Consumers’ Future Orientation and the Effect of Temporal Framing on Health Risk Perception

Silvia Heideker, University of Erlangen-Nürnberg, Germany

This study analyzes the influence of temporal framing on health risk perception according to consumers’ future orientation. Higher future orientation increases health risk perception. Temporal framing and benefit presentation result in similar risk perceptions for consumers with high future orientation. Health risk perception increases interest in negative consequences of behavior.

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INTRODUCTION
Extensive research in psychology and behavioural economics highlights that judgments and decisions regarding future events depend on temporal distance and thus on temporal framing from those events (Trope and Liberman 2003). Health risks only strike consumers in the remote perceived future and follow unhealthy behaviours, such as smoking, alcohol consumption or unhealthy eating. Companies and organizations (e.g., state, insurers, and health funds) interested in healthier consumers need possibilities to overcome the temporal distance of health risks and to persuade consumers to engage in healthier behaviours. Although past research highlighted the important relationship of health risk perception and health behaviour (Chandran and Menon 2004; Kees 2010; Heideker and Steul-Fischer 2015), only a small number of studies examined the effects of temporal framing and its antecedents on health risk perception.

The mechanisms of temporal framing in the public health arena are important to examine due to findings that may inform creators of health campaigns how to effectively promote healthier decisions (Kees 2011). Relatively few studies examined temporal framing effects, and the particular conditions of temporal framing to influence consumers are unclear (Kees 2011). This research highlights the role of future orientation as a particular condition and strives to evaluate conclusions regarding how temporal framing influences health risk perception.

Previous research emphasized the possibility of temporal framing to increase the persuasiveness of health information, comparing day and year framing (Chandran and Menon 2004; Churchill, Good and Pavey 2014; Kees 2011; Lo et al. 2012). It is not clear whether temporal framing effects are consistent despite different consumer levels of future orientation. Only the studies of Kees (2010; 2011) examine the role of future orientation and the effects of temporal framing on health risk perception, but do so only with a student sample and without considering benefit presentation. To the best of our knowledge, this study is the first investigation with the addition of examining benefit presentation with a more heterogeneous sample.

Considering the individual’s future orientation, this paper’s objective is to answer the research question regarding how temporal framing and benefit presentation influence health risk perception and health behaviour intentions with a more diverse sample than student samples. During this study, which imposes future orientation, an attempt to analyze whether temporal framing (day vs. year) and benefit presentation (present vs. future vs. no) increase health risk perception, and health behaviour intentions are made. The study analyzes the health risk perception for physical inactivity as an essential risk factor for leading causes of global deaths in 2015; these causes include ischemic heart diseases or strokes (World Health Organization 2017). The results provide several contributions to the literature and include empirical insights for a deeper understanding of the influence of future orientation, temporal framing, health risk perception and behaviour intentions. This study derives different implications for research and management.

CONCEPTUAL BACKGROUND
Future Orientation and Temporal Framing
The research on future orientation focuses on consumer differences in the perceptual orientation of time. Consumers’ time orientations range between a great emphasis on immediate (present-oriented) and delayed (future-oriented) consequences of their behaviour (Kees 2010). The results of Robbins and Bryan (2004) emphasize future orientation to predict health risk behaviour, and Kees (2010) found an impact of future orientation on temporal framing and risk perception. Robbins and Bryan (2004) assume that future orientation serves as a protective factor and they highlight that consumers with high future orientation tend to be less involved with several risk behaviours. Therefore, considering health risk perception as an upstream variable for health risk behaviour, higher future orientation should increase health risk perception.

Hypothesis 1 The higher consumers’ future orientation is, the higher their health risk perception is.

Temporal framing uses different temporal frames (e.g., every day and every year) that objectively refer to the same time period (e.g., the present) but subjectively appear different (Chandran and Menon 2004). The theoretical background of temporal framing is based on Construal Level Theory (Trope and Liberman 2003), which encourages consumers to use higher-level construal to represent information regarding either distant or near future events. Lo et al. (2012) state that temporal framing is a promising strategy to make health risks more proximal and specific. Different studies have examined the opportunities of temporal framing to increase the persuasiveness of health messages (Chandran and Menon 2004; Churchill, Good and Pavey 2014; Kees 2011; Lo et al. 2012). Empirical findings on this issue have partly inconsistent results; Chandran and Menon (2004) state that every day framing leads to higher self-risk perceptions, while Bonner and Newell (2008) find that the year format increases perceived risk. One explanation is provided through future orientation (Kees 2011; Kees, Burton and Tangari 2010) as the influencing factor of temporal framing on risk perception. Kees (2010) emphasizes that consumers who score high on future orientation report similar risk perceptions across temporal framing conditions. Participants with high future orientation should report similar health risk perception independent of temporal framing.

