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Appendix A: Supplementary Study Information

A0 Pilot Study Supplementary Information

A0.1 Brand relationship perceptions: pilot study methods. Participants (n = 140 students) were asked to consider two different situations in randomized order. In one situation, they were informed that they decided to purchase a Nike-branded putter in order to improve their golf game. In the other situation, they were instead informed that they decided to enroll in a Nike-branded putting lesson in order to improve their golf game. After each scenario, respondents evaluated their relationship with the Nike brand using items based on Kim and Kramer (2015), "The Nike brand is acting like a servant to the consumer," "The Nike brand is acting like a partner to the consumer," "The Nike brand is acting like a coach to the consumer," where 1 = strongly disagree and 7 = strongly agree. We used the term "coach" to provide greater clarity to respondents but observe similar results when directly asking about whether the brand is acting like a "master" to the consumer.

A0.2 Brand relationship perceptions: pilot study results. Responses indicated that participants viewed the Nike brand as playing more the role of a servant when evaluating a Nike-branded putter (M = 3.65, SD = 1.91) compared to a Nike-branded putting lesson (M = 3.12, SD = 1.86, matched pairs $t(139) = 4.47$, $p < .001$), but that the Nike-brand took on more of a master role was considering the Nike-branded putting lesson (M = 5.74, SD = 1.57) compared to the Nike-branded putter (M = 3.19, SD = 2.04, matched pairs $t(139) = 13.1$, $p < .001$). The Nike brand was also perceived to be more of a partner when respondents evaluated the Nike-branded putter (M = 4.71, SD = 1.79) relative to the Nike-branded putting lesson (M = 4.20, SD = 1.76, matched pairs $t(139) = 3.5$, $p = .002$). These findings confirm the intuition that brands are often seen as taking on a more subservient role when applied to performance-enhancing products, but

instead take on more of a superior role when applied to performance-enhancing training experiences.

A1 Study 1 Supplementary Information

A1.1 Brand efficacy perceptions: validation study. An independent sample (n = 46 students) provided perceptions of efficacy associated with the NASA brand. We adapted items from Garvey et al. (2016) to assess these performance-brand perceptions, in which respondents answered the following items: "Products/services provided by this brand are of high quality," "This brand's offerings are associated with a high level of performance," "This brand's offerings are more effective than those of most other companies," where 1 = strongly disagree and 7 = strongly agree. Respondents indeed evaluated the NASA brand to be associated with a high level of efficacy, M = 6.38, SD = .66, $t(45) = 24.7$, $p < .001$ in a comparison against the scale midpoint.

A1.2 Brand relationship perceptions: validation study. A separate group of respondents (n = 48 Amazon Mechanical Turkers, AMTs) evaluated their relationship to the NASA brand in one of two contexts selected at random. Contrasting the situations examined in prior marketing placebo research (Shiv, Carmon, & Ariely, 2005) with the current study, respondents were told that prior to completing a problem solving test they would either consume an energy drink or complete a computer-based brain-training game. They were informed that the product or experience was NASA-branded. Subsequently, respondents evaluated perceptions of brand-as-servant and brand-as-master using identical items to those in the pilot study described above (A0.1). Responses indicated that participants perceived the NASA brand as significantly more in line with the role of a servant when considering a NASA-branded product (M = 5.28, SD = 1.64) compared to a NASA-branded training experience (M = 3.74, SD = 2.26, $t(46) = 2.72$, p

= .009). They also indicated that respondents perceived the NASA brand as significantly more in line with the role of a master when considering a NASA-branded training experience (M = 5.70, SD = 1.49) compared to a NASA-branded product (M = 4.12, SD = 2.19, $t(46) = 2.89$, p = .006).

A1.3 Study measures. Participants in the main study responded to follow up questions regarding the level of effort they put into the tasks ("How much effort did you put into the previous test?" 1 = not at all, 7 = very much). Participants also shared their perceptions of the NASA brand. We measured mood using the Brief Mood Introspection Scale (Mayer & Gaschke, 1988). Demographic variables including age and education were collected at the end of the study.

A1.4 Effort and mood. One explanation for the performance decline associated with the use of high-performance-branded enhancement experiences could be that participants exert differential effort during training when engaging with a high-performance brand. For instance, participants may have put in so much effort into the training experience that they felt exhausted by the time they reached the subsequent performance assessment. Counter to this idea, we found no differences between conditions in accuracy rates on the training task. Participants who completed the high-performance-branded NASA-training responded correctly on 44.0% (SD = 25.6%) of training trials compared to 44.1% (SD = 21.7%) in the control condition, $t < 1$. Furthermore, we found no differences in self-reported effort on the performance assessment ($t <$ 1), suggesting that participants who completed a high-performance-branded enhancement experience also did not become any more complacent relative to participants who completed the unbranded training experience. Responses furthermore indicated that participants did not exhibit any differences in mood valence between conditions ($t < 1$).

A2 Study 2 Supplementary Information

A2.1 Brand efficacy perceptions: validation study. An independent sample (n = 31 AMTs) evaluated the perceived efficacy associated with the MIT and University of Phoenix brands, selected at random. Respondents answered performance-brand perception items identical to those described above (A1.1). Participants indeed evaluated the MIT brand to be associated with a significantly higher level of efficacy (M = 6.11, SD = 1.03) relative to the Phoenix brand (M = 3.37, SD = 1.53, $t(29) = 5.12$, $p < .001$).

