Every Step Counts: When Physical Movement Affects Perceived Value

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Abstract

Physical movement is an important contextual factor during customer's decision-making. Yet, little is known about how movement can affect customer's response to mobile promotions, or how it can influence the search and evaluation of products in a retail setting. Across three studies, this research shows that physical movement improves the perceived value of products and promotions for customers with a predominant locomotion motivation. Such effects are mediated by engagement. One implication is that retailers may increase engagement for individuals with a predominant locomotion motivation by playing mobile adverts when cellular sensors indicate movement.

Keywords: Movement, Mobile Marketing, Regulatory fit, Value-from-fit, Locomotion, Assessment

1. Introduction

In a retail setting customers move around the physical store to find, and to try products. Physical movement is the context by which customers interact with the marketing mix. A customer may walk around a chocolate shop to find the best product; or she may physically test a pair of sneakers to see if they are worth the price. Digitization offers retailers the ability to trace the movements of their customers on an industrial scale using accelerometers, WiFi signals, and GPS built into mobile devices. Movement can be monitored within the retail space, or outside it. For instance, as the customer approaches a specific store, location-based audio promotions on Spotify can prompt the customer to step in and have a closer look. Yet, the core of the marketing and customer research literature largely neglects physical movement. Despite emerging interest in customers' movement in the store and its influence on the decision making process as well as spending behavior (Clifford & Hardy, 2013), little is known about how value perceptions are affected by customers' physical movement. For instance, which customers value marketing communications on the go? When does movement engage customers with a brand? For which customers is physical movement related to spending? Such questions remain to be answered.

This article extends previous research by addressing two critical issues in the literature. Firstly, physical movement has not been studied explicitly in the marketing literature despite recent calls for this kind of research (Hui et al., 2013; Shankar & Balasubramanian, 2009; Varnali & Toker, 2010). The present article contributes to the marketing literature by investigating how the interaction between physical movement and individual differences can influence customer's perception of value in aspects of the marketing mix. In particular, the article demonstrates how perception of value in advertisements and customers' willingness to pay for products are affected

by this interaction of physical movements and customers' individual differences. This is interesting for retailers such as Nordstrom and Nike who trace consumers' movement using sensors that connect to customers' mobile devices (Clifford & Hardy, 2013). We show how they can identify customers for whom movement increases value perceptions. Perceived value is of high relevance to marketers as it has been found to positively affect customer loyalty (Yang & Peterson, 2004), purchase intentions (Wu et al., 2015) and trust (Chen & Chang, 2012).

Secondly, and more generally, the article contributes to recent theorizing in the marketing literature about the influence of *regulatory fit* (Aaker & Lee, 2006; Avnet & Higgins, 2003, 2006; Daryanto et al., 2010; Florack & Scarabis, 2006; Mathmann et al., 2017; Motyka et al., 2013; Pham & Chang, 2010). Regulatory fit theory proposes that when customers choose products by using decision strategies that align with their general motivations, they value products more compared with customers who do not experience this type of fit (Aaker & Lee, 2006; Avnet & Higgins, 2003, 2006; Higgins, 2000, 2006; Motyka et al., 2013; Pham & Chang, 2010). It has not been tested, however, whether physical behaviors such as customer movement per se (rather than decision making strategies) have a similar effect on regulatory fit and thereby on perceived value.

2. Theoretical background

The limited marketing literature, which considers physical movement (i.e.: displacement of a customer's physical body through space), does so only indirectly by accounting for in-store travel distance. In this stream of research, movement is typically considered a transaction cost (Hui et al., 2013; Danaher et al., 2015). The economic theories that underpin this interpretation imply that customers seek to

minimize these costs (Hui et al., 2013, Danaher et al., 2015). Accordingly, the way for managers to increase value in a physical retail space is to limit unnecessary movement (Danaher et al., 2015). Researchers speculated for example that increased walking in retail environments leads to customer irritation (Hui et al., 2013) and lower mobile coupon redemptions (Danaher et al., 2015).

In contrast, regulatory mode[1] theory in psychology offers a fresh perspective. It suggests movement may actually be engaging for some customers, but not for others (Kruglanski et al., 2000). For example, to purchase a chocolate bar, a customer must evaluate its attributes and make a choice from the available set of alternatives. From the perspective of regulatory mode, some individuals are predominantly motivated to evaluate (so called assessors). According to regulatory mode theory (Higgins, 2012; Higgins et al., 2003; Kruglanski et al., 2000), assessors are concerned with making the right decision, for instance choosing the right chocolate (Kruglanski et al., 2000). This means that they should prioritize dedicating cognitive resources to evaluation rather than movement. Others just want to get on with it and make it happen (eat the chocolate). Those are the locomotors (Kruglanski et al., 2000). Locomotors are concerned with managing change and progressing towards the goal. This involves *movement from state to state* (Kruglanski et al., 2000). When locomotion orientations are stronger than assessment orientations, we can thus speak of predominant locomotors. Physical movement fits the motivational concerns of predominant locomotors because they are concerned with effecting change by moving from state to state rather than pausing for evaluation. Even when movement is predominantly a cost, as commonly argued by the marketing literature, locomotors may be less affected by its detrimental effects because the movement is a fit for them.