Hypothesis 2 For consumers with high future orientation, health risk information with day framing will not increase their health risk perception more than health risk information with year framing.

Benefit Presentation
Benefit presentation indicates different benefits (e.g., present benefit, future benefit or none) due to a healthier behaviour change or retention. Bergus et al. (2002) state that consumers should receive balanced presentations regarding risk and benefit to make informed decisions. Zhang et al. (2016) note that risk preference is a trade-off between perceived benefits and perceived risks. The researchers
observed a negative correlation between expected benefit and risk perception. The punctuation of benefits should temper a consumer’s health risk perception.

Hypothesis 3  Health risk information with benefit presentation decreases health risk perception more than health risk perception without benefit presentation does.

Health Behaviour Intentions

Menon, Raghubir, and Agrawal (2008) describe interest as one of the behavioural consequences of health risk perception. These authors propose health risk perception to be translated to a behavioural consequence. To these researchers, interest is able to lead consumers to follow-up on behaviour or to take preventive actions. Several researchers highlight the positive relationship between higher health risk perception and health behaviour intentions (Chandran and Menon 2004; Heideker and Steul-Fischer 2017; Kees 2010). Higher health risk perception should lead to higher interest in the negative consequences of physical inactivity.

Hypothesis 4  The higher health risk perception is, the higher the interest in the negative consequences of physical inactivity.

Chandran and Menon (2004) indicate that day framing results in more increased behaviour intentions than year framing. With interest as one specific health behaviour intention, day framing should increase the interest in negative health behaviour.

Hypothesis 5  Health information with day framing increases the interest in negative health behaviour (in terms of physical inactivity) more than health risk information with year framing does.

STUDY

Method

A total of 452 participants (62.4 % female; mean age = 35.6 years; 47.4 % employed and 42.5 % students; body-mass-index of participants: 46.4 % underweight, 62.2 % normal range, 23.2 % pre-obese, 6.6 % obese, and 3.3 % missing data) participated in the study with a 2 (temporal framing: day vs. year) x 3 (benefit presentation: present vs. future vs. none) between-subjects design. The sample included participants without previous illnesses due to physical inactivity. Health risk information was provided: “every day” (day framing) or “every year” (year framing), a significant number of people become sick due to the negative consequences of physical inactivity. In all six experimental conditions, the same health consequences were named, such as fatal heart disease, diabetes, breast and colon cancer, excessively high body fat percentage, unnatural spinal curvature, and worsened coordination ability. The text contained either “daily 1.38 hours” (present benefit presentation) or “yearly 21 days” (future benefit presentation) of a “healthy vacation” for their heart due to lower heart exposure if participants regularly engage in an endurance sport. In the no benefit condition, the text offered no information regarding “healthy vacation” to consumer hearts.

Measures: Participants’ perceived level of health risk perception was measured with the question “scenario is risky to your health” on a 10-point scale (1 = no risk to health, 10 = very high risk to health). Individuals’ future orientation was measured with the four items of the temporal focus scale of Shipp et al. (2009) (α = 0.89). In accordance with Menon, Raghubir, and Agrawal (2008), participants were requested to answer the question for “interest in negative consequences of physical inactivity” (1 = totally disagree, 7 = totally agree).

Results

The results of an ANOVA indicate a significant effect of future orientation (F(1,446) = 6.18, B = 0.26, p = .013) on health risk perception, and no direct influence of temporal framing (F(1,446) = 0.55, B = 0.19, p > .05) on health risk perception. As hypothesized (H2), health risk perception is not significantly different comparing day- and year-framing independent of the benefit presentation (present benefit: Mday = 6.10 vs. Myear = 6.16, p > .05; future benefit: Mday = 6.16, Myear = 5.63, p > .05; no benefit: Mday = 6.12, Myear = 5.89, p > .05). This finding is due to the high future orientation of all participants (present benefit: Mday = 4.62 vs. Myear = 4.35, p > .05; future benefit: Mday = 4.56, Myear = 4.34, p > .05; no benefit: Mday = 4.57, Myear = 4.59, p > .05). There is no significant influence of benefit presentation (F(1,446) = 0.23, B = 0.12, p > .05) (H3) on health risk perception.

