickel, 2010). A number of researchers have been interested in how subject variables could influence delay discounting. One such example is the finding that pathological gamblers discount monetary rewards more steeply than non-pathological gamblers (e.g., Dixon, Marley, & Jacobs, 2003), which may suggest that these individuals struggle with delayed gratification. Another is the finding that cigarette smokers discount cigarettes more steeply than nonsmokers (e.g., Johnson, Bickel, & Baker, 2007), which may indicate that they place less weight on long-term health consequences than nonsmokers. Still another is the finding that individuals who regularly attend church services discount delayed monetary rewards more steeply than those who do not (Weatherly & Terrell, submitted), which may suggest that church attendance has decreased the material value of money.²

Although gender differences have long interested social scientists, they have not been the focus of behavior-analytic research. However, there are theoretical reasons to be interested in gender differences from a behavioral perspective. For instance, gender may serve as a setting event (Kantor & Smith, 1975). That is, being male or female in particular situations may influence the contingencies that will be enforced. For instance, research outside of

²These descriptions highlight the multifaceted nature of discounting. Finding that church-goers discount money differently than non-regular goers can be interpreted as a difference in the value of money. Finding that smokers discount cigarettes more than nonsmokers can be interpreted as a proneness to prefer more immediate outcomes (see Yi, Mitchell, & Bickel, 2010). Delay discounting is systematically affected by a number of variables, which means that there may be multiple interpretations of a particular finding.

behavior analysis has suggested that gender differences exist in decision-making and the extent to which those differences are observed may depend on the situation and the type of decision that needs to be made (e.g., Huang & Wang, 2010). The way such results can be reconciled with a behavior-analytic perspective may be to view gender as setting event in those situations.

Gender differences have been studied in terms of impulsiveness. Research in that area suggests that males are more compulsive than females (e.g. Chapple, & Johnson, 2007; Martins, Storr, Ialongo, & Chilcoat, 2008; Stoltenberg, Batien, & Birgenheir, 2008). Delay discounting is a behavioral measure of impulsivity (see Logue, 1995, for a review), but research suggests that discounting is not perfectly correlated with paper-pencil measures of impulsivity (e.g., Beck & Triplett, 2009; Madden & Bickel, 2010; Smith & Hantula, 2008). Recent research from our laboratory suggests that impulsivity measures may correlate differently with discounting as a function of the commodity being discounted (Terrell & Weatherly, submitted). Thus, studying gender differences in delay discounting, outside of other measures of impulsivity, may have some utility for behavior analysts and non-behavior analysts alike.

Little to no research has specifically focused on gender differences in delay discounting.³ Some discounting studies have failed to find significant gender effects (e.g., Hardisty & Weber, 2009; Tayler, Arantes, & Grace, 2009), although others have reported sig-

nificant effects. Kirby and Maraković (1996) found that males displayed greater discounting of monetary rewards than females. Beck and Triplett (2009), however, reported the opposite effect. Likewise, studies using non-human subjects have also reported greater discounting in female, than male, subjects (Koot, van den Bos, Adriani, & Laviola, 2009; Ostaszewski, Karzel, & Białaszek, 2004). Still other studies have reported interactions, such as Weller, Cook, Avsar, and Cox (2008), who found obese women discounted monetary amounts more than control women. However, the same effect was not present for men. Jones, Landes, Yi, and Bickel (2009) reported differences in discounting between male smokers and nonsmokers, but the same effect was not present for females.

Researchers in the area of discounting, like those studying gender differences, have attempted to determine if discounting is influenced by state or trait factors (see Odum & Bauman, 2010). Research indicates that discounting can vary as a function of state variables, such as how the questions are framed (e.g., Weatherly, Derenne, & Terrell, 2010). Research has also shown that differences in discounting can be the outcome of trait characteristics, such as the general tendency for drug users to prefer more immediate rewards relative to non-users counterparts (e.g., Yi et al., 2010). To the best of our knowledge, no study has focused on whether any potential gender difference in discounting is the outcome of state or trait factors. Doing so was one goal of the present study.

