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„Prevention first? The Influence of Regulatory Focus on Perception Speed of Threatening Cues in a Traffic Context“

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Content

Introduction

Despite new technologies and so-called Advanced Driver Assistance Systems in modern cars, being a participant of the traffic is still very dangerous. In 2020 there were 30,670 crashes with 37,730 people injured solely in Austria. From the injured 31,080 were injured only lightly, 9,650 were injured severely, and 344 persons died (Statistik Austria, 2021). But the most alarming fact is that 90.6 % of these crashes were due to misbehavior of persons (85,4% of the deadly crashes) and the most common cause was inattention or distraction with 28.4% (21,1%) (Statistik Austria, 2021). This seems to be a consistent problem since it was the same for the last three years (Statistik Austria, 2019, 2020, 2021). So, if individuals had been more focused on the traffic, more attentive to threatening cues, and had assessed situations faster as dangerous or risky, two out of six car crashes in Austria could have been prevented, and 294 lives could have been saved solely from 2018 to 2020.

This study examines psychological mechanisms that could help people to behave adaptively in risky traffic situations. To judge risks correctly, a person must be especially sensitive to threatening cues and perceive them as fast as possible. But what is a state, in which a person can do so? Higgins (1997) proposes two different motivational mindsets in his regulatory focus theory (RFT) a *promotion focus* and a *prevention focus*. Individuals in promotion focus are motivated towards aspiration and accomplishment. Therefore, they use a strategy to approach advancement and gains and have a tendency towards risky decisions, they don’t want to miss opportunities. Individuals in prevention focus are motivated towards safety, responsibility, and nonlosses. Therefore, they show a vigilant strategy to ensure safety and a tendency to be more careful and avoid mistakes. To be able to ensure safety, a person in prevention focus should be more alert towards cues that endanger their current safety. Therefore, they should be able to detect a threatening cue faster than a person in promotion focus. This study aims to test this proposition using an experimental design with eye-tracking measurement.

Regulatory Focus Theory

The RFT (Higgins, 1997) is a widely applied theory about the two motivational states, promotion focus and prevention focus. In promotion focus the concern is the possibility of advancement, the goal in general is to make good things happen. Individuals in promotion focus want to ensure hits and positively deviate from the status quo. They are focused on gains and nongains and are more sensitive towards these. In contrast, prevention focus is concerned with maintaining a satisfactory state, the goal in general is to prevent bad things from happening. Individuals in prevention focus want to ensure against errors of commission and maintain the current status quo. They are focused on losses and nonlosses and are also more sensitive towards these. (Higgins, 1997; Higgins & Scholer, 2014).

The RFT has been applied to numerous settings like economics (Florack, J. Keller, & Palcu, 2013), medicine (Fridman, Ubel, & Higgins, 2018), or the work environment, (Lanaj, Chang, & Johnson, 2012). This research has shown that a difference in regulatory focus leads to a variety of different outcomes (Higgins & Cornwell, 2016; Higgins & Scholer, 2014; Scholer, Cornwell, & Higgins, 2019), such as performance tasks, the susceptibility to anxiety disorder - prevention focus - (Klenk, Strauman, & Higgins, 2011) or depression - promotion focus - (Jones, Papadakis, Hogan, & Strauman, 2009), and emotional responses to success and failure (Idson, Liberman, & Higgins, 2000; Shah & Higgins, 2001). For promotion focused individuals, success means cheerfulness-related emotions, for prevention focused individuals, success implies quiescence-related emotions, and failure means dejection-related emotions for promotion focused and agitation-related emotions for prevention focused individuals. These differences imply advantages as well as disadvantages of the foci. Higgins and Scholer (2014) as well as Scholer et al. (2019) give an overview over the tradeoffs from applying either a promotion or a prevention focus on different occasions. Regarding performance, individuals in promotion focus perform better in situations that need associative, divergent and flexible thinking (Friedman & Förster, 2001) and they tend to finish tasks faster (Förster, Higgins, &

Bianco, 2003). But despite feeling higher desires towards temptations, they can control themselves better and resist those temptations (Dholakia, Gopinath, Bagozzi, & Nataraajan, 2006). In contrast, individuals in prevention focus perform better in situations where convergent analytical thinking is necessary (Seibt & Förster, 2004) or the focus on local details is important (Förster & Higgins, 2005). They tend to perform slower but more accurate in return (Förster et al., 2003). In sum, depending on the task a person in promotion focus might outperform one in prevention focus, like in a brainstorming task. On another task, like maintaining the safety of employees, it might be the other way around (Higgins & Scholer, 2014).