<table>
<thead>
<tr>
<th>Benefit Frame</th>
<th>Temporal Framing</th>
</tr>
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<tbody>
<tr>
<td>Day</td>
<td>Year</td>
</tr>
<tr>
<td>Present Benefit</td>
<td>6.10 (2.69)</td>
</tr>
<tr>
<td>Future Benefit</td>
<td>6.16 (2.91)</td>
</tr>
<tr>
<td>No Benefit</td>
<td>6.12 (2.63)</td>
</tr>
</tbody>
</table>

A MANOVA indicates a higher health behaviour intention by health risk perception: health risk perception has a significant influence on interest in the negative consequences of physical inactivity (B = 0.19, t = 6.02, p = .000) (H4). There is a positive significant interaction between health risk perception and temporal framing on interest in the negative consequences of physical inactivity (F(1,449) = 4.96, B = 0.05, p = .026, η² = .011) (H5).

Based on these analyses, future orientation has a significant influence on health risk perception. The higher the future orientation, the higher the health risk perception is (H1). This finding is in accordance with the arguments of Robbins and Bryan (2004) that future orientation predicts health risk behaviour; Kees (2010) highlights the impact of future orientation on health risk perception. Due to the high future orientation of participants, health information with day framing did not increase health risk perception compared to year framing (H2) and is in accordance with the findings of Kees (2010), who reports a similar risk perception for consumers who score high on future orientation. Contrary to the assumption of H3, participants reported no lower health risk perception when health information contained future or present benefits than health information without benefit. One explanation may be the presented benefit of “healthy heart vacation”. Although the benefit was obviously a future benefit and congruent with the future orientation of the participant, the possible meaningless of the benefit may not increase the health risk perception. The findings of Nan et al. (2015) emphasize that consumers with no reference to a certain health risk, such as nonsmokers simply ignoring health information such as warning labels due to low involvement. The same results may occur because of low involvement in case of no reference to the presented benefit, if the participants never had heart problems or do not anticipate the benefit of “healthy heart vacation”. Bergus et al. (2002) indicate that risks affect judgments more than benefits, as well. The positive relationship between higher health risk perception and health behaviour intention
is highlighted by the higher interest of participants in the negative consequences of physical inactivity due to their higher health risk perception (H4). The indicated effect of day framing to result in an increased behaviour intention (Chandran and Menon 2004) is replicated by the finding of increased interest in the negative consequences of physical inactivity due to health information with day framing compared to health information with year framing (H5).

**GENERAL DISCUSSION**

The findings have implications for theory and practice that are relevant to publishers of health information. The results reveal a positive impact of consumers' higher future orientation to increase their health risk perception. In accordance with recent research, consumers with high future orientation report no difference in health risk perception due to day or year framing. Providers of health information should investigate the individual time orientation of their target groups to create target-oriented information. For consumers high in future orientation, other methods, such as other framing effects, may be more effective in increasing risk perception. This study extended current research with the addition of analyzing benefit presentation and examining a more heterogeneous sample. The utilized benefit presentation for the “healthy heart vacation” case provokes no differences in health risk perception. Further studies and providers of health information should use other, more intense health benefits to increase health risk perception. Higher health risk perception increases consumer interest in the negative consequences of physical inactivity, and day framing leads to higher interest in these negative consequences. In accordance with different studies, temporal framing is relevant for this behaviour intention.

This study has several limitations. Although the sample included more heterogeneous participants than the research by Kees (2011), the sample mainly contained participants high in future orientation and with higher educational levels, which is not representative for all health information target groups. Further studies should investigate different levels of time orientation and a possible interaction with temporal framing. Additional studies may prime consumers’ future orientation. Manipulating future orientation and controlling for covariates may enhance the results of this study. Also, future studies should consider measures of other behaviour intentions and should observe actual and future behaviour with long-term studies. Investigations into the different levels of consumers' future orientation in combination with temporal framing and health risk perception could provide more insights if temporal framing is consistent, despite the different levels of consumers' future orientation (Kees 2010). Further studies should take into account and control for confounding factors that may influence future orientation and which may also drive health risk perception. In addition, these investigations could expand the knowledge of providers and help them to procure more persuasive health information.

**REFERENCES**