Despite the analogy of movement, regulatory mode studies have mostly

examined movement in the psychological sense rather than actual physical movement. Actual physical movement should also result in fit for high locomotors. When the environment matches an individual's regulatory motivation it produces a "fit". Individuals experiencing fit react more favorably, or less adversely, in a given environment. Studies have shown that locomotors assign greater perceived value to objects as a result of regulatory fit. Perceived value involves an *attraction toward the outcome of the goal pursuit* (Higgins 2006; Higgins & Scholer, 2009), and studies have measured it through willingness to pay, as well as established scales of perceived value (Mathmann et al., 2017). For instance, locomotors were willing to pay more for a reading light chosen using a sequential decision rule (e.g.: elimination by aspects) because it offered them a sense of progress towards a goal (Avnet & Higgins, 2003).

The conjecture in this article is that regulatory fit occurs not only as a result of psychological processes and decision-making strategies but also due to actual physical movement. What is interesting about physical movement, and different from decision strategies, is that physical movement requires cognitive resources that otherwise would be available for critical evaluation Lindenberger et al., 2000). For instance, in a chocolate store, consumers must watch where they step, avoid obstacles, and navigate in addition to evaluating attributes of the chocolates. Such multitasking likely interferes with critical evaluation over and above a mere psychological process or a decision strategy. This means that high locomotors' regulatory fit with movement could not only intensify positive reactions to the decision activity from the movement but also attenuate what are often experienced as detrimental effects of the movement. Notably, in both cases the high locomotors would have a more favorable reaction to the decision activity (including less negative) than low locomotors.

When it comes to the marketing mix, customers are often exposed to advertising and product choices on the go. Walking to the shop they may hear an advertisement, and when they get there, they must traverse the store to find the product. Ikea is potentially the best (or worst - depending on your regulatory inclination) example of a retail environment where physical movement affects a sense of progress. The one-way traffic through an Ikea store favors locomotors for whom the retail environment provides regulatory fit; which in turn intensifies value of products and communications encountered in such an environment. It is expected that high locomotors will react more favorably to the physical movement required in this situation than low locomotors. Hence, the first hypothesis is that:

H1: Individuals with a high predominant locomotion motivation value products and promotions encountered during physical movement more positively —including less negatively —than those with a low predominant locomotion orientation.

That is, whether customers perceive value in an advertisement they hear or a product they see depends in part on the interaction effect (the regulatory fit) between the physical movement and their motivation for locomotion. Previous research explained the effect of fit on value by suggesting that when consumers pursue a goal in a way that fits their established motivations they are more engaged in the goal pursuit activity (Higgins & Scholer, 2009; Mathmann et al., 2017). Engagement is conceptualized as a *state of sustained attention* (Higgins, 2006; Higgins & Scholer, 2009) and has been distinguished from similar constructs such as involvement (Hollebeek & Chen, 2014). Sustained attention is instrumental to attraction toward an outcome of goal pursuit (i.e.: perceived value) because where attention goes action follows (Higgins, 2006; Higgins & Scholer, 2009). Sustained attention amplifies the salience of a pursued outcome (Scholer & Higgins, 2009). That is why the experience

of engagement in a retail context should intensify consumers' value responses (Higgins, 2006). As such, engagement is part of the process that transitions regulatory fit effects to judgments of perceived value. Hence, the second hypothesis is that:

H2: Engagement mediates the interaction effect of physical movement and predominant locomotion (i.e. regulatory fit) on perceptions of value.

Figure 1 illustrates the relationships expected under H1 and H2 where engagement mediates the interaction effect of physical movement and predominant locomotion on perceived value. The following studies investigate the hypothesized effects in the context of: (i) products, with actual monetary offers (Study 1) and willingness to pay (Study 2) as the measures of perceived value; and (ii) marketing communications, focusing on perceived value in mobile advertisements (Study 3).

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3. Study 1: Movement Integral to Search Process

Study 1 was designed to test hypothesis 1 in the context of movement that is integral to product search. Regulatory fit literature distinguishes between actions integral and incidental to intent (Motyka et al., 2013). When the intent is to purchase a product, physical movement becomes integral to that goal. A customer will deliberately search for, and approach products that promise value. Such movement can be traced in-store through customers' cellphone signals (Hui et al., 2013; Danaher et al., 2015), or manipulated through mobile coupons (Danaher et al., 2015). In line with H1, it was hypothesized that when searching for a product, physical movement will lead to greater monetary offers for selected products by customers high (vs low) in predominant locomotion motivation (H1).

3.1 Method

Participants (N=130) from the subject pool of an Australian University (57 males, M_{age}=22.5, SD=5.3) took part in a between subject experiment that manipulated movement (low vs high). Participants were allowed to participate under the condition that they were not currently dieting and were willing to purchase chocolates for part of their $12 participation payment. One participant was excluded as he did not follow instructions. Participants were randomly assigned to either the high movement (N=56) or the low movement condition (N=74). Respondents chose chocolates either while walking around a table or while sitting at a table. Appendix 1 illustrates this environment.

