

The Satiating Effect of Pricing: The Influence of Price on Enjoyment over Time

Kelly L. Haws
Vanderbilt University, Nashville, TN, United States

Brent McFerran
Simon Fraser University, Vancouver, BC, Canada

Joseph P. Redden
University of Minnesota, Minneapolis, MN, United States

Published version appears as:

Haws, K.L., McFerran, B., Redden, J.P. The satiating effect of pricing: The influence of price on enjoyment over time, *Journal of Consumer Psychology* (2017).

<http://doi.org/10.1016/j.jcps.2017.03.001>

The authors gratefully acknowledge financial support provided by Vanderbilt Chancellor Fellow funds and the Social Sciences and Humanities Research Council of Canada.

Abstract

Prices are typically critical to consumption decisions, but can the presence of price impact enjoyment over the course of an experience? We examine the effect of price on consumers' satisfaction over the course of consumption. We find that, compared to when no pricing information is available, the presence of prices accelerates satiation (i.e., enjoyment declines faster). Preliminary evidence suggests price increases satiation by making the experience seem like less of a relaxing break and something to financially monitor. We rule out several alternative explanations for this effect and discuss important implications for marketers and consumer researchers.

Keywords: Pricing; Satiation; Consumption Experiences; Enjoyment

Price conveys multiple types of information to consumers. Although much prior research examines how price specifically affects perceptions of a product's quality or performance expectations (Rao, 2005), the role of price in the subsequent enjoyment over time has not been addressed. That is, does the presence of price information influence consumers' satisfaction over the course of a consumption experience? If so, how? In the present research, we explore how pricing affects enjoyment during repeated consumption. We propose that exposure to a price accelerates satiation, relative to the absence of a price. Indeed, a series of studies shows that the presence of prices leads to faster satiation, as experienced enjoyment dropped faster during consumption. We test several alternative explanations and provide initial process evidence that a price makes an experience less relaxing, which then drives this novel effect.

Price Influences Satiation During Consumption

We define satiation as the decline in enjoyment during repeated consumption (Coombs & Avrunin, 1977; Redden, 2008), which emerges with nearly any experience (McSweeney & Swindell, 1999). This broad perspective on satiation encompasses multiple contributing mechanisms that could include habituation, adaptation, and sensory-specific satiety. Satiation has a significant psychological component (McSweeney & Murphy, 2000), as numerous contextual factors (e.g., categorization and attention) affect the satiation rate (Redden, 2008; Redden & Haws, 2013). This indicates that consumer satiation is malleable, and that marketers must understand how their actions affect satiation to encourage consumers to keep buying and using their products.

Typically, when price is examined in relationship to products, the emphasis is on either quality expectations or receiving a good deal (Lichtenstein & Burton, 1989). We instead focus on the presence or absence of pricing information during repeated consumption, and how price

might influence the *rate* at which enjoyment is sustained during ongoing consumption, rather than just initial enjoyment. In doing so, we build on prior work examining how reminders of wealth and income influence the consumption experience. Quidbach et al. (2010) showed that individuals primed with wealth were less likely to savor consumption experiences. After being exposed to a picture of money, participants ate chocolate faster and appeared to savor it less than participants exposed to a neutral picture. DeVoe and House (2012) show that having individuals think about their income as an hourly wage decreased their happiness with leisure experiences, suggesting that impatience with wasted time drove the effect. As such, bringing awareness to the value of one's time (through wealth or wage cues) affects the enjoyment of otherwise pleasant experiences.

Although wealth and wages are quite different from a product's price, all three share monetary undertones and encourage financial evaluation. As such, these past findings suggest a relationship between financial considerations and experienced enjoyment, such that the presence of a general reminder of money (broadly defined) may decrease experienced enjoyment. In this research, we posit that the mere exposure to product prices may affect the pleasure derived from an ongoing consumption experience. In many consumer contexts, the price of a product is a salient piece of information; however, this is not always the case. Marketers often have control over the exposure consumers have to a price, especially during the moments of consumption. For instance, the price may be prominently displayed on the package, continually tallied during consumption, or noted if paying during consumption.