Persons are typically inclined to be in one focus more often than the other (*chronical regulatory focus*). However, they always have both foci and can, based on the task and situation, apply a different focus for each situation (*situational regulatory focus*) (Higgins & Scholer, 2014). This differentiation implies that regulatory focus can affect the application of strategies and tactics on different levels. The chronical regulatory focus influences strategies on a more general level. In a work environment for example the chronical regulatory focus of a person may lead to the strategy of striving for a promotion – chronical promotion focus - versus trying to keep their current job – chronical prevention focus. The situational regulatory focus however influences the implementation of specific tactics in certain situations (Higgins & Cornwell, 2016; Scholer et al., 2019). In a work environment it may lead to the application of different tactics during a presentation like trying to impress the boss – situational promotion focus - versus avoiding to make a bad impression in front of the boss - situational prevention focus.

A well-adapted individual should be able to apply the focus that suits the situation. So, when there is the need to be creative (Friedman & Förster, 2005; Higgins, 1997; Higgins & Scholer, 2014), produce a lot of options or explanations (Molden & Higgins, 2008; Vaughn, Baumann, & Klemann, 2008), or implement a change or new technology (Stam &

Stanton, 2010), a promotion focus would suit best. On the other hand, when high commitment (Crowe & Higgins, 1997) or analytical thinking (Friedman, Fishbach, Förster, & Werth, 2003; Friedman & Förster, 2005; Zhu & Meyers-Levy, 2007) is necessary, a prevention focus suits best.

When these findings are transferred to traffic situations, commitment to the rules and analytical thinking to assess a situation correctly seems the adapted option. So, the regulatory focus suited for traffic situations should be prevention focus. This assumption is also supported by studies, which found that it is less likely for a prevention focused individual to be considered a high-risk driver and engage in risky driving behaviors than for a promotion focused individual (Hamstra, Bolderdijk, & Veldstra, 2011; Lemarié, Bellavance, & Chebat, 2019). This risky tactic of promotion focused individuals can also be found in signal detection tasks (Crowe & Higgins, 1997; Friedman & Förster, 2001). They want to ensure hits, so they rather accept false positives than misses. Individuals in prevention focus show a more conservative bias, they rather miss than accept a false positive. This is reasonable, considering a person in prevention focus is more concerned with maintaining the current status quo and a negative deviation from it is considered a loss. Whereas individuals in promotion focus drive for positive deviations from the status quo, which is considered a gain (Higgins & Scholer, 2014). In a traffic situation, getting where one wants to be on time or making a good impression on the fellow passengers could be considered as gains for a promotion focused individual. For a prevention focused individual not causing or being involved in an accident could be relevant nonlosses.

In general, promotion focused individuals tend to see possibilities and opportunities in ambiguous or uncertain situations. By contrast, prevention focused individuals are more likely to see dangers and risks (Herzenstein, Posavac, & Brakus, 2007). So, a prevention focus might be beneficial in real traffic situations. Traffic situations are often complex and therefore more likely to be a bit uncertain or ambiguous, because there are always fellow traffic

participants whose actions are not completely foreseeable. A person in prevention focus would more often see danger where there might not be any, hence would drive more cautious avoiding a possible crash as a result. And as Werth and Förster (2007) have shown, prevention focused individuals actually brake faster in ambiguous traffic situations than promotion focused individuals. They used a driving simulator with a screen where videos of traffic situations were played, and a pedal. Two videos of dangerous traffic situations were used. In one video the danger was foreseeable, because children were playing further ahead on the street, and then another child runs on to the street in front of the car, which was labeled as the ambiguous traffic situation. In the other video, a child runs onto the street completely unexpected, which was labeled as the unambiguous dangerous traffic situation. By pressing the pedal participants indicated that they would brake at this point and the video would stop. Werth and Förster (2007) measured the time from the onset of the dangerous situation, the point when the child runs onto the street in front of the car, until the participants press the pedal to indicate they want to break. In this situation the participants with prevention focus braked faster in the ambiguous traffic situation. They were more alert towards the possible danger and could therefore react faster.