A2.2 Brand relationship perceptions: validation study. A separate group of respondents (n = 56 AMTs) evaluated their relationship to the MIT or Phoenix brands (selected at random) in one of two contexts (also selected at random). Prior marketing placebo-related research examining MIT-branded pens (Park & John, 2010, 2014) provided a point of comparison with the current study, where respondents were told that prior to completing a foreign language test they would either be given a pen to use during the test or complete language training involving instructional videos. They were informed that the product/experience was either MIT-branded or Phoenix-branded. Subsequently, respondents evaluated perceptions of brand-as-servant and brand-as-master using items identical to those described above (A0.1). Responses indicated that participants perceived both the MIT and Phoenix brands as significantly more in line with the role of a servant when considering a branded product (MIT: M = 6.07, SD = 1.27; Phoenix: M = 6.23, SD = 1.01) compared to a branded training experience (MIT: M = 4.14, SD = 1.83, $t(26) = 3.23$, $p = .003$; Phoenix: M = 2.67, SD = 1.80, $t(26) = 6.32$, $p < .001$). Participants also perceived the MIT and Phoenix brands as both being significantly more in line with the role of a master when considering a branded training experience (MIT: M = 6.36, SD = .84; Phoenix: M = 5.93, SD = 1.67) compared to a branded product (MIT: M = 3.36, SD = 2.47,

$t(26) = 4.30$, $p < .001$; Phoenix: $M = 2.77$, $SD = 2.17$, $t(26) = 4.36$, $p < .001$). These findings establish that across both brands, consumers evaluate their brand relationships as being more in line with a brand-as-master configuration when completing a performance-enhance training experience but more in line with a brand-as-servant configuration when using a performance-enhancing product.

A2.3 Study measures. In the main study, to examine the processes through which varying the brand influenced the objective performance outcomes, we measured the proposed mediating factors. This included participants' perceptions of the performance-expectations associated with the test ("The standards for this task were high") and their feelings of performance-anxiety ("I was intimidated by the task") on 7-point scales (1 = strongly disagree, 7 = strongly agree). Probing perceptions of self-efficacy, we also asked participants to share their evaluations of how well-prepared they felt after completing the language-learning training experience (1 = very poorly, 7 = very well), administered immediately after the training experience but prior to the learning assessment.

A2.4 Self-efficacy. Counter to the idea that people may experience lowered self-efficacy after completing a high-performance branded training experience, participants indicated that they actually felt better prepared after completing the MIT-branded training experience relative to the Phoenix-branded training experience, even though the materials were identical. A one-way ANOVA revealed that participants reported greater preparedness after completing the MIT tutorial ($M = 3.31$, $SD = 1.37$), compared to the University of Phoenix tutorial ($M = 2.59$, $SD = 1.37$, $F(1,126) = 8.13$, $p = .005$).

A2.5 Price manipulation details. In addition to the brand manipulation, we also varied pricing information associated with the training program, building on prior research that has

demonstrated positive marketing placebo effects of price on performance (Shiv et al., 2005; Waber, Shiv, Carmon, & Ariely, 2008). While our goal was to combine our experimental design with that of Shiv et al. (2005), we did not observe any effects of price differences on performance. Yet, we believe that this null result offers an important data point on the potential boundaries associated with using price to influence consumer performance. In particular, these findings may suggest that the positive price-placebo effects documented in traditional marketing placebo research could be less potent when applied to experiences. More broadly, this price-related null effect also speaks to our wider conjecture that marketing actions may have divergent effects on performance-enhancement products and performance-enhancement experiences. We describe additional study details below.

Following Shiv et al. (2005), we informed participants that the language-learning program was either full-priced (costing $34.95 per month) or discounted ($9.95 per month, discounted from the full price of $34.95 per month). To provide participants with a better sense for the magnitude of the discount, we provided all participants with the prices for several major language programs (including Simon and Schuster's Pimsleur, $16.49, Instant Immersion, $16.99, and learn2speak, $17.99).

A one-way ANOVA analysis failed to reveal a significant main effect of the price manipulation on performance ($F < 1$). Specifically, there were no significant differences in number of questions answered correctly between participants who completed a discounted training experience ($M = 11.46$, $SD = 3.99$) and those who completed the full-priced training experience ($M = 11.13$, $SD = 3.95$), $d = -.040$. A two-way ANOVA analysis also confirmed that there was no main effect of price ($F < 1$) or interaction between price and brand ($F < 1$) on performance. However, this analysis did reveal a significant main effect of the brand ($F(3,124) =$

6.10, $p = .015$). When participants completed an MIT-branded training experience, they displayed lower levels performance regardless of whether the training was offered at full-price ($M = 10.42$, $SD = 3.84$) or at a discount ($M = 10.42$, $SD = 4.34$); participants who completed a Phoenix-branded training displayed comparatively higher levels of performance regardless of whether the training was offered at full-price ($M = 11.8$, $SD = 4.01$) or at a discount ($M = 12.5$, $SD = 3.38$). Consequently, we collapsed the discounted and full-priced conditions within each brand in the analyses reported within the main text.

A2.6 Effort and mood. Although participants who completed the MIT-branded training experience performed worse relative to those who completed the Phoenix-branded training experience, they reported putting in more effort on the tests (MIT: $M = 5.84$, $SD = 1.06$ vs. Phoenix: $M = 5.17$, $SD = 1.32$, $t(126) = 3.18$, $p = .002$). When controlling for the effect of effort, the effect of the brand remained significant, where the MIT-branded training experience significantly lowered performance relative to the Phoenix-branded training experience, whereas the effect of effort on performance was not significant ($t < 1$). No differences on self-reported mood were observed between participants who completed the MIT-branded training experience and those who completed the Phoenix-branded training experience (MIT: $M = 4.83$, $SD = 1.09$ vs. Phoenix: $M = 4.78$, $SD = 0.97$, $F < 1$).