The perceived value was measured as actual payment using an established method (Avnet & Higgins, 2003) in which participants made an offer for the chocolates (M=3.07, SD=1.64) using their participation money. They placed a bid for a chocolate bar they selected having been told the researcher pre-commited to a hidden reserve price on that product. Participants who bid a price greater or equal to the reserve bought the chocolates at their bid price. In the same survey, participants also answered questions about locomotion (e.g. "I feel excited just before I am about to reach a goal"; α = .75) and assessment (e.g. "I am a critical person" α = .76) motivations measured using the established 12 items for each construct on 6-point scales from "Strongly Disagree" to "Strongly Agree" (Kruglanski et al., 2000) (correlation between the motivations was: r = .30, p <.01).

3.2 Results

Perceived value. To test H1, we used Movement as the IV, Predominant Locomotion motivation (PL motivation; Locomotion vs. Assessment scoring

according to Kruglanski et al., 2000) as the Moderator, Product Valuations as the DV, and the test was conducted with the PROCESS macro for SPSS (Hayes, 2012, Model 1). Results are displayed in Table 1. The hypothesized 2-way interaction between PL motivation and Movement was positive and significant, $\beta = .77$; $p < .05$; $\Delta R^2 = .03$) (see Figure 2).

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Insert table 1 about here

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The conditional effect of movement on product valuations transitioned in significance at the centered low locomotion predominance value of -.16, $\beta = -.58$, SE = .29, t = -1.98, p = .05, 95% CIs [-1.15, .00] and remained significant for all values below this point. These findings support H1.

4. Study 2: Movement Integral to Evaluation Process

Study 2 was designed to test hypothesis 1 in the context of movement as part of product evaluation. Brick-and-mortar retailers might encourage physical movement to allow customers to test their products "in motion". Nike stores are a good example of this: Customers that track their movements using the Nike+ app can try football gear in store to see how it feels in action (Nike, 2016). In-store motion sensing through mobile phones (e.g. using WiFi data) and wearable technology can then provide visibility into whether these initiatives influence customer movement (Hui et al., 2013; Danaher et al., 2015) and how this, in turn, relates to spending behavior.

Study 2 contributes to the understanding of physical movement and its effect on the perceived value of products by focusing on movements integral to product evaluation (H1).

4.1 Method and Measures

Participants (N=36) from the subject pool of a university in the northeastern United States (9 males, M_{age}=23.5, SD=9.9) took part in a between-subject experiment that manipulated physical movement (low vs. high). Participants were asked to evaluate a stepping stool. In the high movement condition (N=18), participants were asked to walk up and down the stepping stool as shown in an instruction video. In the low movement condition (N=18), participants sat still at a desktop computer and watched a video that showed the stepping stool from different angles. Two participants were excluded due to experimenter error, causing participants not to perform the experimental task as planned or at all. All participants received $7 for taking part in the study.

The perceived value assigned to the stepping stool was measured by asking participants "How much do you think the stepping stool is worth?" (Pham et al., 2011) with the values "<$20"," $20-$39"," $40-$59"," $60-$79"," $80-$99"," $100-$119" and "$120 and higher" Coding: 1-7, M=1.89, SD=.78). No participant indicated "$120 and higher". Participants' locomotion (α = .88) and assessment (α = .88) motivations were measured exactly as in Study 1 (Kruglanski et al., 2000, r = .22, n.s.).

4.2 Results

Perceived value. To test H1, we used Movement as the IV, PL as the Moderator, Product Valuations as the DV, and the test was conducted with the PROCESS macro for SPSS (Hayes, 2012, Model 1). Table 2 summarizes the results. The predicted 2-way interaction between PL and low vs. high Movement (β =. 66; $p < .05$; $\Delta R^2 = .11$) was positive and significant (see Figure 3).

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The conditional effect of low versus high movement transitioned in significance at the centered low predominant locomotion value of -.80, β = -.73, SE = .36, t = -2.04, p = .05, 95% CIs [-1.08, .00] and remained significant for all values below this point. These findings provide further support for H1.

5. Study 3: Incidental Movement and the Role of Engagement

Study 3 tested hypothesis 1 and 2 in a field setting and was designed to contribute to the literature on retail motion sensing and mobile advertisements (Hui et al., 2013). For retailers and digital service providers, it is important to understand whether perceived value (H1) and engagement (H2) of advertisements can benefit from consumer motion sensing. For example, Spotify tracks consumers' physical movement in order to increase engagement in activities and then confronts consumers with audio advertisements (The Spotify Team, 2015). In this context the movement is incidental to the advertisements (Motyka et al., 2013). That is, movement does not

occur as a result of pursuing a product or promotion, but merely concurrently to the advertising exposure. Little is currently known about how incidental movement affects judgements of value, and in particular the perception of value in advertising messages.

5.1 Methods and Measures

Participants (N=114) from the subject pool of a Dutch university (43 males, M_{age}=21.9, SD=2.7) were informed that they would listen, for 15 minutes, to advertisements using an iPhone provided to them by the researcher, as they went about their business during a break. Participants listened to 15, 30-second advertisements for products from five different brands (McDonald's, Sprite, Durex, Listerine & Burger King) while a pedometer smartphone application covertly measured their steps per second (M=1.30, SD= .76). Three participants were excluded due to technical errors, and all participants received € 8 for taking part in the study.

