Protection Motivation Theory – an Additive Or a Multiplicative Model?

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Protection Motivation Theory – An Additive or a Multiplicative Model? Magdalena Cismaru, University of Regina According to the Protection Motivation Theory, four factors influence the persuasiveness of a health appeal: vulnerability, severity, efficacy, and costs. Literature reflects uncertainty of the interaction effects and the combinatorial rules among these variables. A model in which the decision-maker ranks the variables and sets minimum cut-offs is proposed. According to this model, a weighed additive relationship will take place only when the cut-off levels for all variables are met. This model helps explain inconsistent findings from the literature and adds insight into the decision making process involved when deciding whether or not to follow a particular recommended health behavior.

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Results

The results of our first study which was conducted among 39 student subjects indicated that the strength of the corporate brand endorsement moderated the perceived responsibility in case of a product failure. Responsibility was judged on a scale from -5 (product brand completely responsible) to 5 (corporation completely responsible). The responsibility of the corporation for a failure by the product brand was judged significantly greater when the corporate endorser was prominently displayed in an advertisement than when it was hidden in the corner of the ad (mean_{endostrong}=-0.25, mean_{endoweak}=-1.88; F=4.1, p<.05). Further support came from the manipulation of the brand name similarity. The corporation was perceived more responsible when the corporate brand and product brand names were similar than when the brand names were different (mean_{endostrong}=-1.37, mean_{endoweak}=-3.59; F=6.3, p<.02).

In study 2 we presented 77 student subjects with an advertisement of a product brand for sporting goods and a fictitious news article. The advertisement served as the main manipulation of brand endorsement by either prominently displaying the corporate brand endorser or by hiding it in the corner of the ad. The news article reported either on flaws in products (broken zippers and faulty shock absorbers) or on a neutral event (brand presents its new collection) thereby manipulating the valence of the information. In the strong endorsement condition the corporate name was reinforced in the news article but not in the weak endorsement condition.

In support of hypothesis 2, we found a significant 2-way interaction of information valence and endorsement strength on the attitude toward the product brand (F=14.8, p<.001). The attitude toward the product brand was negatively affected by the failure story when the corporate brand endorsement was weak (mean_{negative}=2.8, mean_{neutral}=4.07). In the strong endorsement condition the corporate brand seemed to have worked as a buffer by taking on the responsibility for the failure (mean_{negative}=4.18, mean_{neutral}=4.10). Also, the product brand was perceived less responsible for the failure when the corporate endorsement was strong than when it was weak thereby replicating the findings from study 1 (mean_{endostrong}=0.22, mean_{endoweak}=-3.32; F=51.0, p<.001).

Mediation analyses (Baron & Kenny, 1986) suggest that judgment of responsibility served as a mediator of attitude towards the product brand. Brand endorsement was a significant predictor of brand attitude (p<.001) and brand endorsement predicted judgment of responsibility (p<.001). Regressing both, the potential mediator and the independent variable, on attitude, the impact of brand endorsement was attenuated (from p<.001 to p<.10).

Our findings extend the previous research on the role of superordinate brands. They raise new questions on how to incorporate the buffer role into the theoretical models of the effects of brand architecture and provide practical implications. Strengthening the corporate brand as is currently en vogue in marketing may provide an unforeseen benefit when it comes to coping with product failure.

References


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Protection Motivation Theory (PMT) Variables

According to PMT, four factors influence the persuasiveness of health communications: vulnerability, severity, efficacy (response and self), and costs. Vulnerability refers to one’s subjective perception of the risk of contracting a condition or leaving a condition untreated. Severity refers to feelings concerning the seriousness of the condition. Response efficacy refers to the person’s belief that the recommended behaviors are effective in reducing or eliminating the danger. Self-efficacy refers to the person’s belief that he or she has the ability to perform the recommended behaviors. Finally, costs represent the sum of all barriers to engaging in the recommended behavior.

Variables’ Importance

All PMT variables were found to have an impact on persuasion, though not equally so. Indeed, the results of a meta-analytic review (Milne, Sheeran, and Orbell, 2000) show that costs and self-efficacy have the highest impact on persuasion measures.

Interactions Effects

Literature shows significant two-way interaction effects suggesting that costs influence the effect of self and response efficacy on persuasion measures, whereas self-efficacy and response-efficacy influence the effect of perceived vulnerability. Further, vulnerability was found to modify the effect of severity, whereas severity was shown to influence the effect of response efficacy.

Additive versus Multiplicative

There is disagreement among researchers as to whether the combined effect of PMT variables on persuasion follows a multiplicative model or an additive one. A multiplicative model assumes that no protection motivation would be aroused if the value of any of the components would be zero and expects a significant interaction effect among all variables. An additive relationship assumes that even when one of the predictor variables is 0, the persuasion could be different than zero and the combination of high levels of the variables produces the highest persuasion scores.
Proposed Combinatorial Rules and Empirical Evidence

Rogers (1975) predicted that perceived vulnerability, severity, and response efficacy combine multiplicatively to influence intentions. He expected significant main effects for each variable, and two-way and three-way interaction effects among these three variables. Few studies provided support for this model (Eagly & Chaiken, 1993).

A second model proposed by Rogers (1983) posited an additive relationship within each appraisal process and second-order interaction effects between the threat and coping variables. This model has also failed to find empirical support (Eagly & Chaiken, 1993).

Weinstein (1993) proposed a weighted additive model, implying that the PMT variables are not equal in importance. Although this model has not been empirically tested, it makes a valid attempt to mathematically describe the relationships among the PMT variables. However, this model does not account for the numerous interactions among PMT variables that have been recently reported in the literature and described in the present review.

Proposed Model

We propose a new model in which the decision-maker does not equally and simultaneously considers all the PMT variables, but rather subjectively ranks the variables based on his or her own perception of their importance and sets minimum cut-offs for each. The person then starts by evaluating the most important variable, and decides not to follow the recommendations if the level of that variable does not meet the minimum cut-off point. If the variable meets the minimum cut-off point, then the next most important variable is evaluated and the overall effect will follow a weighted additive rule.

Costs were found to have the highest impact on persuasion (together with self-efficacy). In addition, costs are certain and represent a loss to the person. Consequently, it is likely that cost information would be considered as the most important among the PMT variables. When decision makers evaluate costs, they will set a maximum level above which they will not consider performing the behaviour (regardless of the other variables’ levels). If the costs are considered reasonable (below the cut-off level), thus self-efficacy is reasonable high, we expect people to evaluate the other PMT variables’ levels. Again, if the level of any of the variables is under a particular minimal level, the person decides not to follow the recommendations, following an initial elimination-by-aspects rule. In the situation in which all the PMT variables pass the cut-off levels, the general decision rule followed would be a weighted additive one.

Our model is based on the assumption that people are exposed to numerous health messages advocating changes in behavior. They choose not to adopt many of these behaviors, but may consider adopting a few. When exposed to fear-arousing health information advocating changes in behavior, people look for reasons to avoid adopting the recommended behavior. This proposed model thus, posits a combination of strategies frequently observed in the decision-making literature (Bettman, Luce, and Payne, 1998) with an initial use of the elimination by aspects rule to reduce the number of health messages considered for adoption, followed by a compensatory strategy such as the weighted additive rule to select from those remaining.

We believe our proposed model helps explain the inconsistent findings in the literature regarding the presence or the absence of one variable’s impact on persuasion and will also provide insight into the decision making process involved when deciding whether or not to follow a particular recommended health behavior.