A2.7 Additional mediation analysis details. First, performance-expectations were higher when participants completed the high-performance MIT-branded training experience ($M = 4.75$, $SD = 1.31$) relative to the lower-performance Phoenix training ($M = 3.91$, $SD = 1.50$, $F(1, 126) = 11.51$, $p < .001$). Also, performance-anxiety was higher when participants completed the high-performance MIT-branded training experience ($M = 3.36$, $SD = 1.72$) relative to the lower-performance Phoenix training ($M = 2.73$, $SD = 1.56$, $F(1, 126) = 4.64$, $p = .033$). Second,

a model incorporating brand and performance-expectations to predict performance-anxiety suggested the following: (1) performance-expectations predicted performance-anxiety ($F(1,125) = 20.93$, $p < .001$), but (2) brand did not predict performance-anxiety ($F < 1$). When brand, performance-expectations, and performance-anxiety were included in a model predicting performance, performance-anxiety predicted performance ($F(1,124) = 5.23$, $p = .024$). At the same time, the effect of brand was marginally significant ($F(1,124) = 3.42$, $p = .067$) while the effect of performance-expectations on test performance failed to reach significance ($F < 1$). The direct effect from MIT-branded training to performance became marginally significant, once all mediating variables had been accounted for in the model ($b = -.644$, $SE = .349$, 95% CI [-1.3344, .0455]). Net of the indirect effect, there was no additional evidence of alternative indirect paths (e.g., via performance-expectations only, or via performance-anxiety only). Furthermore, an alternative serial mediation model where performance-anxiety preceded performance-expectations showed no evidence of an indirect effect ($b = -.027$, $SE = .036$, 95% CI [-.1155, .0278]), providing additional support for our proposed account. All indices were centered. See Table A1 for parameter estimates.

Table A1. Study 2 Mediation Analysis Estimates

	Performance-Expectations (Mediator 1)		**Performance-Anxiety (Mediator 2)**		**Performance (DV)**	
IV	*b*	*t*	*b*	*t*	*b*	*t*
Constant	.33***	2.64	-1.10***	-7.93	10.94***	26.12
MIT-Branded Training	**0.42*** **	3.39	0.13	0.90	-0.64*	-1.85
Performance-Expectations			**0.44*** **	4.57	-0.27	-1.03
Performance-Anxiety					**-0.50****	-2.29

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

A3 Study 3 Supplementary Information

A3.1 Brand efficacy perceptions: validation study. An independent sample (n = 51 students) provided perceptions of efficacy associated with the Goldman Sachs (GS) brand. Respondents answered performance-brand perception items identical to those described above (A1.1). Participants indeed evaluated the GS brand to be associated with a high level of efficacy (M = 5.80, SD = .83, $t(50) = 15.5$, $p < .001$ in a comparison against the scale midpoint).

A3.2 Brand relationship perceptions: validation study. A separate set of participants (n = 119 AMTs) evaluated their relationship to the Goldman Sachs brand after having completed the tasks in the main study with either a GS-branded training experience or a GS-branded calculator, selected at random. Respondents evaluated the brand relationship using items identical to those described in the pilot study above (A0.1). Findings indicated that participants perceived the GS brand as significantly more in line with the role of a servant after using the GS-branded product, i.e. the GS financial calculator (M = 5.09, SD = 1.37), compared to the GS-branded training experience (M = 3.66, SD = 1.86, $t(117) = 4.73$, $p < .001$). Participants also perceived the GS brand as being significantly more in line with the role of a master after completing the GS-branded financial training experience (M = 5.53, SD = 1.31) compared to using the GS-branded financial calculator (M = 4.75, SD = 1.71, $t(117) = 2.79$, $p = .006$). No differences were observed on perceptions of GS as a partner ($t(117) = 1.23$, $p = .221$).

A3.3 Study measures. In order to examine the processes underlying performance effects within the main study, we measured participants' perceptions of performance-expectations via two items ("The standards for this task were high," "I felt that I was expected to acquire a lot of new information from the training experience", 1 = strongly disagree, 7 = strongly agree, α = 0.67). We also measured performance-anxiety using a six-item scale ("I was intimidated by the

tasks," "I felt pressured during the assessment", "I felt a sense of intimidation during the training and testing,", "Even though I may have been well prepared for the test, I felt anxious about it," "I felt nervous that I might forget facts that I know on the test," "I felt uneasy, upset feelings about the test", 1 = strongly disagree, 7 = strongly agree). The former three items directly probed feelings of intimidation (α = .82) while the latter three items probed feelings of test-anxiety (α = .82), adapting items from prior scale development in the literature (Sarason, 1977). A factor analysis revealed that all six items were indeed captured by a single factor (λ = 3.70); thus we combined all six items into a performance-anxiety scale (α = .88). To verify that varying the placement of the GS brand on the performance-enhancement experience rather than product changed perceptions of the brand relationship, we probed participants' perceptions of brand-as-master with an identical measure as in the prior validation tests.

We also included items to assess additional processes that could contribute to the reverse effects on performance. To evaluate an expectancy-attribution account, we asked participants to indicate the extent to which they attributed their performance to themselves and to the brand providers ("I was personally responsible for my performance on the financial assessment," "The training course provider was responsible for my performance on the financial assessment," "The financial calculator provider was responsible for my performance on the financial assessment," 1 = strongly disagree, 7 = strongly agree). In addition, because the expectancy-attribution account suggests that incoming performance ability may moderate the effect, participants answered questions related to their existing financial analysis ability ("I feel that I am good at financial calculations", "In general, I am good at managing my finances," "When compared to other people, I feel that I know a lot about finance", α = .82). Furthermore, to assess processes through which performance-brands may lower self-evaluations, participants responded to items on self-

efficacy ("I was confident that I would do well on the financial assessment," "I was confident in my ability to perform well on the financial assessment," 1 = strongly disagree, 7 = strongly agree, $\alpha = .95$) adapting measures from Park and John (2014) and self-esteem ("I have high self-esteem," 1 = not very true of me, 5 = very true of me) applying a single-item measure developed in prior literature (Robins, Hendin, & Trzesniewski, 2001). We also probed post-performance perceptions of the training program efficacy through willingness to pay for a monthly subscription.