At the end of the task, participants completed a survey in which they answered questions about engagement: "I concentrated on the McDonalds ads; I put a lot of thought into evaluating the McDonalds ads", and perceived value of advertisements: "I think the McDonalds ads were valuable; I liked the McDonalds ads" (repeated for each brand: Sprite/Durex/Listerine/Burger King, and measured on a scale of 1 Strongly Disagree - 5 Strongly Agree). After this, locomotion (α = .83) and assessment (α = .83) were measured using the same scales as in studies 1 and 2 (Kruglanski et al., 2000; correlation between the motivations was: r = .19, p =.038). Finally, demographic questions and payment followed before participants were debriefed.

5.2 Results

Engagement and Perceived Value. To test H1 and H2, we used Movement (in terms of steps per second) as the IV, PL as the Moderator, Engagement as the Mediator, Valuations as the DV, and the test was conducted with the PROCESS macro for SPSS (Hayes, 2012, Model 8) For engagement, the findings show no significant effect of Movement (β = .04; n.s.) or PL (β = .01; n.s.). More importantly, the predicted 2-way interaction between PL and Movement (β =. 20; p< .05; Δ R^2 = .04) was positive and significant.

To further illustrate the nature of these interaction effects, the Johnson-Neymann (J-N) technique was used (Hayes, 2012). The effect of Movement on engagement transitioned in significance for the region above the centered high predominant locomotion value of 1.36, β = .30, SE = .15, t = 1.98, p = .95, 95% CIs [.00, .60]. This reflects the fact that, as predicted for predominant locomotors, Movement had a positive effect on engagement in advertisements. (See Figure 4). For value perceptions, the findings showed no significant direct effects (H1).

Insert figure 4 about here

Tests of Mediated Moderation. A moderated mediation analysis was performed to test H2. To perform this analysis, Model 8 from the PROCESS macro for SPSS (Hayes, 2012) was used (see Table 3). The interaction between Movement (average number of steps per second) and PL motivation was positively associated with engagement (β = .20, p <. 05) while the effects of engagement (β = .24, p < .01) on perceived value was positive and significant. These findings illustrate that heightened engagement has a positive effect on product valuations.

Insert Table 3 about here

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95% bootstrapped CIs for the indirect effects of higher order interaction (i.e., a3 X b1, model 8, Hayes, 2012) did not include 0 for engagement (95% BC *CI*= .0021, .1306). The indirect effect of physical movement on perceived value through engagement was significant and positive for individuals with a predominant locomotion motivation of .86 (β = .05, SE = .03, 95% BC *CI*= .0002, .1446) or higher, but not for individuals with weaker predominant locomotion motivation (locomotion motivation <.86, n.s.). This indicates that the moderation is fully mediated (Zhao et al., 2010). These findings confirm H2.

6. General Discussion

Physical movement as a context factor to customer's experience of products and marketing messages has received little attention in the academic literature. Fast-paced advances in technology have meant the amount of real-time information on customer movement in retail environments has grown rapidly. Yet academic research has done little to show how this information can be relevant for marketing. Calls for research about the influence of customer movement on the perception of value in aspects of the marketing mix have not been answered (Hui et al., 2013; Varnali & Toker, 2010). Literature that indirectly accounted for physical movement, for example by measuring in-store travel distance through mobile sensors, exclusively considered movement as a transaction cost (Hui et al., 2013; Danaher et al., 2015). It neglected how physical movement could increase engagement and value for some individuals (and have the opposite effect for others) by being a fit with their predominant locomotion orientation. This article addresses those issues by demonstrating: How communications on the go affect some customers but not others. That movement can

be used to engage particular customers with a brand and for which customers' physical movement is related to spending behavior.

Three studies considered the effect of physical movement on perceived value in aspects of the marketing mix. In Studies 1 and 2 movement was integral to decision making: product search (Study 1) and product evaluation (Study 2). In Study 3 movements were incidental as customers listened to marketing communication about different brands (Study 3). Repeatedly, it was demonstrated that regulatory fit between physical movements and consumers' predominant locomotion motivation influenced these marketing mix variables.

When participants walked around a counter to select chocolates in Study 1, high predominant locomotors paid a higher price for the chocolates they chose than low predominant locomotors. Locomotors are those customers who have a strong motivation for movement from one state to the next. In Study 2, customers who performed movements to evaluate a product's main function, stepping on a stepping ladder, indicated they were willing to pay more for the product, when they had a higher locomotion orientation. Crucially, this effect was due to regulatory fit, where only locomotors responded in that way. Finally, Study 3 showed how walking while listening to advertisements increased engagement, and in turn value of those messages for locomotors.

From a theoretical perspective, regulatory fit due to physical movement and predominant locomotion has not been demonstrated before. However, the findings in this article mirror those on regulatory fit from decision-making strategies (Aaker & Lee, 2006; Avnet & Higgins, 2003, 2006; Motyka et al., 2013; Pham & Chang, 2010). Previous literature explained regulatory fit as a result of congruence between

customer decision-making strategies and general motivations (Higgins, 2000, 2006). The current article shows how embodied movement can result in regulatory fit as well. Not only does this provide a theoretical underpinning for future analysis of motion tracking and analysis of the data generated by monitoring customer movements, it also offers a novel segmentation approach and a source of value for physical retailers.