In addition Scholer, Stroessner, and Higgins (2008) have shown that individuals in prevention focus can outperform those in promotion focus in signal detection tasks when the stimulus is negative (e.g. words with negative meaning). In general, a negative stimulus implies a threat to safety and security, so an individual in prevention focus is especially focused on negativity in the environment to avoid threats and dangers. This, too, can be beneficial while driving. When the attention is focused on negativity, threatening cues should be detected especially fast to ensure one’s safety.

In sum, a prevention focus should be better than a promotion focus in situations where an individual needs to be aware of possible dangers, that could have a huge negative impact. An individual needs to focus on negative stimuli or threatening cues in the surrounding area,

that could be dangerous, and analyze the situation correctly. Thus, they can perceive threatening cues fast, so an accurate reaction can be applied in time to prevent the possible danger from actually becoming dangerous for this person. Because missing a threatening cue while driving is dangerous for the driver and the rest of the traffic participants, the regulatory focus suitable for driving should be the prevention focus.

The Present Research

Studies concerning visual perception or signal detection and regulatory focus often use reaction times as the dependent measure (Crowe & Higgins, 1997; Förster & Higgins, 2005; Scholer et al., 2008). Reaction times, like braking speed, are also very important in traffic situations to prevent accidents (Werth & Förster, 2007), but to be able to react fast and prevent a threat, a person must first perceive the threat. This study aims to test whether the focus on negativity and threats in one's surrounding area in prevention focus directs visual attention towards threatening cues in traffic situations, leading to higher perception speed of threatening cues. To measure perception speed, an eye-tracking device, which makes it possible to measure eye movements and gaze behavior of individuals, was used. The entry time on the threatening cue was assessed. *Entry time* is defined as the timespan from the onset of the stimulus to the first fixation of the threatening cue (Palcu & Florack, 2016). The idea is that the attention towards threatening cues leads to faster perception of these cues. Therefore, the hypothesis is that individuals in prevention focus perceive a threatening cue faster than those in promotion focus while there is no difference in general perception speed.

H: The entry time on threatening cues is shorter for individuals in prevention focus than for those in promotion focus, when controlled for entry time on neutral cues.

In addition, general differences in gaze behavior between the two foci and the interaction between the situational and chronical regulatory focus have been analyzed in an exploratory way.

Method

Design. This study was conducted as a between subject design with comparison of two groups. Remote eye-tracking was used because the cues were partly small, and a high resolution was necessary. Therefore, participants were invited to the lab and completed the experiment there in individual sessions.

Sample. The power analysis using G*Power to determine the sample size revealed that 128 participants (64 per group) were necessary to get a result with 80% power for a two tailed t-test, an effect size of Cohens-d = .50, and an alpha level of .05. Therefore, 142 participants were recruited online via LABS, an online platform used by the University of Vienna to grant students credits, which they need to finish some of their courses, in exchange for participating in experiments. Each student got two credits for this experiment. Only participants with a driving license were recruited to ensure familiarity with standard traffic situations and their possible dangers. From the recruited students 17 had to be excluded because the calibration of the eye tracking device was not possible. The remaining sample consists of 125 students (80 female and 45 male) with a mean age of 21.64 years (SD = 4.22). There was one outlier with an age of 55 years, but since there was no significant correlation of age with any of the eye-tracking measures this outlier was not excluded from the analysis. The participants had their license on average for 3.81 years (SD = 0.35) and drove about 3278.35 km per year (SD = 6455.67). They were randomly assigned to one of the two conditions prevention focus (62 participants) or promotion focus (63 participants).

Procedure and measures. On the online platform, participants were informed that the experiment is about perception of traffic situations and were asked to not use mascara or

eyeliner on the day of the experiment, because it might impair the accuracy of the eye-tracking measurement. Upon arriving at the laboratory, participants read a consent form. The consent form summarized the study procedure and informed participants that they were free to quit the study at any time. Participants received the contact information of the researcher for any questions that might arise after the study. Then participants agreed to the terms of the consent form with their signature. The consent form is displayed in the Appendix B.