A3.4 Brand-as-master perceptions. A one-way ANOVA confirmed that perceptions of the Goldman Sachs brand taking on a master role differed significantly across conditions ($F(2, 279) = 6.98$, $p = .001$). Specifically, brand-as-master perceptions were significantly higher after completing the GS-branded training experience ($M = 5.39$, $SD = 1.40$) relative to the GS-branded product ($M = 4.82$, $SD = 1.52$), $t(187) = 2.72$, $p = .007$) and the control condition ($M = 4.61$, $SD = 1.57$), $t(188) = 3.62$, $p < .001$). Brand-as-master perceptions did not differ between GS-branded product and control conditions ($F < 1$).

A3.5 Performance-expectations. A one-way ANOVA also revealed that the manipulation influenced performance-expectations across conditions ($F(2, 279) = 8.10$, $p < .001$). Performance-expectations were significantly higher after completing the GS-branded training experience ($M = 5.35$, $SD = 1.15$) relative to the control condition ($M = 4.81$, $SD = 1.47$), $t(188) = 2.80$, $p = .006$) as well as the GS-branded product condition ($M = 4.58$, $SD = 1.40$, $t(187) = 4.11$, $p < .001$). Performance-expectations did not differ between the GS-branded product and control conditions ($F(1, 183) = 1.19$, $p = .276$).

A3.6 Performance-anxiety. Additionally, a one-way ANOVA indicated that participants experienced significantly different levels of performance-anxiety between conditions ($F(2, 279)$

= 6.80, p = .001). Participants who completed the GS-branded training experience reported significantly higher levels of performance-anxiety (M = 4.91, SD = 1.24) compared to those using the GS-branded product (M = 4.19, SD = 1.43, $t(187) = 3.71$, $p < .001$) and marginally higher levels of performance-anxiety compared to the control condition (M = 4.58, SD = 1.37, $t(188) = 1.77$, p = .079). Participants using the GS-branded product also reported marginally lower levels of performance-anxiety relative to participants in the control condition ($t(183)$ = 1.89, p = .061). Higher performance-expectations were correlated with higher levels of performance-anxiety (ρ = .64, 95% CI [.56, .70], $p < .001$).

A3.7 Expectancy-attribution account. Originally aiming to explain some of the classic reverse placebo findings in the literature that insomniac patients sleep more quickly after taking a purportedly arousal-inducing placebo pill, and less quickly after taking a purportedly arousal-reducing placebo pill (Storms & Nisbett, 1970), the expectancy-attribution framework (Ross & Olson, 1981) offers a potential mechanism that could also be at play in driving the reverse effects observed in the current research. Under the expectancy-attribution account, because the arousal-inducing placebo pill was expected to increase arousal (parallel to insomniac subjects' already high arousal), misattributing this arousal to the pill rather than to themselves reduced anxiety and facilitated sleeping. Applied to the current paradigm, the high-performance brand (i.e., "the pill") was expected to increase performance; under a similar analysis, the expectancy-attribution model would suggest that reverse effects would obtain when those who already had high levels of performance misattributed their performance ability to the brand rather than to themselves, leading to worse performance outcomes. This account also predicts that individuals who already had high incoming financial performance ability would be more likely to exhibit reverse effects, as expectancies would be parallel.

Our data do not provide clear support for this explanation of the current findings. Some observations are in fact consistent with the expectancy-attribution framework. For instance, we do indeed observe stronger reverse effects for individuals with higher incoming financial analysis ability. Focusing on branded conditions only, the effect of a performance-branded experience on objective performance outcomes indicated a marginally significant interaction with financial analysis ability ($F(3, 185) = 3.30$, $p = .071$). Simplifying exposition with a median split on financial analysis ability, this result suggested that for individuals with high incoming financial analysis ability, applying the performance-brand to the training experience significantly lowered objective performance outcomes ($M_{\text{GS-training}} = 2.09$ vs. $M_{\text{GS-calculator}} = 4.09$, $t(107) = 4.53$, $p < .001$) while this reverse effect was weaker for individuals with low incoming financial analysis ability ($M_{\text{GS-training}} = 2.14$ vs. $M_{\text{GS-calculator}} = 2.83$, $t(78) = 1.64$, $p = .105$). In addition, those in the branded-experience condition indeed attributed nominally greater responsibility for performance to the training brand (relative to those in the branded-product condition), but this difference did not reach significance ($M_{\text{GS-training}} = 3.82$ vs. $M_{\text{GS-calculator}} = 3.49$, $t(187) = 1.36$, $p = .175$). The difference was marginal among individuals with high incoming financial analysis ability ($M_{\text{GS-training}} = 4.38$ vs. $M_{\text{GS-calculator}} = 3.73$, $t(107) = 1.96$, $p = .053$).

However, other evidence appears to be inconsistent with the expectancy-attribution account. For instance, we did not observe that individuals attributed less responsibility to themselves after completing the branded training experience ($t < 1$), even among participants with high incoming financial analysis ability ($t < 1$). In addition, we did not observe differences in effort, as revealed by number of assessment questions attempted ($t < 1$) and self-reports (see A3.9 below). Findings from the prior studies similarly did not indicate that participants who completed a high-performance branded training experience exerted less effort on tasks (see A1.4

and A2.6). Thus, we did not find that people who completed a high-performance branded training experience took on less personal responsibility with performance, as would be implied by the expectancy-attribution account; in other words, people did not uniquely "outsource" personal responsibility and effort to the brand, as they did to the pill in the classic Storms and Nisbett (1970) setting.

A3.8 Self-efficacy, self-esteem, and social comparison. A self-efficacy related mechanism could also contribute to the observed reverse performance effects. Under this account, undergoing a performance-enhancing training experience with a strong brand may lead consumers to infer that greater personal capability will be required of them. Participants may subsequently assess their own personal abilities to be deficient, lowering their self-efficacy relative to other participants who may have completed a weaker-branded training experience. Consequently, lowered self-efficacy could impair performance outcomes due to increased performance-anxiety.