The research literature would suggest that gender differences in discounting, if they exist, may be commodity specific. Thus, the present study made use of multiple commo-

³ A search of PsycINFO, conducted on June 6, 2010, using the term "gender differences" resulted in 57,882 references. When that search was repeated and cross-listed with the term "delay discounting," the resulting number of references was 5.

dities. One commodity was cigarettes. As noted above, Jones et al. (2009) reported an interaction between gender and smoking status. Other evidence also suggests that gender differences should exist with this commodity. For one, more men smoke than women (e.g., Dube, Asman, Malarcher, & Carabollo, 2009), suggesting that the reinforcing consequence of smoking may differ between genders. There are also gender differences in why individuals smoke and in how easily one can quit (e.g., Perkins, 2009).

A second commodity was a hypothetical monetary amount. Both Beck and Triplett (2009) and Kirby and Maraković (1996) reported finding a gender difference with this commodity, although they reported finding opposite effects. Outside of the literature on delay discounting, research suggests that women tend to find monetary losses more aversive than do men (Booij & van de Kuilen, 2009), suggesting that money may have a higher subjective value for women than men. If so, women may be more prone to wait for the larger sum of money than would men and thus display less delay discounting (i.e., not discount as steeply as men).

The third commodity was the ideal body image. One might assume that an ideal body image would be a more reinforcing consequence to women than men, but our literature search did not find evidence to support that assumption. Body image is a factor in certain eating disorders (e.g., bulimia; Legenbauer, Vocks, Schäfer, Schütt-Strömel, Hiller, Wagner, & Vögele, 2009), but such disorders can be found in both genders. The literature does suggest that men and women differ in how they objectify body image (e.g., Oehlof, Musher-Eizenman, Neufeld, & Hauser, 2009)

and Weller et al.'s (2008) study found a gender-by-obesity interaction, which may relate to body image. Thus, one might expect to find gender differences in how men and women discount their ideal body image.

The last commodity was finding the perfect mate. Tayler et al. (2009) failed to find gender differences when participants discounted delayed close relationships (e.g., choosing between a good relationship that will last for one year and a longer good relationship that will begin in one year). However, the literature supports the idea that there are gender differences in terms of what men and women look for in a mate (e.g., Travaglia, Overall, & Sibley, 2009) and certain theoretical perspectives predict that women should be more selective than men when selecting a mate (e.g., Geary, 2010). Thus, one could predict that women might place a greater value on finding the perfect mate than men. However, women in the United States tend to marry at a younger age than men (e.g., U.S. Census Bureau, 2010), although this difference has been decreasing over recent decades (e.g., Saardchom & Lemaire, 2005). Thus, one could alternatively expect women to be less likely than men to wait for the perfect partner.

We made the following predictions. First, men would discount cigarettes and money more than women. Second, women would discount body image more than men. Finally, we predicted a gender difference in discounting the perfect mate, but did not predict the direction of the difference.

To determine whether any gender differences were the outcome of state or trait factors, we then conducted factor analyses on the data sets from male and female respondents.

In the present study, factor analyses allowed us to determine how the rates of discounting of the different commodities varied in relationship to the other outcomes. For instance, it is possible that the rate at which an individual discounts money is predictive of how that individual discounts cigarettes, but not predictive of how s/he discounts finding the perfect mate. If so, then money and cigarettes would load onto one factor in a factor analysis and the perfect mate would load onto a separate factor. If gender serves as a setting event for discounting the commodities tested in the present study, then one might expect to observe different factor structures when the data from males and females are analyzed, because such an outcome would represent a gender difference at a molar level. However, finding differences at the molecular level (i.e., absolute rates of how some commodities are discounted) but not at the molar level (i.e., observing similar factor structures between genders) would suggest any observed gender differences occurred at the state, not trait, level. Numerous examples of gender differences in trait characteristics can be found in the literature (e.g., Lippa, 2010). Thus, we predicted different factor structures would be observed.