The general structure of the experiment was as follows. First, participants filled out a questionnaire. Then regulatory focus was induced by framing the two tasks that followed the questionnaire using different instructions for each group. The first task was the Pac-Car task where participants played a game called Pac-Car for 5 Minutes. This task was also for inducing regulatory focus. The second task was the eye-tracking task, where participants looked at pictures of traffic situations and answered questions concerning this situation, while their gaze behavior was measured. After participants completed the tasks, they were debriefed.

Questionnaires. After they agreed to participate in the study participants were asked to fill out a pen and paper questionnaire. They were first asked to answer questions concerning *demographics* and their *driving habits.* These questions included *gender, age*, the *duration of having a driving license* ("*How long have you had your driving license?*"), the *frequency of driving a car* ("*How often do you drive a car?"*), and the *amount of kilometers driven per year* ("*How many kilometers do you drive per year approximately?*"). Age, duration of having a driving license, and the amount of kilometers driven per year were each assessed with one item and an open answer format. The frequency of driving a car was assessed with one question and participants could answer on a 5-point scale ranging from *"less than once a month"* to *"several times a week"*. Gender was assessed with one item and the possible answers "*male*", "*female*" and "*other*".

The demographics were followed by the *Regulatory Focus Questionnaire (RFQ)* from Higgins et al. (2001) and the *Work Regulatory Focus Scale (WRF)* from Neubert, Kacmar, Carlson, Chonko, and Roberts (2008) to measure their *chronic regulatory focus*. The RFQ consists of eleven items and two subscales. One subscale with 6 items to measure promotion focus (*RFQ Promotion*) (Cronbachs - α = .62) and one subscale with 5 items to measure prevention focus (*RFQ Prevention*) (Cronbachs - α = .80). In the RFQ, participants had to first answer seven questions on a 5-point scale on how often a described situation takes or took place, such as *"How often did you stick to the rules and regulations of your parents?",* with possible answers ranging from *never or rarely* (1) to *very often* (5). In the second part of the RFQ participants had to indicate to what degree a statement is true for themselves, such as *"Not being careful enough has gotten me into trouble at times",* on a 5-point scale ranging from *definitely untrue* (1) to *definitely true* (5). The WRF consists of eighteen items and two subscales. One subscale to measure promotion focus (*WRF Promotion*) (Cronbachs-α = .72) and one to measure prevention focus (*WRF Prevention*) (Cronbachs-α = .82) with 9 items each. In the WRF participants had to indicate to what extend they agree to a statement like *"I do what I can to prevent losses at work"* on a 5-point scale ranging from *do not agree at all* (1) to *totally agree* (5). In the instruction participants were told they could exchange "work" with "studies" if it suits them better. The items of the WRF were presented in a randomized order in the questionnaire. The German questionnaire is displayed in the Appendix B.

Induction of Regulatory Focus. After participants completed the questionnaire, they were randomly assigned to one of two groups, *prevention focus group* or *promotion focus group*. For randomization, the Microsoft Excel-Function "RAND"was used. For induction of regulatory focus, two different techniques were combined. The two tasks, the Pac-Car task and the eye-tracking task, were framed as either a loss or a win situation, plus the maze-task from Friedman and Förster (2001) was adapted and implemented to induce a strong regulatory focus (Scholer et al., 2008).