Our data offer mixed support for this process. Self-efficacy measures taken post-performance indicated that while participants in the performance-branded training experience did not report significantly lower levels of self-efficacy relative to the control condition ($M_{\text{GS-training}}$ = 4.10, SD = 1.62 vs. M_{control} = 4.43, SD = 1.44, $t(188) = 1.44$, $p = .150$), they did report marginally lower levels of self-efficacy relative to the performance-branded calculator condition ($M_{\text{GS-calculator}}$ = 4.56, SD = 1.60, $t(187) = 1.95$, $p = .053$). Prior mediation analysis provided support for our proposed mechanism, whereby performance-branded training experiences impair objective performance outcomes via increased performance-expectations and performance-anxiety, relative to the unbranded control. We applied a similar mediation analysis to evaluate the self-efficacy account, whereby performance-branded training experiences could impair

objective performance outcomes via lowered self-efficacy, relative to the unbranded control. An analysis using PROCESS model 4 (Hayes, 2013) indicated that the indirect path via self-efficacy did not reach significance (b = -.0320, SE = .0294, 95% CI [-.1017, .0104]). While these findings are directionally in line with a lowered self-efficacy process, the evidence weakly supports this account. Furthermore, we re-ran our serial mediation model (reflecting our proposed mechanism; see A3.11 for details), while also including the self-efficacy measure as a covariate in the model. Using PROCESS model 6 (Hayes, 2013), we found that the indirect path via performance-expectations and performance-anxiety remained significant after inclusion of the self-efficacy covariate (b = -.042, SE = .025, 95% CI [-.0983, -.0012]). Similarly, an analysis with a mediation model that included brand-as-master perceptions and the self-efficacy covariate still found a significant indirect path via brand-as-master perceptions, performance-expectations, and performance-anxiety (b = -.015, SE = .011, 95% CI [-.0415, -.0006]).

It is worth noting that self-efficacy measures were taken post-performance, following Park and John (2014). Because these items may reflect post-hoc rationalizations rather than self-efficacy beliefs prior to or during performance, we conducted an additional test to evaluate self-efficacy perceptions after the completion of the training experience but prior to the performance assessment. In fact, in Study 2 participants had reported greater preparedness after completing the performance-branded training experience post-training but prior to the performance assessment (A2.4). As indicated below (A3.9), GS-branded training experiences also increased post-training self-efficacy beliefs relative to the unbranded control.

Relatedly, performance-branded products have in the past been shown to increase self-esteem, subsequently lowering performance-anxiety (Garvey et al., 2016). Thus, another possibility is that undergoing a training experience with a strong performance brand could yield

negative self-evaluations in the form of lowered self-esteem. Our findings revealed no differences in self-esteem across conditions ($M_{control}$ = 3.43, SD = .97 vs. $M_{GS\text{-}training}$ = 3.55, SD = 1.07 vs. $M_{GS\text{-}Calculator}$ = 3.33, SD = 1.08, $F(2, 279) = 1.06$, $p = .349$). An additional test (see A3.9) also indicated that the performance-branded training experience actually raised self-esteem after completion of the training and prior to the assessment. These results reinforce the idea that the high-performance branded training experience did not yield negative effects on performance via negative self-evaluations.

A further possibility is that people may form negative self-evaluations after upward social comparison that occurs during the performance-branded training experience. However, in addition to findings that participants did not exhibit lowered self-evaluations after performance-branded training, other evidence is also inconsistent with the idea that social comparison processes may be at play. For instance, a social comparison account would suggest that individuals who have a greater discrepancy relative to the performance-brand would experience more negative self-evaluations; in other words, participants with lower incoming financial analysis ability would experience a greater gap between themselves and the Goldman Sachs brand. However, our data in fact reflect the opposite pattern. As reported above (A3.7), we observed that individuals with high incoming financial analysis ability were those that experienced the strongest negative effects of the performance-branded training experience.

Taking a broader perspective, while multiple processes may indeed be at play in driving reverse effects on performance, the above mechanisms are limited in domain, accounting for negative performance effects only. That is, they do not provide a rationale for why applying a performance-brand to products versus experiences would yield divergent effects on objective performance outcomes. For example, the negative self-evaluation accounts would suggest that

MIT-branded pens or GS-branded calculators could also elicit the same sequence of evaluations and subsequently interfere with performance. Presumably, a performance-branded tool could also lead consumers to infer that greater personal capability will be required of them to use the tool, such that consumers subsequently assess their own personal abilities to be deficient (lowering self-efficacy), and impairing performance outcomes due to increased performance-anxiety. Importantly, the current work introduces the brand-relationship construct in order to parsimoniously account for why strong performance brands may yield divergent effects on objective performance outcomes when applied to performance-enhancing experiences, rather than products. As the evidence suggests, performance-branded products indeed *improve* performance outcomes (Garvey et al., 2016; Park & John, 2014) while performance-branded training experiences instead *impair* performance outcomes. Our account explains this divergence due to the fact that performance-branded products offer stronger support to consumers (in a brand-as-servant configuration) while performance-branded training experiences instead impose greater demands upon consumers (in a brand-as-master configuration).

A3.9 Post-training, pre-test perceptions: validation study. To gain additional insight into the processes through which high-performance branded training experiences yield effects on performance, we conducted an additional study (n = 71 AMTs) in which we probed consumer perceptions after the training experience but prior to taking the performance assessment. Participants were randomly assigned to either complete the GS-branded financial training experience or the unbranded control training experience, in which materials were identical. Following the training experience, we assessed participants' feelings of self-efficacy on items related to both preparedness ("After completing the financial training, I feel well prepared to solve financial problems," "The financial training has improved my financial knowledge," and