6.1 Managerial implications

By challenging existing assumptions about how movement affects customer engagement and value perceptions, the present article offers new perspectives for physical retailers. Enabled through digitization, motion sensing in physical retail environments is one source of advantage compared to pure online retailing. What has been missing to date is how motion and location-specific information may be used to increase value. The key to unlocking this potential is regulatory mode, and specifically customers' motivation for locomotion.

Retailers do not have to guess customer movement during search and evaluation. Location, direction and speed can be traced using mobile sensors such as gyroscopes, GPS and WiFi (Miller, 2012) and customers can be targeted as they approach products in a retail store (Khaljehzadeh & Oppewal, 2015). At the same time, locomotion can also be primed, for instance by using in-store advertisements (e.g. Nike's just do it; Avnet & Higgins, 2003; Mathmann et al., 2017). This means individual motivations can be nudged by targeted communications to produce fit in a physical retail environment. A good example for such a fit is a Nike+ event, where customers are exposed to Nike promotions while showing off their speed, activity rate, and jump height using sensors in sneakers that connect to mobile phones (Nike, 2012).

Customers' physical movement is not only relevant to decision making in physical retail environments, but also affects customer's response to mobile marketing. Our results suggest that mobile advertisements are most engaging for the locomotor segment, and in general are received more favorably by them. Interestingly, locomotion predominance can be measured through mobile applications as well. For instance, asking people to complete simple surveys for amusement is common practice; "Am I a "go-getter"?" is a typical game on mobile apps like Facebook or BuzzFeed. A fit between customers' movement and survey data offers a path to stronger engagement with customers using mobile advertising.

Thus, the ability to identify customers' movement and regulatory mode, and to do so in real-time, is uniquely enabled through digitization of physical retail stores. In the face of strong competition from online retailers, analysis of such information based on recent theories of customers' regulatory mode may offer an edge and improve the perception of value in the marketing mix for physical retailers.

6.2 Limitations and Further Research

Our findings are compelling, though questions still remain. Locomotion has been positively related to effort investment in work activities (Pierro et al., 2006). Literature on the Ikea effect furthermore links customers' effort investment in products to product value perceptions (Norton et al., 2012). Could locomotors' preference for effort explain the presented findings? We believe that this is unlikely. In our studies, the effort level was generally low. Walking around a table (Study 1), stepping up and down a stepping stool (Study 2), or going for a fifteen-minute walk (Study 3) are not high exertion activities. However, the effort investment hypothesis becomes relevant when effort in physical movement increases. For example, when

customers spend hours walking around a shopping center to find the right product, or rush to buy items during Black Friday sales. This creates an interesting extension to the process we reported. Thus, further work is needed to better understand to what extent high (*vs.* low) locomotors' greater favorability to movement might derive from the fit that movement produces for locomotors' or the investment of effort in the required movement.

In addition, physical movement requires cognitive resources that could otherwise be used for evaluation (Lindenberger et al., 2000). Limiting cognitive resources for evaluation would be in conflict with assessment motivations (Kruglanski et al., 2000). Further research is necessary to test whether experiences of progress or depletion of cognitive resources can explain the effects of movement. For instance, our results hinted that in some instances high locomotors were neutral to movement (i.e., movement's potential detrimental effects were neutralized), and the difference in perceived value was driven by the significant negative reaction to movement of low predominant locomotion participants.

Another area for future research is the relevance of movement. "Relevance", refers to the degree to which interaction with the product facilitates movement in a concrete and direct manner. A good example for relevant movement is a situation where a specific movement is required for product performance (i.e.: integral movement), such as when testing a new pair of Nike+ sensor-enabled sneakers. In our results we found incidental, as well as integral, movements affected perceptions of value. However, incidental movements were linked to mobile advertisements, while integral movements were associated with products and their function. A set of studies that reverses this design would be interesting. For instance, investigating incidental movement in relation to products (say noticing running shoes on the way to work) and

integral movement in relation with mobile advertisements (e.g., targeting advertisements as customers approach a product), could provide a fuller understanding of the conditions under which movement affects perceived value. These extensions may provide further insight on potential boundary conditions for the effects we found.

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Fig. 1: Locomotion Fit From Movement and the Role of Engagement Strength in Perceived Value in aspects of the marketing mix.