METHOD

Participants

The participants were 537 undergraduate students (194 males; 343 females) recruited from undergraduate psychology courses. The mean age of the male and female participants was 19.66 (SD = 1.94 years) and 19.37 years (SD = 2.31 years), respectively. The mean grade point average (GPA) for

males was 3.21 out of 4.00 (SD = 0.55). It was 3.44 (SD = 0.46) for females. Five hundred three of the 537 participants reported being Caucasian. Participants earned extra course credit for their participation.

Materials and Procedure

Completion of the questionnaire packet occurred in the participants' psychology course. Each packet contained an informed consent sheet, a demographic form that asked participants about a variety of characteristics (i.e., gender, age, GPA, ethnicity, relationship status, annual income, parents' annual income, whether and how much they smoked, whether they regularly worked out, and whether they had ever attempted to lose weight), and 40 delay-discounting questions.

The five commodities in the discounting task were 100 free packs of cigarettes, the hypothetical amount of \$1,000 they had won, \$100,000 they had won, the ideal body image attained through diet and exercise, and finding the "perfect mate" through a dating service. The exact questions appear in the Appendix. The same questions, but not the same data sets, were used in Weatherly, Terrell, and Derenne (2010). Two monetary amounts were included as a manipulation check (i.e., the magnitude effect; see Chapman, 1996).

The fill-in-the-blank method (Chapman, 1996; and see Smith & Hantula, 2008) was used to collect discounting data. For each commodity, the participant provided a value for the minimum amount/percentage of the commodity s/he would accept immediately rather than waiting a specified amount of time for the full amount/percentage. Eight delays were tested for each commodity (i.e., 8 questions): one week, two weeks, one

month, three months, six months, one year, five years, and 10 years. Prior to constructing the questionnaire packet, the 40 total delay-discounting questions were randomized. All participants then completed the questions in the same random order.

Data Preparation and Analyses

There are several potential methods to analyze delay-discounting data. One popular method is to fit a hyperbolic function to the indifference points across the different delays (e.g., Mazur, 1987; see Madden & Bickel, 2010). An alternative method is to calculate the area under the discounting curve using the indifference points across the different delays with the following equation (Myerson, Green, & Warusawitharana, 2001):

$$(x_2 - x_1)[(y_1 + y_2)/2] \quad (1)$$

Area under the curve (AUC) is calculated by summing the areas of the trapezoids created by the data points across the different delays and can range from 0.0 to 1.0. Smaller values of AUC indicate more discounting of that commodity.

We used Equation 1 in the present study because we had no theoretical reason to assume that the discounting of the five commodities used in the present study would conform to a hyperbolic function.⁴ Also,

⁴ Some researchers employ a conservative exclusionary criteria in their discounting studies, such as participants must display some decrease in the amount of the commodity they are willing to accept immediately rather than waiting for the full amount (e.g., Beck & Triplett, 2009) or requiring accepting lesser amounts immediately as the delay to the full amount increases (e.g., Dixon et al., 2003). Such criteria regularly result in the omission of 10 – 15% of the participants from the sample (see Beck & Triplett, 2009). We did not employ such criteria because we were interested in the overall decrease in the value of the commodity across time (i.e., 10 years), not necessarily the form that such decreases might take. Furthermore,

whereas the parameter that represents the rate of discounting when using a hyperbolic equation is estimated from the participants' data, AUC directly represents the responses of the participants. Finally, the present data were not adequately fit by a hyperbolic equation. Thus, AUC was used as the dependent measure.

Comparison of individual commodities was accomplished by conducting separate analyses of covariance (ANCOVAs). In each analysis, gender served as the grouping factor and the AUC value for that particular commodity was the dependent measure. For cigarettes, whether and how much the participant smoked was used as the covariate. For both monetary amounts, the participants' personal and parents' annual income were both used as covariates. For ideal body image, participants' responses to whether they worked out regularly or had ever tried to lose weight were the covariates. Finally, for finding the perfect mate, participants' relationship status was the covariate. A participant's discounting of a particular commodity (i.e., AUC) was not analyzed if s/he did not provide information on the covariate(s). The degrees of freedom vary across analyses for this reason. Results were considered significant at $p < .05$.