"The financial training has improved my ability to answer financial questions correctly," 1 = strongly disagree, 7 = strongly agree, α = .93) and confidence ("I am confident that I will do well on the financial assessment," "I am confident in my ability to perform well on the financial assessment," 1 = strongly disagree, 7 = strongly agree, α = .96) adapting items from Park and John (2014). A factor analysis indicated that all five items were captured by a single factor (λ = 3.98), and we thus combined all five items into a self-efficacy scale (α = .93). State self-esteem was measured by two items ("I felt good about myself," "My self esteem was high," 1 = strongly disagree, 7 = strongly agree, α = .91) adapting items from Garvey et al. (2016). We also measured performance-expectations after the training experience, using measures identical to those described above (see A3.3, α = .74). We examined perceptions of how difficult it would be to learn from the training experience, both prior to the start of the training experience ("Learning new material in the financial training lesson will be difficult"), as well as after the completion of the training experience ("It was difficult to learn from the training", 1 = strongly disagree, 7 = strongly agree). Furthermore, we asked participants to share how much effort they put into the training tasks ("How much effort did you put into learning during the training?" 1 = none, 7 = a lot). After answering post-training follow-up questions, participants were informed on the last page of the study that they would not need to complete the performance assessment itself.

Responses revealed that the performance-branded GS training experience increased participants' feelings of self-efficacy (M = 5.46, SD = 1.11) compared to the unbranded training experience (M = 4.53, SD = 1.56, $t(69) = 2.72$, p = 0.008). Participants also reported higher levels of self-esteem after completing the GS-branded experience (M = 5.53, SD = 1.03) compared to the unbranded control (M = 4.95, SD = 1.20, $t(69) = 2.12$, p = 0.037). At the same time, the GS-branded training experience raised the bar around how much participants expected

they should know after training, heightening performance-expectations (M = 4.62, SD = 1.38) relative to the unbranded control (M = 3.88, SD = 1.43, $t(69) = 2.17$, $p = 0.033$). These findings suggest that the high-performance branded training experience did not lead to negative self-evaluations after training, but instead may have imposed greater demands upon consumers. We observed no differences on perceived difficulty in learning from the training experience both before and after the training experience (ts < 1). In addition, participants exerted an equal amount of effort in learning during the training experience, regardless of the brand ($t < 1$).

A3.10 Willingness to pay. Despite the fact that completing the performance-branded training experience lowered objective performance outcomes, participants reported significantly higher willingness to pay for a monthly subscription of the GS-branded financial training program (median = $100) compared to the unbranded financial training program (median = $25, nonparametric Wilcoxon $Z = 5.23$, $p < .001$).

A3.11 Additional mediation analysis details. We assessed whether the GS-branded training experience lowered objective performance outcomes via performance-expectations and performance anxiety. The serial mediation analysis was conducted from training brand to performance-expectations, performance-anxiety, and finally financial analysis performance. We focus on the differences generated between GS-branded training and control conditions. All indices were centered.

We observed a positive relationship between the GS-branded training experience and performance-expectations ($F(1,188) = 7.85$, $p = .006$). In a model incorporating GS-training (versus the unbranded control) and performance-expectations to predict performance-anxiety suggested: (1) performance-expectations predicted performance-anxiety ($F(1,187) = 106.58$, $p < .001$), while (2) GS-branded training no longer predicted performance-anxiety ($F < 1$). Finally, in

a model predicting performance, performance-anxiety negatively predicted performance ($F(1,186) = 5.24$, $p = .023$) as did performance-expectations ($F(1,186) = 5.42$, $p = .021$), while GS-training also marginally predicted performance in a negative direction ($F(1,186) = 2.86$, $p = .093$). See Table A2.

A bootstrap confidence interval for the indirect effect of the GS-branded training experience on performance via performance-expectations and performance-anxiety confirmed this mediation path ($b = -.050$, $SE = .028$, 95% CI [-.1126, -.0048]), consistent with the proposed account. Net of this indirect effect, there was also evidence of an alternative indirect path (via performance-expectations only, $b = -.085$, $SE = .047$, 95% CI [-.1960, -.0093]). At the same time, the direct effect from GS-branded training to performance failed to reach significance once all mediating variables had been accounted for in the model ($b = -0.246$, $SE = 0.146$, 95% CI [-.5337, .0411]). Additionally, when reversing the order of mediators in our serial mediation model, we did not find a significant indirect effect through performance-anxiety and subsequently performance-expectations ($b = -.0323$, $SE = .0238$, 95% CI [-.0881, .0044]). Furthermore, including self-efficacy as a covariate in the proposed mediation model did not eliminate the suggested indirect path.

Table A2. Study 3 Mediation Analysis Estimates

	Performance-Expectations (Mediator 1)		**Performance-Anxiety (Mediator 2)**		**Performance (DV)**	
IV	*b*	*t*	*b*	*t*	*b*	*t*
Constant	1.08***	11.32	0.10	0.99	3.08***	16.57
GS-Branded Training	**0.27*** **	2.80	0.01	0.10	-0.25*	-1.69
Performance-Expectations			**0.60*** **	10.32	-0.32**	-2.33
Performance-Anxiety					**-0.31** **	-2.29

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

A3.12 Follow-up mediation incorporating brand-as-master. As a follow-up analysis, we examined a mediation path incorporating the brand-as-master manipulation check item. This analysis assessed whether the GS-branded training experience lowered objective performance outcomes via performance-expectations and performance anxiety, to the extent that people viewed the GS-brand as taking on the master role. The serial mediation analysis was conducted from training brand to brand-as-master perceptions, performance-expectations, performance-anxiety, and finally financial analysis performance. We focus on the differences generated between GS-branded training and control conditions. All indices were centered.

We observed a positive relationship between the GS-branded training experience and brand-as-master perceptions ($F(1,188) = 13.10$, $p < .001$). A model incorporating GS-training (versus the unbranded control) and brand-as-master perceptions to predict performance-expectations suggested: (1) brand-as-master perceptions predicted performance-expectations ($F(1,187) = 9.93$, $p = .002$), while (2) GS-branded training marginally predicted performance-expectations ($F(1,187) = 3.87$, $p = .051$). Next, in a model predicting performance-anxiety, performance-expectations predicted performance-anxiety ($F(1,186) = 97.40$, $p < .001$), while GS-training and brand-as-master perceptions did not (ts < 1). Finally, in a model predicting performance, performance-anxiety negatively predicted performance ($F(1,185) = 5.16$, $p = .024$) as did performance-expectations ($F(1,185) = 5.18$, $p = .024$), while brand-as-master perceptions did not ($t < 1$). Similarly, GS-branded training no longer predicted performance ($F(186) = 2.61$, $p = .108$). See Table A3.