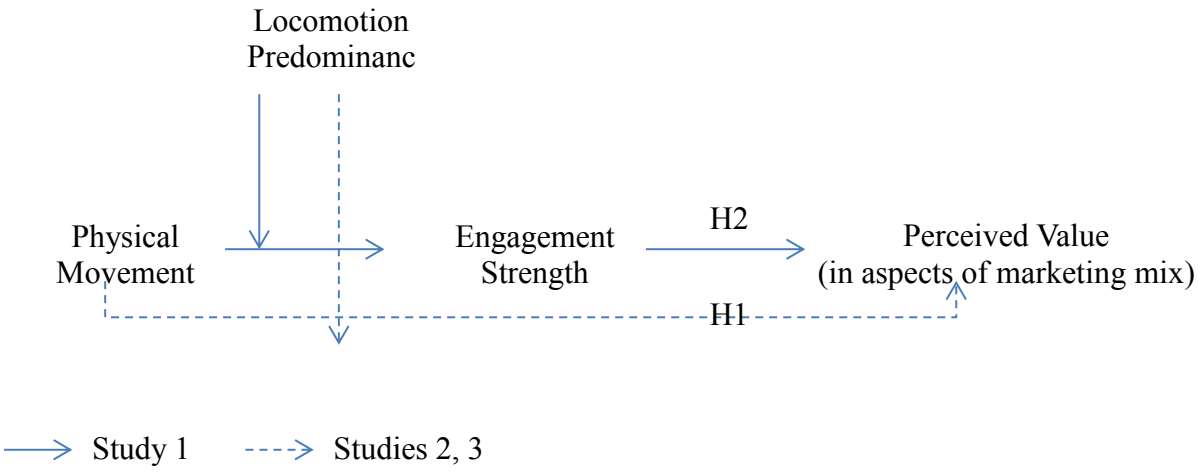
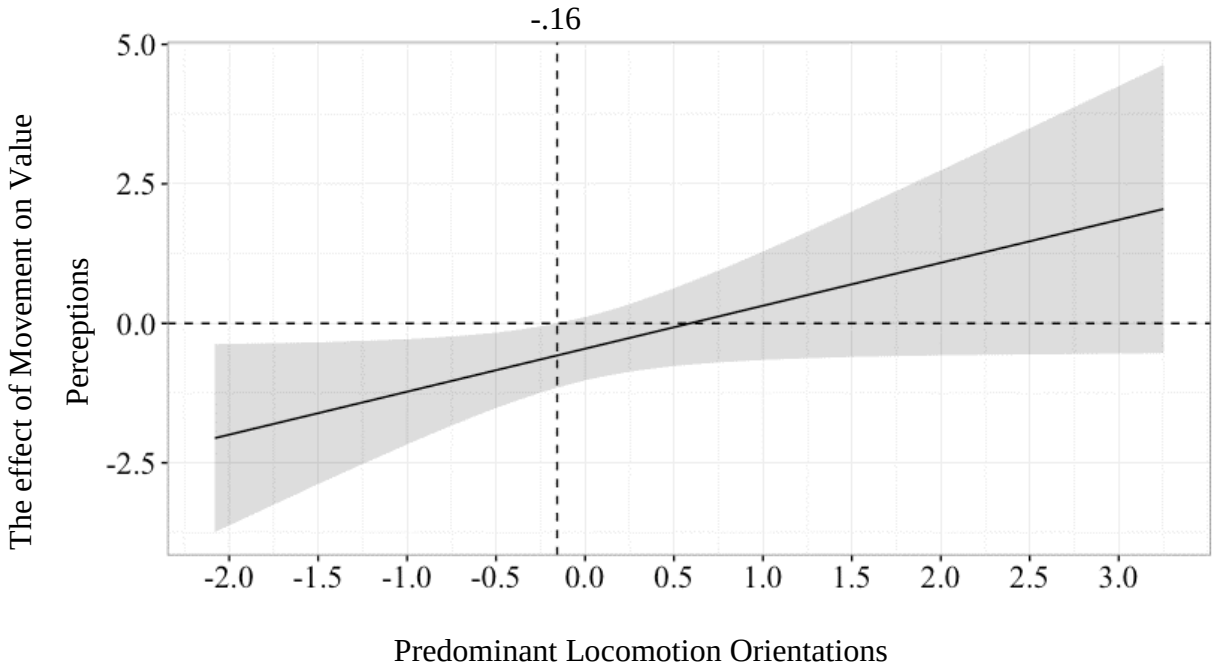
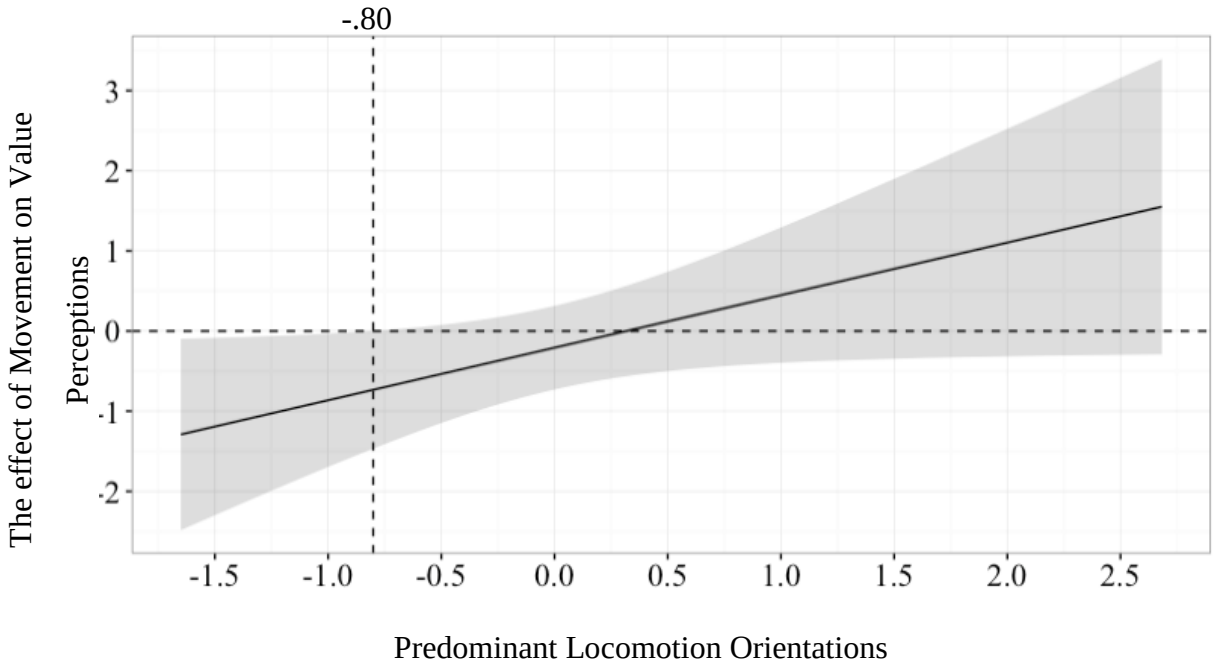