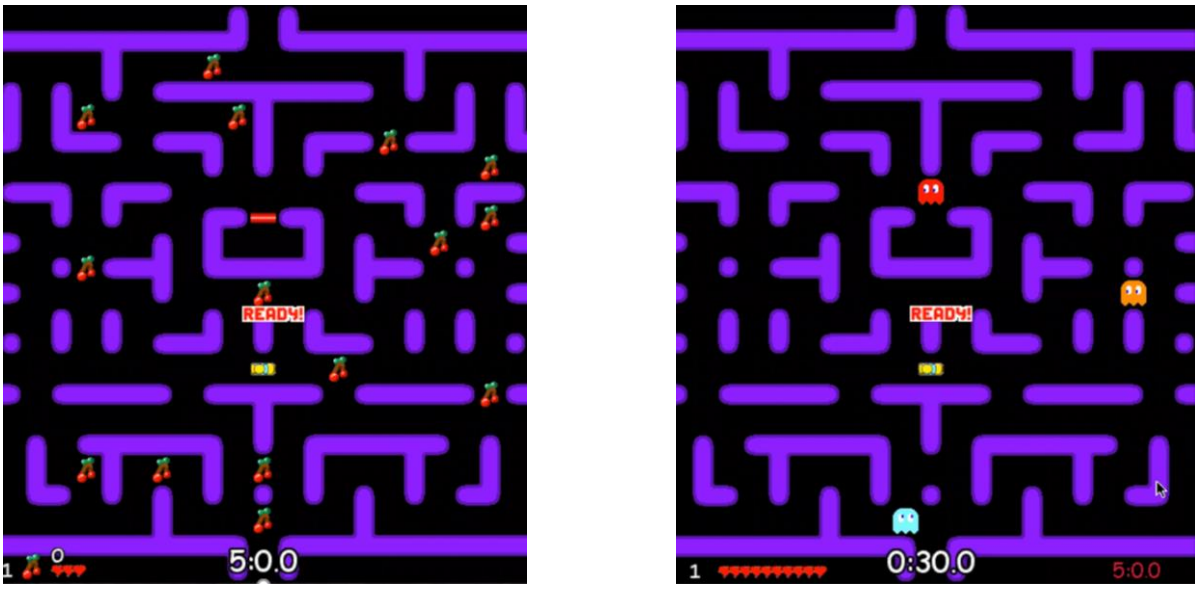
To frame the experiment, participants got different oral instructions, similar to the technique Florack and Hartmann (2007) or Herzenstein et al. (2007) implemented in their studies. Participants could collect points during the Pac-Car task and the eye-tracking task. In the promotion focus group, participants were told there was the possibility to take part in a lottery to win one of five 20€ coupons. To take part in this lottery they had to have more points than the average of all participants in the two tasks, had to be better than the average of all participants respectively. They could collect one point for each level they entered in the Pac-Car task and one point for each correct answer they gave during the eye-tracking task. So, participants in the promotion focus group could gain points and were working towards the gain of partaking in the lottery which should induce a promotion focus. In the prevention focus group participants were told there was a lottery for five 20€ coupons at the end of the experiment. But they would not take part in this lottery if they had fewer points than the average of all participants, or performed worse than the average of all participants of the study respectively. They got a total of 30 points at the beginning, but they could lose points throughout the experiment. Each time they were caught during the Pac-Car task they would lose one point and for every wrong answer they gave during the eye-tracking task they would lose one point, too. So, participants in the prevention focus group could lose points and were avoiding the loss of not partaking in the lottery which should induce a prevention focus. The German instructions can be read in the Appendix B.

For the adapted maze-task a laptop was placed in front of participants and they completed the Pac-Car task, where they played a game for 5 minutes. The Pac-Car task was specially designed for this study and was similar to the maze-task from Friedman and Förster (2001). The free code of the Pac-Man game was taken and changed for the purpose of this study, the game was called Pac-Car. Each group got different version of the Pac-Car task. The participants were told this was a concentration task to get them focused for the eye-tracking task later. In the promotion focus group they had to maneuver a little car through different

levels which were similar to a maze. They had to collect cherries which were evenly spread throughout the level. When all cherries were collected, they automatically advanced to the next level. Collecting cherries and getting points for each level they started should be considered as a gain and induce a strong promotion focus. Image 1 shows what the interface of the two Pac-Car task versions look like.

Figure 1

The two Versions of the Pac-Car task



Note: *Left: Pac-Car task for the promotion focus group; Right: Pac-Car task for the prevention focus group*

In the prevention focus group they had to maneuver the little car through the same levels, but instead of collecting cherries the car was hunted by four ghosts. There was a timer which counted down from 30 seconds. When the timer was at zero, they automatically advanced to the next level. Every time they were caught, they would lose one of their ten lives, which equals one point. Being caught by a ghost and losing a life or a point respectively should be considered a loss and induce a strong prevention focus. After five minutes, the task automatically stopped. The remaining points for participants in the prevention focus group, and the points collected for participants in the promotion focus group were added to the data

of each participant as their *points in Pac-Car*. After the game was finished participants continued to the eye-tracking task.