We propose that presenting a price may alter how consumers perceive and attend to the ongoing experience in multiple ways. For instance, monetary cues in the form of paying wages has been shown to increase impatience on a task (DeVoe & House, 2012), which suggests price

could have a similar effect and alter the salient aspects of the task. If so, we posit that such impatience may make the repetition of an experience particularly noticeable, and hence lead to greater satiation. Alternatively, price itself may be aversive or “painful” (Rick, Cryder & Loewenstein, 2008), and hence act as a repeated source of growing displeasure. As well, price may focus one on whether the experience provides benefits to justify the price (Mazumdar & Papatla, 2000), which becomes increasingly less true as satiation grows and the marginal benefits of consumption diminish over time. Such evaluations may also shift the experience from enjoyable consumption to “a task”. We return to these possible mechanisms later (in Study 3), but our core proposition is that presenting price information increases the rate of satiation, and multiple mechanisms could contribute to this.

It is important to note that alternative theories of price-quality relationships predict effects primarily for the initial response to a product, and not a growing effect over time. Instead, we examine a limited range of plausible prices to mitigate price-quality relationships, and focus on salient versus non-salient pricing. We predict that differences will emerge primarily over time through changes in the satiation rate with repeated consumption.

Study 1

Study 1 tested our core prediction that the presence of prices would accelerate satiation. Music was chosen as the stimulus because songs have generally similar prices and can be fully experienced in the moment, making music a commonly used stimuli in satiation research (Galak et al., 2009; Ratner et al., 1999). We chose to use songs from the popular music genre to ensure people would be familiar with the songs and generally like them.

Method

Members ($n = 102$) of Amazon's mTurk panel participated for \$0.50 in a study ostensibly about online music services. Participants first indicated their 6 most favored songs among 18 songs on Rolling Stone magazine's top pop hits of all-time list (see MDA for details on all study stimuli). Participants were then told they would listen to clips of five of these songs a total of 15 times, and rate how much they enjoyed each. We customized the list of songs to include each participant's second through sixth highest-ranked songs. This ensured everyone had a mix of songs they liked, but not a particularly special song.

Each participant then heard the chorus of one of their songs (approximately 30 seconds), and rated how much they were still enjoying the songs (0 = *not at all*; 100 = *very much so*), and how much they wanted to continue listening to these songs some more (0 = *not at all*; 100 = *very much so*). Participants continued listening and rating enjoyment for a total of 15 trials, with the sequence including each song exactly three times in a randomized order. After the last trial, to gauge ongoing satiation, participants rated their desire to keep listening to this music right now on an 11-point scale (0 = *greatly dislike*; 10 = *greatly like*).

We randomly assigned participants to one of three treatment groups. Participants in the *Control Condition* saw the song's name and artist on each trial. Participants in the *Constant Price Condition* received this information as well as a \$0.99 price presented next to the song information before playing the sequence and during each trial. Participants in the *Varied Price Condition* saw the same information but instead had a range of prices (\$0.79, \$0.89, \$0.99, \$1.09, or \$1.19) each randomly assigned to exactly one song throughout. Our prediction was that participants given pricing information, whether a constant or a varying price, would satiate faster than those not given a price.

Results and Discussion

We averaged the two ratings of the enjoyment and desire for more into a single index for each play (all $\alpha_s > .86$). We then submitted these 15 indices to a random coefficients regression. The model included the information condition, the cumulative number of song clips heard to capture the slope, and the interaction of those two factors to reflect slope differences. The model also included the ranking of the song played on that trial as a covariate, and random effects (with unstructured covariance) for the intercept and the cumulative number of clips heard (i.e., the slope) to capture the repeated nature of the data.

There was a main effect of the number heard so far that reflects satiation ($F(1, 95) = 179.96, p < .0001$), but not the information condition ($F < 1, ns$). This main effect was qualified by the predicted interaction ($F(2, 95) = 4.03, p < .03$), as the satiation rate depended on the information condition. As shown in Figure 1, satiation was slower for participants given no price information ($\beta = -2.71$) than participants given either the constant price ($\beta = -4.25; t(95) = 2.22, p < .03$), or the varied prices ($\beta = -4.47; t(95) = 2.59, p < .02$). The latter two conditions with pricing information satiated at a similar rate ($t < 1, ns$).

--Insert figure 1 about here--

We found similar results when performing an ANCOVA on the desire to continue listening after all the music had finished playing. After accounting for the first enjoyment rating covariate, participants given no pricing information had a greater desire to continue listening ($M = 4.73$) than those seeing pricing information that was constant ($M = 2.74; t(98) = 2.32, p < .03$), or varied ($M = 2.77; t(98) = 2.34, p < .03$). The latter two groups showed no difference ($t < 1, ns$). We find similar results with this second measure of satiation in all of our studies (see Methodological Details Appendix [MDA] for these and other additional analyses including a

similar model containing a quadratic term). Again, providing pricing information (varying or constant) increased the satiation rate.

