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Brief Report

Everyday risk taking as a function of regulatory focus

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ABSTRACT

Uncertainty is an inherent aspect of everyday life. However, faced with uncertainty, some individuals take risks more eagerly than others. Regulatory focus theory may explain such differences because risky behavior may arise naturally from the eagerness of promotion focused individuals, while safe behavior may arise naturally from the vigilance of prevention focused individuals. A highly relevant real-life context for studying risk is mobility, as engaging in traffic inherently carries uncertainty about negative outcomes. We present two studies showing a direct link between regulatory focus and risky behavior going beyond traditional laboratory approaches. In both naturalistic speeding behavior (Study 1) and simulated risk taking (Study 2) promotion focus was positively, and prevention focus was negatively related to actual risky behavior.

1. Introduction

Risk, or uncertainty about negative consequences (e.g., Sitkin & Weingart, 1995), is highly prevalent in everyday situations. As a case in point, around the world road accidents lead to over 3000 deaths daily (Peden et al., 2004) and risky behavior contributes substantially to those statistics (Blows, Ameratunga, Ivers, Lo, & Norton, 2005). Unfortunately, research to date has been largely unsuccessful in revealing why individuals behave in risky or safe manners in traffic (Rothengatter, 1997).

The current research indicates that everyday risky and safe behavior stem from broad self-regulatory strategies of promotion and prevention regulatory focus, eagerness and vigilance, respectively (Higgins, 1997). In doing so, this research contributes to knowledge about the determinants of risk taking by investigating individuals' actual speeding behavior in a field study and by modeling risk taking in a controlled driving simulator. By measuring actual behavior and relating this to broad self-regulatory preferences, this research may shed light on the question *why* individuals take risks (see also Scholer & Higgins, 2008).

Regulatory focus theory (Higgins, 1997) distinguishes promotion and prevention focused self-regulation. Considerable empirical evidence points to the importance of regulatory focus as origin of distinct strategic preferences, suggesting that it has strong implications for everyday behavior (for an overview, see Scholer & Higgins, 2008). Promotion focus guides individuals' attention toward aspirations and ambitions, enhances sensitivity to positive outcomes, and creates a preference to use eager approach strategies for goal attainment. On the other hand, prevention focus guides individuals' attention toward responsibilities and obligations, enhances sensitivity to negative outcomes, and creates a preference to use vigilant avoidance strategies for goal attainment (Crowe & Higgins, 1997; Higgins, Roney, Crowe, & Hymes, 1994; Higgins et al., 2001).

These strategies and outcome sensitivities may have important implications for risk taking in everyday situations. The eager strategy stemming from promotion focus naturally elicits a tendency towards risky choices, whereas the vigilant strategy stemming from prevention focus naturally elicits a tendency towards safe choices (cf., Crowe & Higgins, 1997; Scholer, Zou, Fujita, Stroessner, & Higgins, 2010). Moreover, promotion focused individuals, who are predominantly concerned with positive outcomes, worry less about the negative potential of risk. Furthermore, because risk taking may increase the chances of gaining positive outcomes, it may actually be functional in a promotion focus (cf., Crowe & Higgins, 1997). On the other hand, prevention focused individuals are predominantly concerned with negative outcomes and may therefore be particularly averse to the negative potential of risk. That is, because risk taking would be dysfunctional to individuals with a prevention focus, they may be weary to take risks (cf., Scholer et al., 2010). Hence, our hypothesis was that in everyday behavior, promotion focus relates positively to risk taking, whereas prevention focus relates negatively to risk taking. Previous studies on regulatory focus and risk taking used either signal detection paradigms (Crowe & Higgins, 1997; Scholer, Stroessner, & Higgins,

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2008), or investment decisions in the laboratory (Scholer et al., 2010). However, the relationship between regulatory focus and risk taking has not been investigated in field settings where it is possible to examine individuals' naturalistic risky behaviors.

Given the societal impact of risk taking in traffic, and the inherent uncertainty traffic possesses, it is a highly relevant context for studying individuals' risk taking tendencies. In the present research, we applied two different methodologies that allow for measurement of actual risky behavior in traffic. In Study 1, we employed Global Positioning System (GPS) tracking of car drivers' actual speeding behavior which allowed us to look at risky behavior as it naturally occurs in a situation in which it may have serious consequences. We chose speed violation as the dependent variable because it is a highly prevalent risky behavior (Richter, Berman, Friedman, & Ben-David, 2006). However, because speeding involves a more complex set of determinants than only risky tendencies, in Study 2, we used a driving simulator task that allows for investigating risky behavior in a controlled setting. By measuring behavior in naturalistic settings in Study 1, and by closely modeling actual behavior in Study 2, this research adds to the literature by providing a highly ecologically valid test of the relation between regulatory focus and risky behavior.