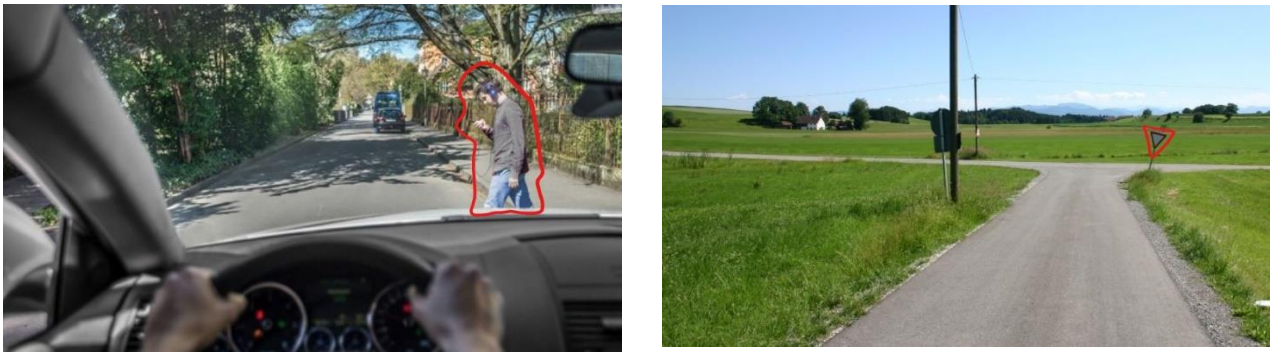
***Eye-Tracking Task*.** After finishing the Pac-Car task, participants continued to the traffic situations. The experiment consisted of 20 trials. Each trial started with a fixation cross in the center of the location, where the pictures were later presented. After participants had fixated on the cross for 1,500 ms, one of 20 pictures was presented in randomized order on the screen for 3,000 ms. During the picture presentation, eye movement was tracked using an SMI RED 500 remote eye-tracker (Sensomotoric Instruments GmbH, Teltow, Germany) with a sampling rate of 250 Hz. Calibration was done according to the manufacturer recommendations. The presentation screen was a 22-inch monitor with a refresh rate of 60 Hz. Participants were seated approximately 60 cm away from the monitor. Lighting was kept constant.

***Eye-Tracking Materials*.** Ten pictures of possibly dangerous traffic situations, containing a critical cue, and ten neutral pictures, without a critical cue, were used during the eye-tracking task. The neutral pictures were included to control for possible differences in general perception speed between the groups. In each "dangerous" picture, the *critical cue*, the cue in the picture that could pose a threat to the driver or other traffic participants, was marked as an area of interest (AOI) for subsequent analysis. In the neutral pictures a *neutral cue* was marked as an AOI. The neutral cue was a part of the picture the participant would have to look at to be able to answer the behavioral question concerning the picture. Each picture was rated by students in a university course of the researcher to either contain a critical cue and therefore a possible threat or not and were then selected for not being ambiguous, so a clear distinction between critical and neutral pictures was possible. The images were additionally processed with an image processing program in such a way that the

salience of the examined stimuli is as low as possible in order to avoid salience as a confounding variable. One example picture containing a critical cue is shown in Figure 2.

Figure 2

Pictures of Traffic Situations



Note: the left picture contains a critical cue; the right picture contains a neutral cue; the AOI is marked in red

After each picture participants had to answer a behavioral question, concerning the content of the previous picture. They had to choose between four options, similar to the design of a driver's license exam. The question presented on the screen was always "*What would you do in this situation?*". The possible answers of the picture containing the critical cue shown in Figure 2 were: "*I drive through the residential area unhindered doing 50km/h*", "*I reduce my speed, because there are children playing further down the street*", "*I break strongly, because there is a person crossing the street directly in front of me without checking the road*" (correct answer), and "*I continue driving, there is a person waiting to cross the road, but I can simply pass him*". To get the participants accustomed to the task two practice trials were completed before the experiment started. All pictures and possible answers in German are displayed in the Appendix B.

