Not Just For Your Health: How Regular Physical Activity Influences Processing of Irrelevant Product Information

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We document a novel “spillover” benefit of regular physical activity (RPA). When facing irrelevant product information, consumers find it difficult to ignore irrelevant information, and “dilute” their judgments. Two studies reveal that RPA aids people’s ability to ignore irrelevant information in product judgments, and investigate competing explanations.

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EXTENDED ABSTRACT

We document a novel “spillover” benefit of regular physical activity (RPA) on decision-making. Specifically, RPA seems to aid people’s ability to ignore irrelevant information. In the consumption domain, when evaluating products, consumers often face a wide range of information - some relevant and informative, while other information might be irrelevant for evaluating the benefits of a product. Exposure to irrelevant information typically weakens consumer’s belief in a product’s benefit and results in less extreme product ratings - the dilution effect (Nisbett, Zukier and Lemley 1981; Meyvis and Janiszewski 2002). The dilution effect represents a judgmental bias since non-diagnostic information is taken into account when it should be ignored to make the optimal choice.

Health research shows that RPA improves the ability to inhibit irrelevant distractors in psychometric tasks (e.g., Hillmann et al. 2014, Hillmann et al. 2004). Besides the positive impact on physical and emotional health, RPA also benefits cognition, particularly executive functions (Barenberg, Berse and Dutke 2011). However, the extant research has not looked at whether RPA also benefits information processing in completely unrelated domains.

The aim of this research was to investigate whether RPA affects information processing in ‘real-life’ decision domains, such as product judgments that require ignoring irrelevant information. We hypothesize that physically active individuals are less susceptible to dilution effects in consumer decision-making and investigate underlying mechanisms.

In Study 1 we combined an experimental manipulation of product information with an individual differences approach to investigate dilution effects in sedentary vs. RPA individuals. Two hundred and ninety-four US participants (age range: 18-65 years) completed an adapted version of Meyvis and Janiszewski’s (2002, experiment 1) consumer product test of the dilution effect. A 2 (information: informative vs. informative + irrelevant) x 7 (product replicates) mixed design was used and crossed with measured RPA, using the International Physical Activity Questionnaire (Hallal and Victora 2004). Participants were randomly assigned to one of two between-subjects factors and saw descriptions of seven products in random order. For each product, participants were first given the desirable benefit (“You are looking for a safe apartment”) and then received the product description. In the control condition, participants received one piece of supportive and diagnostic information (“24 hour on-site security”). In the dilution condition, this was followed sequentially by three pieces of irrelevant information (e.g., “complex name: Haywood Park”). Finally, participants rated the product’s benefit. We collected various control variables to account for differences between people with varying levels of RPA (affect, Big-5, lay beliefs in the effects of RPA, creative and analytical reasoning).

Study 2 was designed to 1) replicate the findings from study one; 2) shed light on underlying mechanisms; and 3) eliminate additional confounding variables as competing explanations. Two hundred eighty-nine US participants completed the same procedure as in study 1. Additionally, participants completed a reaction time recognition test of the product information, two inhibition measures (Stroop test, Necker Cube Pattern Control), two decision-making measures (intertemporal choice, self-control scenarios) and several controls (TIPI, lay beliefs in the effects of RPA, demographics).

In study 3 we tested two hundred and twenty-seven exercisers during their gym visit to address physical activity self-report issues. We used the same procedure but added a quasi-experimental manipulation of physical activity, by varying the timing of the testing (before vs. after workout).

In study 1, adding irrelevant information significantly weakened participant’s beliefs in the product’s benefit, thus demonstrating the classic dilution effect (\(M_{\text{control}} = 75.02, M_{\text{dilution}} = 70.57, t(292) = 3.44, p < .001\)). More importantly, we found support for our hypothesis. A two-way ANOVA showed a significant interaction between the dilution condition and RPA, \(F(1, 290) = 4.37, p < .05\). Simple effects showed that sedentary subjects significantly diluted their product judgments when faced with irrelevant information (\(p = .006\)). There was no difference in product judgments for RPA individuals (\(p = .899\)). This finding persisted after controlling for various characteristics that could explain individual differences, including reasoning scores, socioeconomic status, mood, personality traits and lay beliefs in the effects of RPA.

In study 2 the positive “spillover” benefit of RPA on product judgments was replicated. A two-way ANOVA showed a significant interaction between the dilution condition and RPA, \(F(1, 285) = 4.67, p < .05\). Sedentary subjects significantly diluted their judgments when faced with irrelevant information (\(p < .001\)). There was no dilution effect for RPA individuals (\(p = .402\)). Again, this remained after controlling for potential confounds. Further, we could rule out differences in memory for the product information and improved inhibitory control as mediating factors.

Study 3 revealed a significant three-way interaction between the dilution condition, RPA and time of testing, \(F(1, 219) = 4.31, p < .05\). Planned contrasts showed that regular exercisers did not dilute their product judgments when faced with irrelevant information after they had just exercised, \(p = .206\). All other groups showed a significant dilution effect, \(p < .001\). Summary statistics of all studies across condition and RPA groups.

This research documents a novel effect: Regular exercisers are significantly less prone to dilute their judgments when faced with irrelevant product information. This effect remains after controlling for a number of confounds and also appears after a situational manipulation of physical activity with regular exercisers at a gym.

Our findings have important theoretical and practical implications. First, they are one of the first to establish the positive effect of RPA on cognition, particularly decision-makers’ ability to ignore irrelevant information. This can be useful to promote RPA among people who aren’t motivated to exercise by health benefits. Second, they extend the benefits of RPA to a new and unrelated domain – consumer product judgments. Marketers can take this into account when promoting products to regular exercisers. Finally, our findings shed light on potential remedies against the dilution effect as a judgmental bias. This is important considering the number of studies demonstrating the dilution effect in various applied domains including legal decision-making (Smith, Stasson and Hawkes 1998), negotiations (Wiltermuth and Neale 2011) or climate change (De Vries, Terwel and Ellemers 2014).
REFERENCES