2. Study 1

2.1. Method

2.1.1. Participants

Participants were 126 (38.1% women) customers from different Dutch insurance companies. Their age ranged from 20 to 30 (M = 24.85, SD = 2.33) and they had held a driver's license ranging from one to 10 years (M = 4.49, SD = 2.41). Participants were recruited by offering them the possibility to win a GPS navigation system for completing a preliminary questionnaire including the regulatory focus measurement.

2.1.2. Procedure

Behavioral data were collected in the setting of a 2 month post-experimental measurement in a longitudinal field study (for details, see Bolderdijk, Knockaert, Steg, & Verhoef, 2010) using GPS devices installed in participants' cars. Only trips outside of peak hours on non-urban roads with 80, 100, and 120 km per hour speed limits (50, 62, and 75 mph, respectively) were included in the data analyses because individuals are most likely to reach their preferred, stable driving speed in these instances, allowing them to behave as they would do according to their predispositions. In contrast, 30 and 50 km per hour (19 and 31 mph, mostly urban) roads, as well as congested roads, require frequent acceleration and deceleration, suggesting participants' speed is influenced more strongly by external than internal forces.

2.2. Measures

2.2.1. Regulatory focus

Regulatory focus was assessed using a measure developed and validated by Van Stekelenburg (2006; see also Rietzschel, in press)[2] in which participants indicated their agreement with proverbial mottos. The promotion subscale consisted of eight statements such as, *"Where there is a will, there is a way"*, and the prevention subscale consisted of eight statements such as, *"You should stick with what you know"*. Items were rated on a scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). Promotion (M = 5.06, SD = .92; α = .81) and prevention (M = 4.45, SD = .92; α = .71) subscales were created by averaging across the items for each subscale. The subscales showed a modest positive correlation, r = .30, N = 126, p < .01.

2.2.2. Speed violations

During the 2 months of observation, the GPS devices logged X and Y coordinates every 100 m. For each of these measurement occasions, speed violations were determined by matching car location and speed on a map with speed limits. The dependent variable, speed violation, was computed by determining the proportion of total distance across which individuals exceeded the speed limit by 6% or more. We used the 6% threshold in an attempt to mimic the thresholds that are used in speed enforcement to distinguish between volitional and non-volitional speed violation (cf., Goldenbeld & Van Schagen, 2005). Speed violations for the three road types were averaged to form an overall index representing the percentage of total distance travelled above the speed limit (M = .13, SD = .12; α = .74). Given this proportional definition, a 1% increase in distance travelled above the speed limit is represented by .01 measurement units in terms of the dependent variable.

3.1. Results

We regressed speed violation on promotion and prevention focus. As expected, we found a positive relationship between promotion focus and speed violations, b = .03, SE_b = .01, $t(123)$ = 2.76, p = .007, and a negative relation between prevention focus and speed violations, b = −.03, SE_b = .01, $t(123)$ = −2.48, p = .01, indicating unique relations of promotion and prevention with speeding, and together explaining 7% (adjusted R^2) of the variance in speeding, F (2, 123) = 5.31, p = .006.

4. Study 2

Although speeding is a highly prevalent form of risky behavior (Richter et al., 2006), it is likely to have a more complex set of determinants besides risk propensity. In addition, although it is important to study actual behavior in naturalistic settings, the relatively low percentage of explained variance suggests that such settings give rise to substantial measurement error. Therefore, in Study 2, we aimed to investigate the relation between regulatory focus and risk taking in a more controlled setting. We employed a frequently used paradigm that closely models the process of risky decision making in real life, while excluding extraneous (e.g., error producing) factors: gap acceptance (see Gattis & Low, 1999).

4.1. Method

4.1.1. Participants

Participants (N = 31; 41.9% women) were volunteers recruited through an insurance company. Their age ranged from 18 to 31 (M = 23.03, SD = 2.92) and they had held a driver's license for between 6 months and 12 years (M = 4.41 years, SD = 2.67).

4.2.1. Procedure

Participants first completed a questionnaire of regulatory focus. Next, they were trained in a driving simulator until they indicated they could drive in it as they would normally do in their own car. Next, the formal ride was started and lasted approximately 30 min. The driving simulator consisted of a simulated car with a standard transmission, functional steering wheel, indicators, and pedals

[2] Proverbs are a useful, culturally sensitive way to measure self-regulatory preferences unobtrusively and they have the potential to capture a lot of meaning concerning needs, goals, and psychological situations in a very simple statement. Van Stekelenburg (2006) extensively validated the proverb scales using response latencies, as well as relating the scales to traditional self-report measures of regulatory focus and cultural values.

linked to a dedicated graphics computer registering driver behavior while computing dynamic traffic at 30 + Hz (© StSoftware). The simulator was surrounded by three 32'' LCD screens, rendering participants a 180° view of the road environment. Other vehicles in the simulated world interacted with the simulator car according to hierarchically structured decision rules based on human driving behavior (Van Wolffelaar & Van Winsum, 1992).