For the statistical analysis the eye-tracking measures entry time, dwell time, average fixation duration, first fixation duration, AOI coverage and revisits were used. The *dwell time* states how long participants looked at the AOI during the time the picture was displayed. The

average fixation duration states how long the participants looked at the AOI on average. The *first fixation duration* states how long participants looked at the AOI when they looked at it the first time. The *AOI coverage* is the percentage of the picture that is covered by the AOI. The *revisits* indicate how often a participant revisited the AOI, meaning how often a participant looked at the AOI after the first time they looked at it. The *correct answers,* the sum of all the correct answers participants chose during the eye-tracking task, was used in the statistical analysis as well.

***Debriefing*.** When the eye-tracking was finished the participants were debriefed. The theory as well as the aim of the study were explained to them. When they had no more questions, they were granted the two credits and had to confirm this with their signature. The whole experiment plus the debriefing took approximately 30 minutes for each participant.

Statistical Analysis. For the statistical analysis IBM SPSS Statistics 21 was used.

Preliminary Analysis. Before the analysis of the hypothesis was conducted, it was tested whether participants understood the eye-tracking task and looked at the critical and neutral cues in the pictures. Therefore, a missing analysis for the AOI hits was conducted. An *AOI hit* is a dichotomous value that describes if a person fixated the AOI or not (Palcu & Florack, 2016). Missing values for the participants as well as the images (this calculation was done with Microsoft Excel 365) were calculated to check if the critical and neutral cues were looked at. Then it was tested whether there was a difference in the correct answers given in the eye-tracking task between the two groups with a t-test for independent measures and the correct answers as the dependent variable.

To check for possible covariates cross correlations of age, the duration of having a driving license, the amount of kilometers driven per year, the points in Pac-Car, the chronical regulatory focus, the situational regulatory focus (condition) and the eye-tracking measures entry time, dwell time and average fixation duration on critical and on neutral cues were

calculated. In addition, it was checked whether the gender of the participants had an influence on perception and chronical regulatory focus. Therefore, the differences between the male and female participants were examined using a one-way ANOVA with the eye tracking measures entry time, dwell time, and average fixation duration on neutral and critical cues, and with the chronical regulatory focus measures RFQ Promotion, RFQ Prevention, WRF Promotion, and WRF Prevention.

Analysis of the Hypothesis. To test the hypothesis an analysis of covariance (ANCOVA) was conducted to compare the *entry time on the critical cues* between the two groups, with *entry time on neutral cues* as the covariate to control for general perception speed.

To test if outliers that have missed a lot of the AOIs, and therefore might not have done the eye-tracking task properly, have an influence on the result the analysis was rerun excluding participants that showed more than 2*SDs* deviation from the mean sum of AOI hits in the missing analysis. Pictures that showed more than 2*SDs* deviation from the mean sum of AOI hits in the missing analysis were also excluded in this analysis, since the AOI in these pictures might not have been valid because it was not looked at.

The following data requirements for the ANCOVA were checked prior to the test of the hypothesis. The normal distribution of the data was tested using the Shapiro-Wilk test, as well as by examining the histograms, the kurtosis, the skewedness and the P-P-Plots of the data. The homogeneity of variances was tested with the Levene-test. The independence of the covariate from the condition was tested using an analysis of variance (ANOVA) with the covariate as the predictor variable. The homogeneity of regression slopes was tested using an ANOVA with the condition, the covariate, and the interaction between the condition and the covariate as predictor variables. And homoscedasticity, meaning the variances are approximately the same in both groups, was checked with a scatterplot of the residuals.

Exploratory Analyses of Mean Differences Between the Groups. To test if the situational regulatory focus had an influence on other eye-tracking measures. The same analysis as the one for the test of the hypothesis was conducted to compare the *dwell time* and the *average fixation duration* between the two groups in an exploratory manner. Therefore, two ANCOVAs were calculated. One ANCOVA was calculated with dwell time on critical cues as the dependent variable and dwell time on neutral cues as the covariate. The other ANCOVA was calculated with the average fixation duration on critical cues as the dependent variable and the average fixation duration on neutral cues as the covariate.