For the factor analyses, principal factors extraction was performed through the Principal Axis Factoring option in PASW Statistics Version 17.0. Three criteria were used to determine the number of factors to rotate: the *a priori* hypothesis that each set was composed of two factors (see Weatherly, Terrell,

we had no *a priori* reason to suspect that gender differences might be observed at one, but not another, delay (e.g., one vs. two weeks). AUC was again a good measure because it provides information about discounting across the entire delay, not specific time delays.

& Derenne, 2010), the scree test (i.e., a visual analysis of the eigenvalues), and the interpretability of the factor solution (Cattell, 1966; Tabachnick & Fidell, 2007).

RESULTS

Figure 1 presents the mean AUC values observed for male and female participants for each commodity. Differences in discounting are apparent across commodities. The smallest AUC values (i.e., the most discounting) were observed for cigarettes and the largest values were observed for the perfect mate. Gender differences in discounting were apparent for some (i.e., cigarettes, winning \$100,000, & the ideal body image), but not all (i.e., winning \$1,000 & finding the perfect mate) commodities. Results from the ANCOVAs were generally consistent with these visual impressions. A significant effect

of gender was not observed for the commodity of cigarettes, $F(1, 534) = 2.03, p = .154, \eta^2 = .004$. Females did not differ from males in how they discounted winning \$1,000, $F < 1$, but they discounted winning \$100,000 significantly more than males, $F(1, 490) = 12.25, p = .001, \eta^2 = .024$. Females discounted obtaining the ideal body image more than males, $F(1, 533) = 4.30, p = .039, \eta^2 = .008$. The difference between genders in discounting the commodity of the perfect mate was not significant, $F < 1$.

Factor Analyses

Males. The scree plot for the analysis conducted on data from males indicated a two-factor solution. Based on the scree plot, two factors were extracted (i.e., identified), and this two-factor solution accounted for 52.31% of the variance. There was little difference between the solutions obtained

Figure Caption

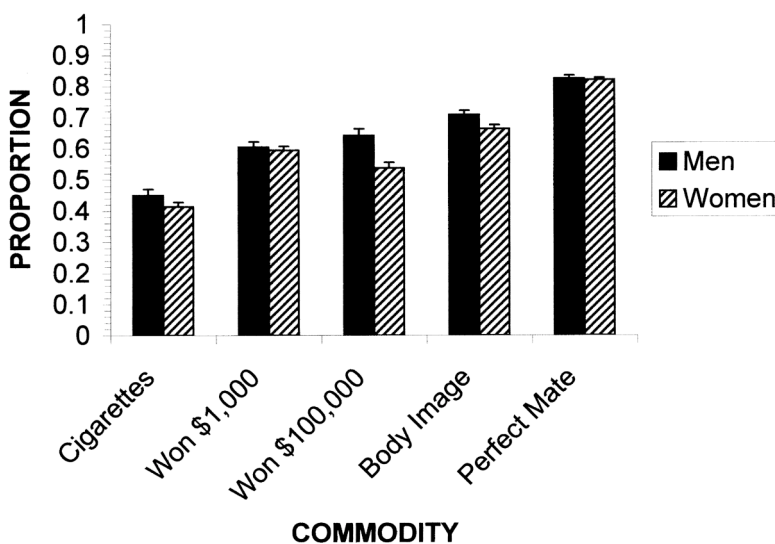


Figure 1. Presented are the mean AUC values for the male and female participants for each particular commodity tested. The error bars represent one standard error of the mean for that group for that particular commodity.

from either Varimax (orthogonal) rotation or Promax (oblique) rotation, but the Promax technique yielded a correlation between the two factors of .381, indicating that there was enough overlap between the factors to warrant retaining the results from the oblique rotation (Tabachnick & Fidell, 2007). Loadings of variables on factors and communalities are shown in the top half of Table 1. All five variables loaded on one of the two factors.

yielded a .380 correlation between the two factors, so the results from the Promax (i.e., oblique) rotation were retained. Loadings of variables on factors and communalities are shown in the bottom half of Table 1. All five variables loaded on one of the two factors. Importantly, the pattern of the item loadings was identical to the pattern observed for males.