Fig 2. Value Perceptions as a function of Movement and Predominant Locomotion Orientations, Study 1



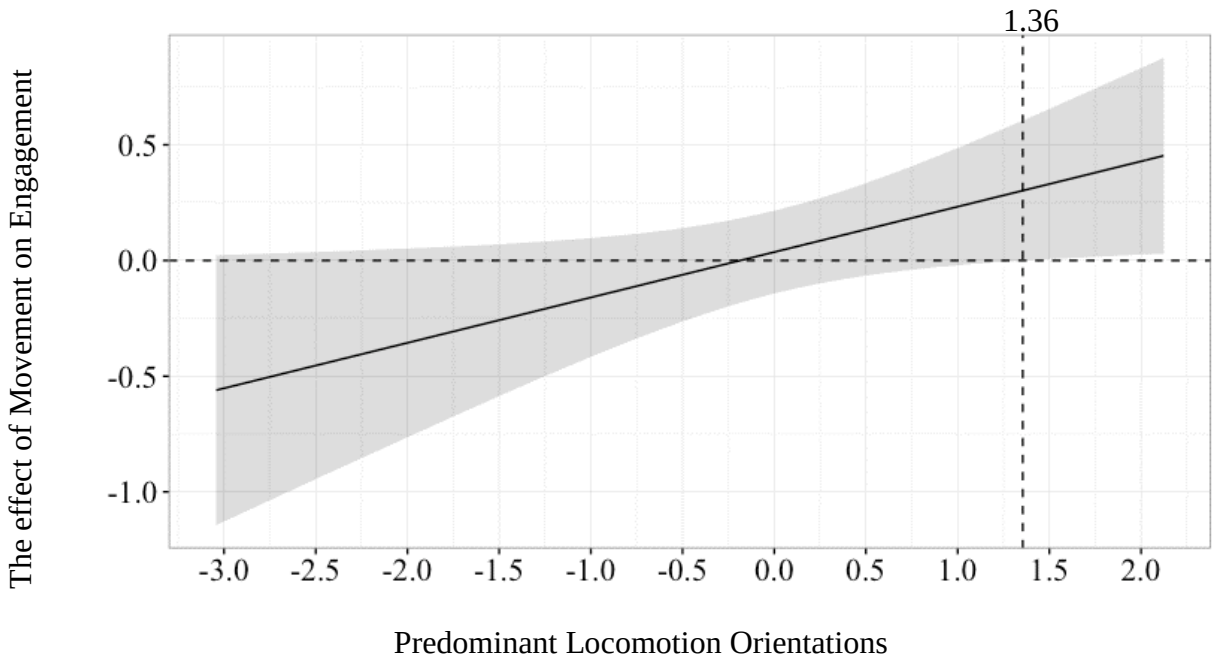
Notes: The graph is based on a floodlight analysis (Spiller et al., 2013) and illustrates the effect of movement on value perceptions for any predominant locomotion value. The shaded area represents confidence intervals and the J-N point is obtained at locomotion = -.16 (p=.05) (mean centered).

Fig 3. Value Perceptions as a function of Movement and Predominant Locomotion Orientations, Study 2



Notes: The graph is based on a floodlight analysis (Spiller et al., 2013) and illustrates the effect of movement on value perceptions for any predominant locomotion value. The shaded area represents confidence intervals and the J-N point is obtained at locomotion = -.80 (p=.05) (mean centered).

Fig. 4. Engagement as a function of Movement and Predominant Locomotion Orientations, Study 3



Notes: The graph is based on a floodlight analysis (Spiller et al., 2013) and illustrates the effect of movement on engagement for any predominant locomotion value. The shaded area represents confidence intervals and the J-N point is obtained at locomotion = 1.36 (p=.05) (mean centered).