This study supports our hypothesis that pricing information leads to faster satiation than when this information is absent. Further, finding the same results for both a constant or varied price provides convergent evidence, while also allowing us to rule out two potential accounts. First, the constant price result indicates that price itself is not acting as a source of “variety” that helps mitigate satiation, as could be true with varied prices. Second, the constant price result also counters the notion that price signals some songs should be enjoyed more (also see our Supplementary Materials for additional studies further supporting the distinction of our effects from a price-quality inference). Our effects emerged only over time as participants continued the experience, suggesting this is not an initial price-quality phenomenon and that a degree of repetition is necessary for the effects of price on satiation to manifest.

Study 2

Study 2 further tested our core prediction that the presence of prices accelerate satiation. It also tested the specific role of price versus other numerical information that might be provided.

Method

Members ($n = 150$) of Amazon’s mTurk panel participated for \$0.50. The procedure and measures were identical to Study 1 with one exception. Instead of a constant price condition, we used an *Other Information Condition* in which participants saw how many weeks the song had been on the musical charts rather than a price. To maintain numerical consistency, the number of weeks also had five levels with the same numbers as in the price condition (79, 89, 99, 109, or

119), and this number was also randomly matched to exactly one of the five songs throughout. Our prediction was that participants given pricing information would satiate faster than those in the other conditions.

Results and Discussion

As in Study 1, we used the same random coefficients regression on the 15 indices of the interim ratings (all α s > .86). There was a main effect for the number of clips previously heard ($F(1, 143) = 197.84, p < .0001$), but no main effect for the information condition ($F < 1, ns$). More importantly, there was the predicted interaction as the satiation rate depended on the pricing condition ($F(2, 143) = 3.32, p < .04$).

As shown in Figure 2, participants given information about the pricing satiated faster ($\beta = -4.04$) than participants given no information ($\beta = -2.84; t(143) = 2.13, p < .04$), or given weeks on the chart ($\beta = -2.71; t(143) = 2.39, p < .02$). The rates of satiation did not differ between the latter two groups without any pricing information ($t < 1, ns$).

--Insert figure 2 about here--

This study established that our effects are related specifically to the presence of a price. Additional numerical information was not sufficient to drive the effects, as the number of weeks on the charts led to satiation rates similar to the control condition. Once again, we note that the effect grew over time and did not emerge immediately, consistent with effects rooted in satiation.

Study 3

This study extended our findings to a food context (also see Supplementary Materials for another study generalizing our effects to the food domain), and tested several potential process

explanations to provide initial insight into why the presence of a price increases satiation. Also, to further enhance the realism of the experience, participants in the payment condition actually transacted money for the product (with money we provided for the task to ensure purchase and limit wealth effects).

Method

In exchange for course credit, 207 undergraduates (58.2% female) completed the study. Participants were seated at individual workstations containing a candy dispensing machine covered with a brown paper bag. They first rated their liking of 12 foods (e.g., apples, yogurt, pretzels; 1 = *not at all*; 11 = *very much*), one of which was “plain M&Ms” to use as a covariate. We then instructed them to uncover the candy machine to reveal it was approximately half-full of plain M&Ms. All participants were informed that they would be asked to eat and evaluate candy. Those in the *Price Condition* had a small envelope at their station containing five dimes, and they were told to get each serving by inserting a dime and turning the lever to dispense a candy portion. To further reinforce the manipulation, the machines in the Price Condition also contained a round yellow 10¢ sticker on the front. In the *Control Condition*, participants did not see any money or price information, and instead simply turned the lever for each candy portion. The machines used in the Price Condition were set to only dispense M&Ms when a coin was inserted, whereas those in the Control Condition were set to dispense M&Ms without requiring money. All machines were set to dispense approximately 4 or 5 M&Ms with each turn. This quantity and price point were selected to be as realistic as possible, while still ensuring that people would consume all of the M&Ms dispensed.