DISCUSSION

Table 1

Factor Loadings and Communalities (h^2) based on Principal Factors Extraction and Promax Rotation for Males and Females

Item	Males		h^2
	Factor 1	Factor 2	
Cigarettes	.536	.062	.316
Won \$1,000	.952	-.106	.841
Won \$100,000	.593	.151	.443
Body Image	.202	.495	.361
Perfect Mate	-.063	.831	.654
	Females		
Cigarettes	.487	.069	.268
Won \$1,000	.847	-.065	.680
Won \$100,000	.796	.031	.653
Body Image	.141	.463	.285
Perfect Mate	-.062	.641	.384

Note: Factor loadings > .3 are indicated by bold typeface.

Females. The scree plot for the analysis on the data for females also indicated a two-factor solution. Based on the scree plot, two factors were extracted, and this two-factor solution accounted for 45.39% of the variance. There was little difference between the solutions obtained from either Varimax or Promax rotation, but the Promax technique

The present study was an attempt to determine whether gender differences would exist in delay discounting of different commodities. Gender differences were predicted for all commodities, but they were observed for only two. In both cases, female participants discounted these commodities to a greater extent than male participants. Importantly, however, results from factor analyses suggest that both male and female respondents had similar factor structures when discounting the different commodities.

As noted above, two monetary amounts were included as a manipulation check. Given that discounting varies inversely with the magnitude of the commodity, the expected result was less discounting for winning \$100,000 than for winning \$1,000. That outcome was only observed for males. Why this result was observed is not known, but it is worth noting because one of the gender differences observed was for \$100,000. One possible explanation may lie in the context of the question itself. Research indicates that people discount money they have won more than money they are owed (Weatherly, Derronne, & Terrell, 2010). It is possible that there is an interaction with this effect and gender,

with females assigning less reinforcing value to won commodities as they increase in magnitude whereas males assign greater reinforcing value under the same circumstances. One could argue that this difference was the manifestation of some type of measurement error created by our procedure (e.g., the fill-in-the-blank technique). If so, however, it is not immediately clear why such an error would only be observed in female respondents. Determining why the difference occurred will require additional research.

Female participants also discounted their ideal body image more than male participants. One could argue this finding suggests that females place less reinforcing value on their ideal body image than males, but the results are also interpretable in terms of impulsivity. That is, females were more willing to get some improvement in their body image immediately (i.e., to choose the smaller, sooner reinforcer) whereas males were more willing to wait for greater improvement (i.e., to choose the larger, later reinforcer). This finding is potentially interesting because, as noted above, men typically score higher than women on self-report measures of impulsivity. The present results suggest that those measures may only be useful in certain domains and/or that they are biased to identify certain trait characteristics of impulsivity that are more common in men than women. It is possible that women can be more impulsive than men, but only in domains that personality psychologists have not typically measured.

Explaining why the gender difference in the discounting of ideal body image was observed may not be easy. One can argue that the question posed to participants was

ambiguous. What exactly does 75% of one's perfect image mean? Does it mean the same thing to women as it does to men? Whatever the answer to the first question, the present data indicate that there were systematic differences between men and women with regard to how quickly they wished to obtain improvement in body image. This finding may deserve further research attention. It may be the case that greater amounts of discounting body image may be a marker for unhealthy weight-loss habits (e.g., purging). Likewise, changes in how one discounts obtaining one's ideal body image may be a useful measure of treatment success for people battling eating disorders.