Using PROCESS model 6 (Hayes, 2013), a bootstrap confidence interval for the indirect effect of the GS-branded training experience on performance via brand-as-master perceptions, performance-expectations, and performance-anxiety confirmed the mediation path ($b = -.0143$,

SE = .0102, 95% CI [-.0395, -.0004]), consistent with the proposed account. Net of this indirect effect, there was also evidence of an alternative indirect path (via brand-as-master perceptions and performance-expectations only, *b* = -.025, *SE* = .016, 95% CI [-.0600, -.0010]). At the same time, the direct effect from GS-branded training to performance failed to reach significance, once all mediating variables had been accounted for in the model (*b* = -0.242, *SE* = 0.150, 95% CI [-.5368, .0533]).

Table A3. Study 3 Follow-up Mediation Analysis Estimates

	Brand-as-Master (Mediator 1)		**Performance-Expectations (Mediator 2)**		**Performance-Anxiety (Mediator 3)**		**Performance (DV)**	
IV	*b*	*t*	*b*	*t*	*b*	*t*	*b*	*t*
Constant	1.00***	9.32	0.88***	7.82	0.07	0.63	3.09***	15.47
GS-Training	**0.39*** **	3.62	0.19*	1.97	-0.01	-0.08	-0.24	-1.62
Brand-as-master			**0.20** **	3.15	0.04	0.81	-0.01	-0.14
Performance-expectations					**0.59*** **	9.87	-0.32**	-2.28
Performance-anxiety							**-0.31** **	-2.27

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

A3.13 Mediation of the branded-product effect. In a further mediation analysis, we also explored whether the forward placebo effect observed when applying the performance-brand to the product was mediated by lowered levels of performance-anxiety, a mechanism identified in Garvey et al. (2016). We focus on the differences generated between the GS-branded product and control conditions only. All indices were centered.

First, we observed a negative relationship between the GS-branded product usage and performance anxiety ($F(1,183) = 3.56$, $p = .009$). Second, in a model predicting performance, performance-anxiety negatively predicted performance ($F(1,182) = 22.15$, $p < .001$), while GS-branded product usage no longer predicted performance ($F(1,182) = 2.39$, $p = .124$).

Using PROCESS model 4 (Hayes, 2013), a bootstrap confidence interval for the indirect effect of GS-branded product usage on performance via performance-anxiety did not reach significance (*b* = .1060, *SE* = .0639, 95% CI [-.0048, .2449]). However, once performance-anxiety had been accounted for in the model, the direct effect from GS-branded product usage to performance was no longer significant (*b* = .2520, *SE* = .1631, 95% CI [-.0698, .5739]). This evidence is broadly consistent with findings observed in Garvey et al. (2016).

Appendix B: Supplementary Materials

Study 1 Instructions.

Participants in the control condition were provided with the following introduction:

> "In this study you will be testing part of a cognitive training program. Please continue forward to receive more details on the specific cognitive training task you that will be testing."

Participants in the NASA-branded condition were provided with the following introduction (where all instructional pages included the same branded NASA header and footer as shown in Figure B1):

> "In this study you will be testing part of a cognitive training program developed by NASA, the National Aeronautics and Space Administration. NASA has developed a comprehensive neurocognitive toolkit consisting of a battery of brief computerized tests. The tasks were designed to train astronauts to maintain high levels of cognitive performance and reduce space flight fatigue. Please continue forward to receive more details on the specific cognitive training task you that will be testing."

All participants were subsequently given the following task information:

> "You will be testing what is known as the N-Back task, a training procedure designed to improve attention and working memory. Some prior research has found that repeated training on versions of this task can improve fluid intelligence [1].
>
> The basic version that you will complete today is called the 2-back task. You will be presented with a sequence of images, and your job will be to respond whether the image you see is the same image as the one presented two trials before -- or in other words, whether it's the same as what was "2 steps back" from the current image. To perform effectively, you should keep a buffer in mind of what the last two images were and update as you move along.
>
> Please click through to the next page for an example before you begin the full training.
>
> [1] Jaeggi, S. M., Buschkuehl, M., Jonides, J., & Shah, P. (2011). Short-and long-term benefits of cognitive training. Proceedings of the National Academy of Sciences, 108(25), 10081-10086."

Figure B1. Sample training material from Study 1.

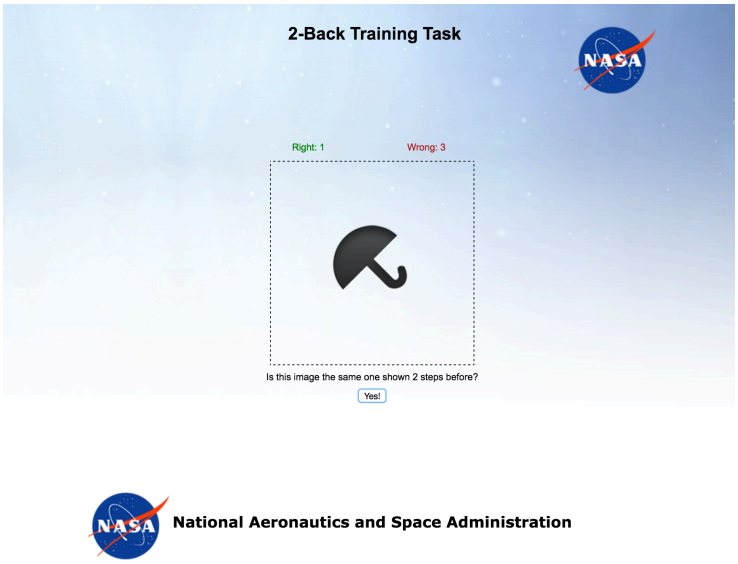

Figure B2. Sample Raven's Progressive Matrices question from Study 1.