After each portion was consumed, participants rated “how much did you enjoy your snack?”, and “how much would you like to eat more of your snack?” (1 = *not at all*; 9 = *very much so*). A brief unrelated task (held constant across conditions, e.g., viewing artwork, completing simple anagrams, etc.) was completed after each serving in order to space out the tasting and evaluating periods. Following the final rating, participants completed four measures of overall lingering satiation: “How much did you enjoy eating the snack today overall?” (1 = *not at all*; 9 = *very much so*), “How much would you like to continue eating the snack right now?” (0 = *not at all*; 11 = *very much so*); “How much would you be willing to pay for the snack you had today?” (slider scale ranging from \$0 to \$4.00); and “How likely are you to buy this snack in the next year?” (1 = *not at all*; 9 = *very much so*).

Next, we included a series of measures to provide insights into what theoretical accounts might underlie our key effects. These included the effect of reminders of monetary and time costs, shifts in evaluative mindsets, annoyance with the process, general aversion to prices, and individual differences in spending self-control and self-awareness. These measures were all adapted from previous research (Impatience, DeVoe & House, 2012; Financial Self-Control, Haws, Davis, and Dholakia, 2016; Tightwad-Spendthrift, Rick, Cryder, & Lowenstein, 2008; and private self-consciousness, Fenigstein, Scheier, & Buss, 1975). See the Methodological Details Appendix (MDA) for a complete listing with means by condition.

Results and Discussion

Consistent with the prior studies, our analyses included a covariate for the general liking rating of the snack taken before consumption (though the results change little without the covariate). Hence, any differences likely reflect a change in liking from repeated consumption

(i.e., satiation), rather than a general difference in liking. We first combined the two ratings of the enjoyment and desire for more after each M&M portion into a single index. We then submitted these five indices (all $\alpha > .83$) to a random coefficients regression with price condition, cumulative number of portions eaten, and their interaction. The model also included random effects for the intercept and the cumulative number of portions eaten (i.e., slope) to capture the repeated nature of the data.

There was a main effect for the number of portions eaten that reflects satiation ($F(1, 205) = 314.26, p < .0001$), and the pricing factor ($F(1, 205) = 5.23, p < .03$). These effects were qualified by the predicted interaction ($F(1, 205) = 4.14, p < .05$). As shown in Figure 3, participants seeing the price ($\beta = -.73$) satiated faster than those given no price information ($\beta = -.58$).

--Insert figure 3 about here--

We found similar results when performing an ANCOVA on the additional dependent measures of lingering satiation, whether analyzed individually (all $ps < .01$), or as a composite measure (standardized and averaged, $\alpha = .80, F(1, 203) = 23.41, p < .0001$). Having participants process the price each time (by using coins we provided) increased the rate of satiation, versus those with no price information ($M = -.25$ vs. $M = .24$).

Given we have theorized multiple mechanisms may contribute, we exhaustively tested each item for potential mediation (see MDA). We first used the estimated slope for each participant from our regression model to capture the satiation rate. We then examined the correlation of this satiation rate with each potential mediator. There were five significant correlations ($p < .05$), but only “I felt that eating the snack was a relaxing break” ($r = .20, p < .01$) was also affected by the pricing manipulation ($p < .0001$). A mediation analysis (Model 4;

Hayes, 2013) showed that this perception of a relaxing break indeed helped explain why pricing information increased the satiation rate, as the effect of price on the satiation rate decreased from -.15 to -.11 after accounting for the effect of the mediator (95% $CI = [-.08, -.01]$). It seems that a price made repeated consumption less enjoyable because it made eating seem like less of a relaxing experience.

Further analysis hinted that pricing information may have altered such perceptions by triggering more evaluation and financial monitoring of the ongoing experience. First, the item “As I consumed more of the snack, I became more critical in terms of evaluating the taste” nearly mediated the effect of pricing information on seeing the experience as a relaxing break (95% $CI = [-.15, .01]$). However, this evaluative mindset was not significantly affected by the price manipulation ($p > .16$), and the full serial mediation (Model 6; Hayes, 2013) did not reach significance (95% $CI = [-.01, .01]$). Second, and more convincing, we tested all of our measures to see if they moderated the effect of price on satiation (i.e., price and the measure interacted in a regression of the individual slopes). Higher scores on two of the financial self-control measures magnified the effect of price information on the satiation rate: “I closely monitor my spending behavior” ($\beta = .10, p < .02$), and “I carefully consider my needs before making purchases” ($\beta = .10, p < .03$). This is again suggestive that a price may trigger a deeper evaluation and financial monitoring of the experience (versus just a relaxing break), and hence accelerate satiation.