Tables

Table 1

Monetary offers as a function of Predominant locomotion motivation and Movement

DV = Monetary offers	β	t	F	R^2
Model			2.22	.05
Constant	3.05	21.46***		
Low vs. high movement (0 vs. 1)	-.23	-1.10		
Predominant locomotion motivation	-.46	-1.59		
Low vs. High movement X Predominant locomotion motivation	.77	1.98*		

* $p < .05$, *** $p < .001$

Table 2

Value perceptions as a function of Predominant locomotion motivation and Movement

DV = Value perceptions	β	t	F	R^2
Model			1.66	.13
Constant	1.86	14.60***		
Low vs. high movement (0 vs. 1)	-.21	-.81		
Predominant locomotion motivation	-.10	-.61		
Low vs. high movement X Predominant locomotion motivation	.66	2.03*		

* $p < .05$. *** $p < .001$.

Table 3

Indirect conditional effect of Movement on Product valuations through Engagement

DV = Engagement	Model 1			
	B	t	*F*	R^2
Model			1.68	.04
Constant	3.22	47.76***		
Steps per Second	.04	.40		
Predominant locomotion motivation	.01	.07		
Steps per Second X Predominant locomotion motivation	.20	2.14*		

DV= Perceived Value	Model 2			
	B	t	*F*	R^2
Model			2.14	.07
Constant	2.08	7.19***		
Engagement	.24	2.68**		
Steps per Second	-.08	-.98		
Predominant locomotion motivation	.05	.72		
Steps per Second X Predominant locomotion motivation	-.06	-.74		

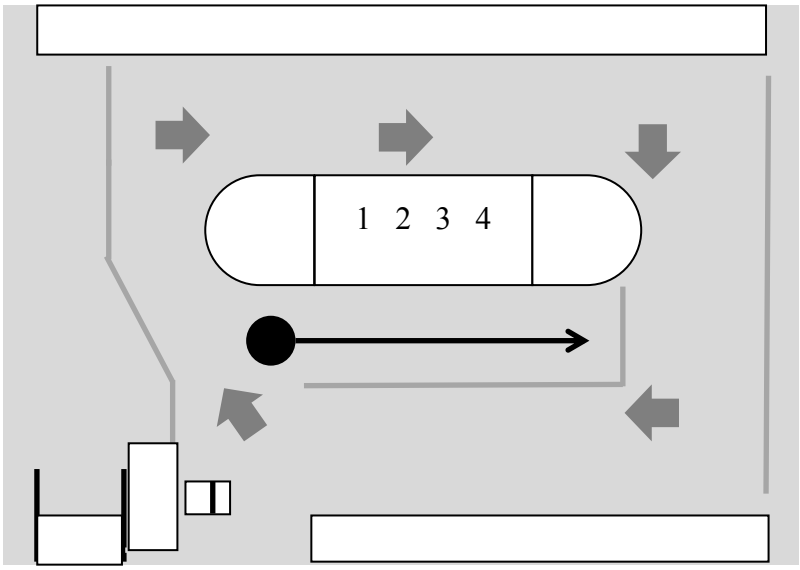
	Indirect effects			
	Boot indirect effect	BootSE	BootL95	BootU95
Highest order interaction Engagement	.05	.03	.0034	.1219

* $p < .05$, ** $p < .01$, *** $p < .001$.

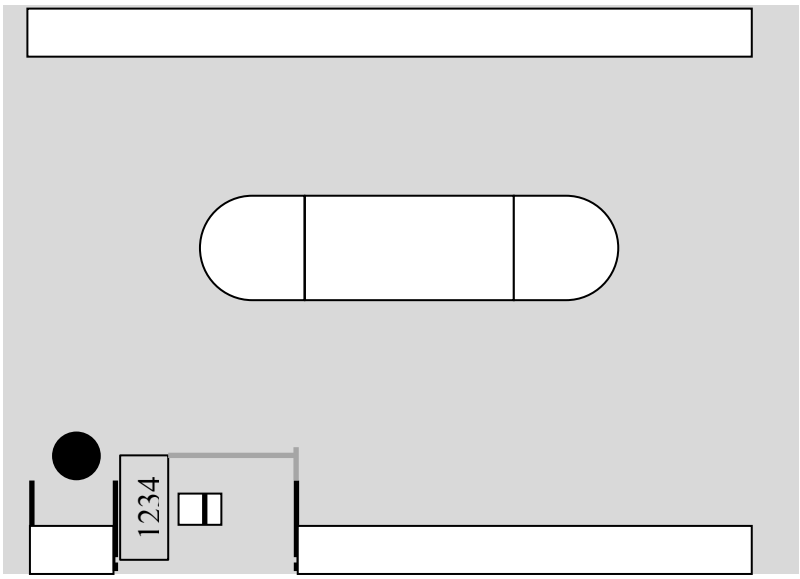
Appendix

Floor plan for movement and stasis conditions Study 1.

Movement

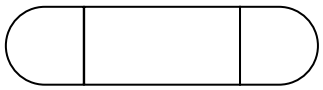


Stasis

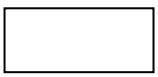


Symbol key:

Large Table



Small Table



Location of chocolates

1234

Experimenter movement

Experimenter

Experimenter office cubicle

Participant movement

Belt Barrier

Chair for participant

[1] Not to be confused with regulatory focus theory (Higgins, 2012), which involves promotion and prevention focus.