4.2. Measures

4.3.1. Regulatory focus

Regulatory focus was assessed using a short version of the same measure employed in Study 1 (Van Stekelenburg, 2006) using five items per subscale. Promotion focus ($M = 5.61$, $SD = .63$; $\alpha = .60$) and prevention focus ($M = 4.36$, $SD = .98$; $\alpha = .65$) subscales were created by averaging across items for each subscale. There was no significant correlation between the subscales, $r = -.11$, $N = 31$, $p = .55$.

4.3.2. Gap acceptance task

In the gap acceptance task, participants drove on a two lane urban road with a posted speed limit of 50 km per hour (31 mph). They were asked to drive straight on until the simulator's navigator told them to turn left at a y-junction, a situation in which oncoming traffic has right of way. When participants were 150 m (164 yards) from such an intersection, a stream of traffic was generated through which participants would have to cross in order to turn left. The time between each of the cars in this stream increased with one second, ranging from one to 12 s. Thus, participants had to choose the gap that, in their opinion, would allow them to cross the street without colliding with other vehicles. In total, participants encountered seven y-junctions at which they carried out the gap acceptance task. Our dependent variable was individuals' mean gap acceptance time ($M = 5.05$, $SD = .70$; $\alpha = .82$). Accordingly, lower gap time (in seconds), or in other words smaller distance between cars, entails riskier behavior. Thus, a difference of 1 in the dependent variable reflects a one second difference in mean gap acceptance time.

4.3. Results

As expected, regression analysis revealed a negative relation between promotion focus and mean gap time, $b = -.51$, $SE_b = .17$, $t(28) = -3.07$, $p = .005$, indicating a positive relation between promotion focus and risk taking. In addition, we found a positive relation between prevention focus and mean gap time, $b = .24$, $SE_b = .11$, $t(28) = 2.26$, $p = .03$, indicating a negative relation between prevention focus and risk taking. Thus, promotion focus and prevention focus again predicted risky and safe behavior, together explaining 32.2% of the variance (adjusted R^2) in gap size, $F(2, 28) = 8.12$, $p = .002$.

5. General discussion

Results from both studies were consistent with the hypothesis that promotion focus is positively related to risk taking, whereas prevention focus is negatively related to risk taking. In Study 1, promotion focus was positively related to the proportion of distance travelled above the speed limit, whereas prevention focus was negatively related to the proportion of distance travelled above the speed limit. In Study 2, promotion focus was negatively related to gap time, translating to riskier behavior, whereas prevention focus was positively related to gap time, translating to safer behavior. These results suggest that promotion focus and prevention focus independently explain part of actual risk taking and safe behavior in everyday situations such as traffic. Thus, this research contributes to the literature on risk taking by testing regulatory focus theory's predictions in a highly ecologically valid manner.

Strength of this research is the methodology that allowed for both external validity (the use of GPS tracking in Study 1 allowed us to measure actual behavior in a natural setting), and scientific rigor (the simulated setting of Study 2 allowed us to study behavior very precisely). A potential limitation of Study 1 is that we assessed risk taking in terms of speeding, which is a broad behavior constituted by more components than risk taking alone. This limitation may be offset by the high amount of control offered in Study 2, witnessed by the relatively high percentage of explained variance. As we found the same pattern of relations in both studies, these studies together provide convincing support for our hypothesis.

This research sheds light on the determinants of risk taking in everyday life. By studying risk taking in the context of regulatory focus theory, this research also provides a suggestion as to *why* individuals differ in their risk taking tendencies. As regulatory focus theory holds that promotion focus and prevention focus affect preferences for fitting strategies, risky and safe behavior may arise as functional to promotion and prevention focus, respectively (cf., Scholer et al., 2010).

This research indirectly suggests an important new hypothesis, that promotion focused individuals may be more likely to be involved in accidents. This, in turn, gives rise to practical questions on how to reduce these occurrences. With regard to reducing traffic accidents in general, previous research has suggested that negatively framed safety campaigns (i.e., fear appeals) do not necessarily induce safe behavior (see Witte & Allen, 2000). The current research suggests a reason for this based on individuals' motivation: fear appeals fit the regulatory orientation of *prevention* but not of promotion focused individuals (e.g., Haddad & Delhomme, 2006). Hence, fear appeals are least effective in increasing safe behaviors among those who appear to be most risk-prone (i.e., promotion focused individuals) whereas individuals for whom fear appeals are effective, may in fact not need much convincing in the first place.

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