The analyses all supported our core prediction: providing price information (and actually using provided coins to receive a snack portion) increased satiation while eating the snack. Importantly, this study also contributed by (a) generalizing our effects to a different domain, and (b) assessing multiple process accounts. This preliminary process evidence indicated that price

information made the experience seem like less of a relaxing break (perhaps by triggering an evaluative and monitoring mindset), and this (in part) led to the satiation effects we found.

General Discussion

We have established that the presence of price speeds up satiation over the course of consumption, and this is not attributable to just additional information, variety of information, or a price-quality inference. These findings add to the pricing literature by identifying the effects of having a price on enjoyment over time. Past work has explored how consumers use price level as a cue of quality (Rao, 2005), a trigger of product efficacy (Shiv, Carmon, & Ariely, 2005), and a driver of initial enjoyment for ambiguous products (Plassman et al., 2008). We instead documented the longer-lasting effects of the presence of price information on the repeated consumption experience. Further, we add to recent literature on the causes of differential rates of satiation (Redden & Haws, 2013; Galak, Kruger, & Loewenstein, 2011). More generally, we contribute to a broader understanding of consumer satisfaction in a dynamic manner over the course of a consumption experience.

Aside from documenting a novel effect and ruling out several potential explanations, we also provide initial evidence that this effect occurs partially because a price makes the experience less relaxing and encourages evaluation and financial monitoring. We speculate that price information (and perhaps any money cue) may prime a more general “hot” human reward system, which has been shown to affect impatience and a focus on pleasure (Baumeister, 2002; Van den Bergh et al., 2013). Related work has shown that money primes lead people to think more in terms of a work or business mindset (Jiang et al., 2014; Vohs, 2015), which can plausibly be linked to reduced patience or relaxation (DeVoe & House, 2012). Of course, given

the rich nature of experienced enjoyment, there are also likely other mechanisms contributing to our effects, so we cannot rule them out at this point.

Future research could examine potential moderators of our effects. We focused on hedonic stimuli (music and unhealthy food), but different effects could emerge for more utilitarian stimuli. Money has been associated with more utilitarian choices (Tong et al., 2013), and lower emotional expression (Jiang et al., 2014). Given the linkage between emotions and hedonic choices (Shiv & Fedorikhin, 1999), more utilitarian stimuli may mute the effect of price on satiation. Although we did not find evidence that the level of price mattered, we investigated only a restricted range. Of course, price level could affect satiation at more dramatic levels (e.g., a \$1,000 bottle of wine). Consumers might then seek to continue enjoying a very expensive product longer in order to mentally justify its price tag and reduce potential regret.

Overall, we have provided a robust set of demonstrations that having a price salient during consumption increases the rate of satiation (vs. no price information). Future research will need to further explore the limits to these effects, as well as the conditions that foster or hamper them. We expect such work will prove fruitful given it has clear implications for how consumers and marketers can create more enjoyment.

References

- Baumeister, R. (2002). Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behavior. *Journal of Consumer Research*, 28, 670–76.
- Coombs, C. H., & Avrunin, G. S. (1977). Single-peaked functions and the theory of preference. *Psychological Review*, 84, 216-230.
- DeVoe, S. E., & House, J. (2012). Time, money, and happiness: How does putting a price on time affect our ability to smell the roses? *Journal of Experimental Social Psychology*, 48, 466-474.
- Fenigstein, A., Scheier, M.F., & Buss, A.H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, 43, 756-768.
- Galak, J., Kruger, J., & Loewenstein, G. (2011). Is variety the spice of life? It all depends on the rate of consumption. *Judgment and Decision Making*, 6, 230-238.
- Galak, J., Redden, J. P., & Kruger, J. (2009). Variety amnesia: Recalling past variety can accelerate recovery from satiation. *Journal of Consumer Research*, 36, 575-584.
- Haws, K. L., Davis, S. W., & Dholakia, U. M. (2016). Control over what? Individual differences in general versus eating and spending self-control. *Journal of Public Policy & Marketing*, 35, 37-57.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Jiang, Y., Chen, Z., & Wyer, R. S., (2014). Impact of money on emotional expression. *Journal of Experimental Social Psychology*, 55, 228-233.
- Lichtenstein, D. R., & Burton, S. (1989). The relationship between perceived and objective price-quality. *Journal of Marketing Research*, 26, 429-443.