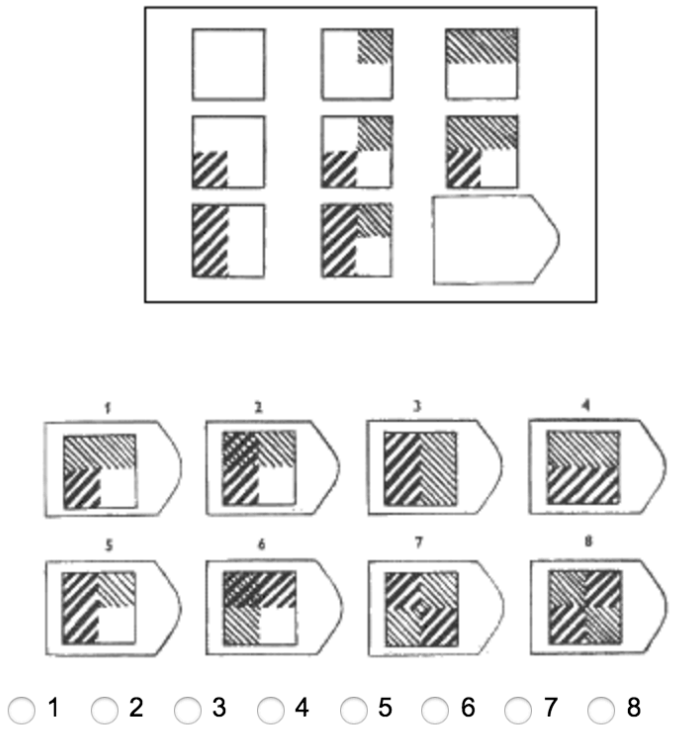

Figure B3. Sample training material from Study 2 (from video).

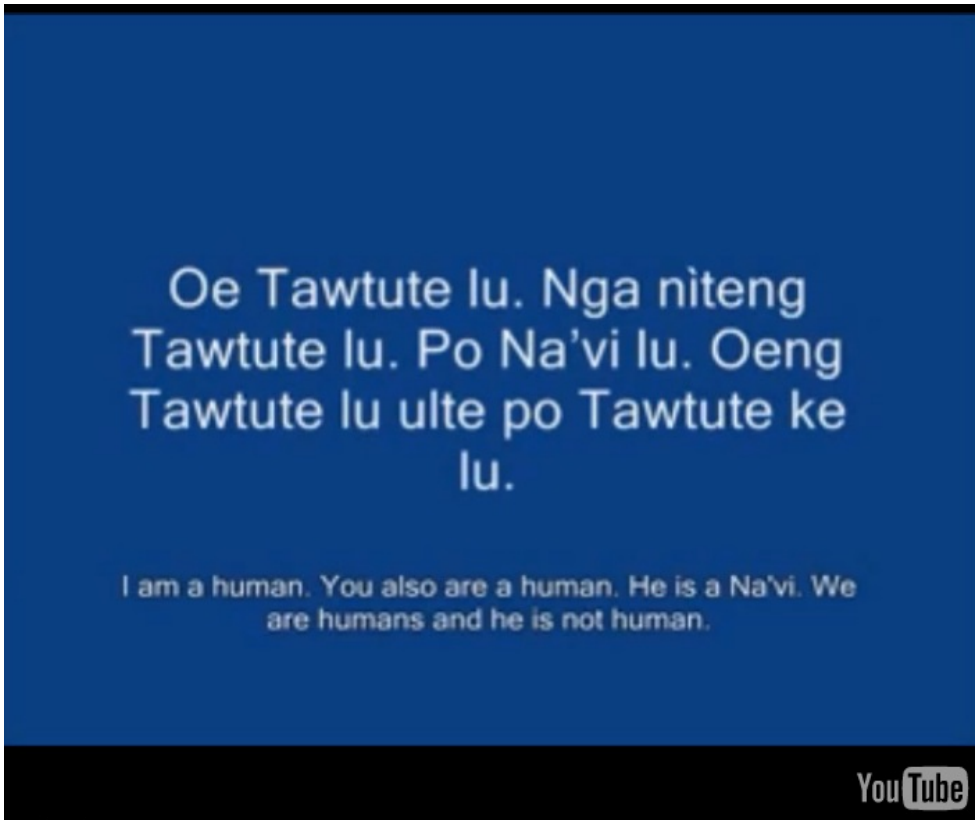

Figure B4. Sample language-learning assessment question from Study 2.

Now, please translate the following sentences from Na'vi to English.

Oe Tawtute lu

a) I am human

b) You are human

c) He is human

d) We are human

Figure B5. Sample training material from Study 3.

Figure B6. Sample financial calculator from Study 3.

FINANCIAL CALCULATOR

Insert **exactly four** values in to the Data Input section (blue). Then, the fifth value will be displayed in the Data Output section (yellow).

Description	Data Entry	Data Output
Present Value ($) =		
Future Value ($) =		
Annualized Interest Rate =	%	%
Number of years =		
Compounding periods per year =		
	Calculate	Reset

Enter only numeric values (no commas), using decimal points where needed.
Non-numeric values will cause errors.

Figure B7. Sample financial analysis question from Study 3.

Question 1 of 12: You are making a $4500 investment to hold a 2.5% equity stake in a new startup venture. You anticipate the venture to grow at a 5% annual interest rate, compounded once per year. If you are able to fully recover your investment after 10 years, what will the future value of your investment be at that time? Please enter a number (without any text, ex. no $), rounded to the nearest cent (ex. "XXXX.XX").

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