Gender differences in the discounting of cigarettes, \$1,000, and the perfect mate were not significant. One potential reason for this outcome is that the covariates obscured any gender effect. Likewise, it is possible that more extreme manipulations (i.e., magnitude of the delayed consequence or increased delays to the full amount/percentage) would have produced a significant effect. This argument is bolstered by the finding that a significant gender difference was observed for \$100,000, but not for \$1,000. Given that the perfect mate was discounted less than any other commodity, future research investigating this particular commodity may benefit by using longer delays than in the present study.

Importantly, the results from the factor analyses suggest that although men and women discounted some commodities differently, a similar factor structure existed in discounting across the different commodities for both. As in previous research (Weatherly, Terrell, & Derenne, 2010), a two-factor solution was identified for both genders, with the

same items loading on to the same factors. This result suggests that the differences in discounting for the individual commodities were likely the outcome of state, rather than trait, differences. That is, the overall pattern of choice behavior was similar between genders. Finding a similar two-factor solution for both genders has utility. It indicates that how individuals discount a particular commodity (e.g., ideal image) when it is delayed may provide information as to how they will discount certain (e.g., the perfect mate), but not all (e.g., won money), other commodities. However, the present study only investigated four commodities, so it remains possible that a gender difference in factor structure would emerge if this number were expanded.

On a similar note, there are procedural issues related to the present study that need to be considered before the results are widely generalized. Perhaps the most important of these is the sample employed. Specifically, the present study employed a university sample of participants who were racially homogenous. Thus, it is possible that different results may have been observed had a more diversified sample, in terms of age, race, socio-economic status, and/or education level, been employed. Such possibilities may be an area for additional research on this topic.

As noted above, one potential reason to study gender differences within a behavior-analytic framework is the possibility that gender serves as a setting event that alters the reinforcing efficacy of certain consequences. The present results would not seem to provide much support for this possibility in terms of delay discounting. The results of the factor analyses indicate that the commodities grouped similarly for the male and fe-

male respondents, suggesting that the commodities that were grouped into one class of commodities for one gender also did so for the other gender. This result would also suggest that the gender differences observed for discounting of certain commodities were the outcome of differences in reinforcer values of those particular commodities at a particular point in the respondents' lives, not a molar difference between males and females in general. Phrased differently, the present results would suggest that, overall, manipulating the delay to an outcome would have a similar effect on the choice behavior of male and female respondents. Likewise, the results suggest that the relative reinforcing values across the commodities tested were similar between male and female respondents. Finally, gender differences, when they were observed, appeared to be associated with the absolute reinforcing value of a particular commodity. Thus, the present results suggest that behavior-analytic researchers who may be interested in gender differences might want to focus their efforts on the conditions that would alter the reinforcing value of a particular outcome and how one's gender is related to those conditions. Consistent with a behavior-analytic perspective, such conditions will likely be environmental, rather than subject, variables.

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Appendix

X times = 1 week, 2 weeks, 1 month, 3 months, 6 months, 1 year, 5 years, & 10 years

Cigarettes

Suppose you are a smoker. A cigarette company is going to send you 100 free packs of cigarettes in X time. What is the fewest number of packs of cigarettes that you would accept immediately rather than waiting X time?

You Won \$1,000

If you won \$1,000 and were not going to get the money for X time, what is the smallest amount of money you would accept today rather than having to wait X time?

You Won \$100,000

If you won \$100,000 and were not going to get the money for X time, what is the smallest amount of money you would accept today rather than having to wait X time?

Body Image

A specific diet and exercise plan will help you attain your ideal body image if you stay on the plan for X time. However, an alternative plan is available that is less effect but gives you immediate results. What is the smallest percentage of your ideal body image (i.e., of 100%) would you settle for to get immediate results?

Perfect Mate

Suppose you are single. A dating company guarantees that they will find you a perfect mate, but that it will take them X time to do so. An alternative company can find you a less-than-ideal mate, but can do so immediately. What percentage of perfect (i.e., 100%) would the person need to be for you to choose to find a mate immediately rather than waiting X time for the perfect mate?