- Mazumdar, T., & Papatla, P. (2000). An investigation of reference price segments. *Journal of Marketing Research*, 37, 246-258.
- McSweeney, F. K., & Murphy, E. S. (2000). Criticisms of the satiety hypothesis as an explanation for within-session decreases in responding. *Journal of the Experimental Analysis of Behavior*, 7, 347-361.
- McSweeney, F. K., & Swindell, S. (1999). General-process theories of motivation revisited: The role of habituation. *Psychological Bulletin*, 125, 437-457.
- Plassmann, H., O'Doherty, J., Shiv, B., & Rangel, A. (2008). Marketing actions can modulate neural representations of experienced pleasantness. *Proceedings of the National Academy of Sciences*, 105, 1050-1054.
- Quoidbach, J., Dunn, E. W., Petrides, K. V., & Mikolajczak, M. (2010). Money giveth, money taketh away: The dual effect of wealth on happiness. *Psychological Science*, 21, 759-763.
- Rao, A. R. (2005). The quality of price as a quality cue. *Journal of Marketing Research*, 42, 401-405.
- Ratner, R. K., Kahn, B. E., & Kahneman, D. (1999). Choosing less-preferred experiences for the sake of variety. *Journal of Consumer Research*, 26, 1-15.
- Redden, J. P. (2008). Reducing satiation: The role of categorization level. *Journal of Consumer Research*, 34, 624-634.
- Redden, J. P., & Haws, K. L. (2013). Healthy satiation: The role of decreasing desire in effective self-control. *Journal of Consumer Research*, 39, 1100-1114.
- Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and spendthrifts. *Journal of Consumer Research*, 34, 767-782.
- Shiv, B., Carmon, Z., & Ariely, D. (2005). Placebo effects of marketing actions: Consumers may

- get what they pay for. *Journal of Marketing Research*, 42, 383-393.
- Shiv, B., & Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research*, 26, 278-292.
- Tong, L., Zheng, Y., & Zhao, P. (2013). Is money really the root of all evil? The impact of priming money on consumer choice. *Marketing Letters*, 24, 119-129.
- Van den Bergh, B., Dewitte, S., & Warlop, L. (2008). Bikinis instigate generalized impatience in intertemporal choice. *Journal of Consumer Research*, 35, 85-97.
- Vohs, K. D. (2015). Money priming can change people's thoughts, feelings, motivations, and behaviors: An update on 10 years of experiments. *Journal of Experimental Psychology: General*, 144, e86–e93.

FIGURE 1
MEAN ENJOYMENT RATINGS BY CONDITION IN STUDY 1

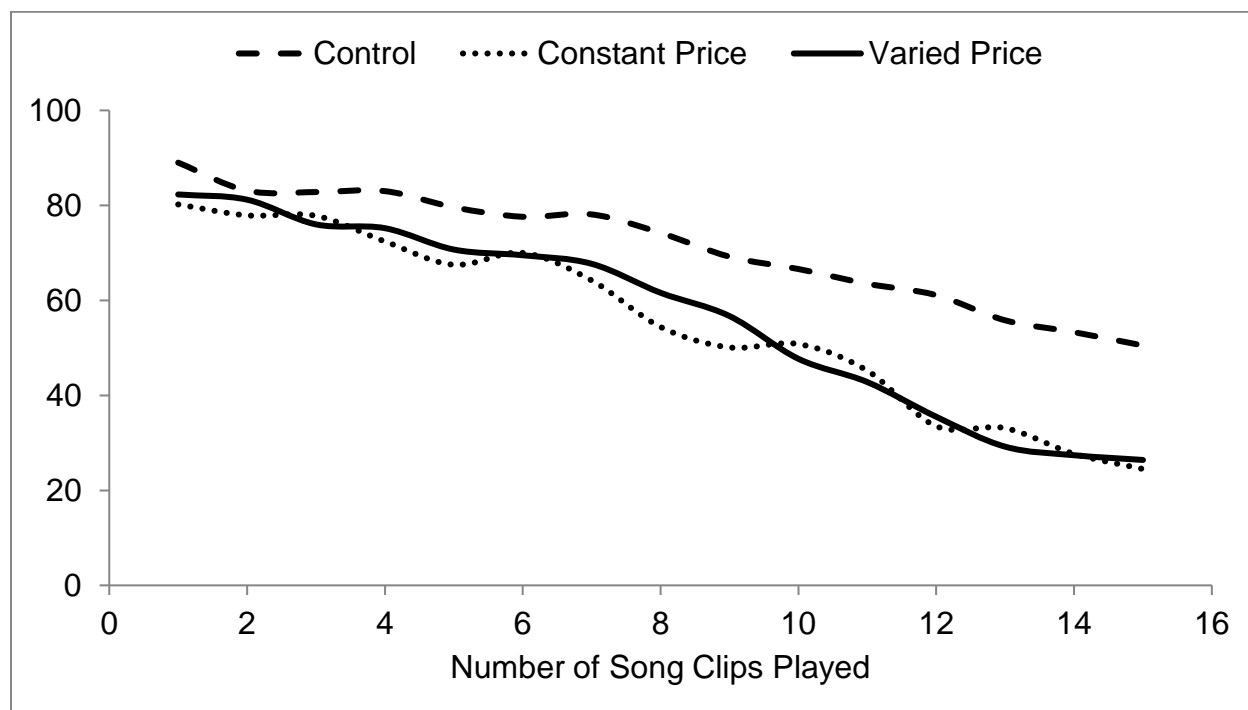


FIGURE 2
MEAN ENJOYMENT RATINGS BY CONDITION IN STUDY 2

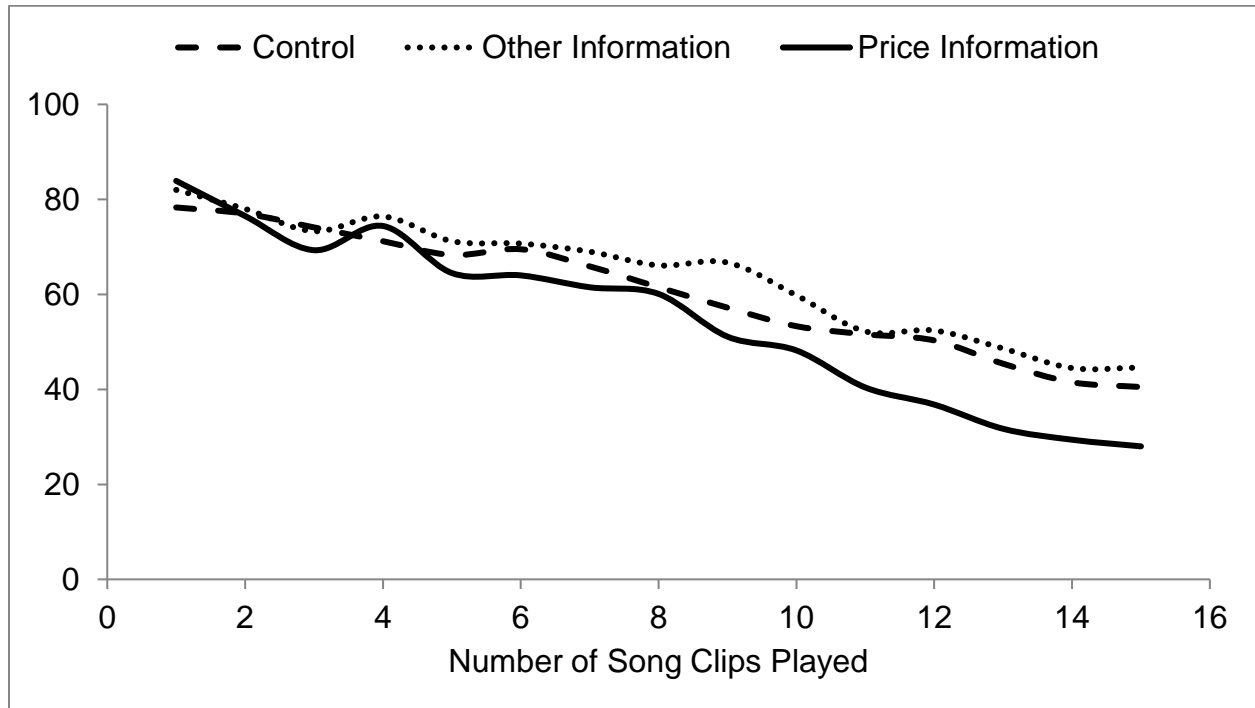


FIGURE 3
MEAN ENJOYMENT RATINGS BY CONDITION IN STUDY 3