Exploratory Analyses of Interactions with the Situational Regulatory Focus. To test if the chronical regulatory focus and the points in Pac-Car were interacting with the primed situational regulatory focus 15 moderation analyses were calculated. This was done using model 1 of the version 3.5 of the PROCESS macro by Andrew F. Hayes. The X variable, the predictor variable, was the same for all 15 moderation analyses. As predictor variable the dummy-coded condition, representing the situational regulatory focus, was entered into all 15 analyses. As the Y variable, the dependent variable, three different variables were used. The three dependent variables were entry time, dwell time and average fixation duration on critical cues. For each of these three dependent variables five different moderation analyses were calculated. Each with a different moderator variable. The moderator variables were RFQ Promotion, RFQ Prevention, WRF Promotion, and WRF Prevention, representing the chronical regulatory focus, as well as the points in Pac-Car. A heteroscedasticity consistent standard error (HC3) and a covariance matrix estimator was used in every moderation analysis. The dummy-coded condition, RFQ Promotion, RFQ Prevention, WRF Promotion, WRF Prevention, and points in Pac-Car were mean centered prior to the analyses.

Results

The preliminary analysis showed no difference between the promotion focus group (M = 17.98, SD = 1.17) and the prevention focus group (M = 17.80, SD = 1.30) in the correct answers given during the eye-tracking task ($t(123) = .87$, $p = .38$, $\eta_p^2 = .02$).

An overview of the mean values, standard deviations, and cross correlations of the demographics, driving habits, chronical regulatory focus and entry time can be seen in Table 1. The means, standard deviations, and correlations between the different eye-tracking measures are shown in Table 2.

Table 1

Means, Standard Deviation, and Correlations of Demographics, Chronical Regulatory Focus and Entry Time

		Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11
1	Age	21.64	4.22											
2	Correct Answers	17.89	1.24	.07										
3	Points in Pac-Car	4.96	2.91	.16	.13									
4	Duration of having the drivers license in years	3.81	3.93	.96**	.07	.14								
5	Frequency of driving a car	2.95	1.47	-.13	.11	-.11	-.07							
6	Km driven per year	3278.35	6455.67	.14	.17	.10	.22*	.38**						
7	RFQ Promotion	3.81	.50	.12	.10	-.02	.12	.17	.13					
8	RFQ Prevention	3.36	.87	-.07	-.09	-.26**	-.05	.07	-.13	.13				
9	WRF Promotion	3.64	.51	.01	.08	.23*	.03	.10	.20*	.20*	-.25**			
10	WRF Prevention	3.89	.68	-.27**	-.11	-.18*	-.27**	.19*	.07	.13	.34**	.08		
11	Entry Time critical [a]	790.42	157.47	.10	-.06	-.16	.10	-.13	-.04	-.16	-.01	-.03	-.08	
12	Entry Time neutral [a]	908.59	217.99	-.01	.08	-.15	.07	.17	-.03	.06	.06	-.06	.06	.12

[a] Means and SDs are in ms

** p>0.05*

*** p>0.01*

Table 2

Means, Standard Deviation, and Correlations of Eye-tracking Measures

		Mean	*SD*	1	2	3	4	5	6	7	8	9
1	Entry Time critical	790.42	157.47									
2	Entry Time neutral	908.59	217.99	0,12								
3	Dwell Time critical	665.72	137,07	-,369**	0,08							
4	Dwell Time neutral	462.38	133.40	0,05	-,244**	,300**						
5	Average Fixation Duration critical	245.67	56.00	-0,10	0,02	,397**	,429**					
6	Average Fixation Duration neutral	237.76	68.70	0,01	-0,12	,245**	,589**	,619**				
7	First Fixation Duration critical	260.15	62.20	-0,12	-0,02	,390**	,391**	,867**	,496**			
8	First Fixation Duration neutral	237.46	74.30	0,05	-0,07	,176*	,551**	,541**	,933**	,436**		
9	Revisits critical	.62	.26	-,316**	0,04	,505**	-0,06	-,216*	-,182*	-0,08	-,202*	
10	Revisits neutral	.46	.27	-0,09	-0,15	,255**	,499**	0,00	-0,13	0,03	-0,10	,193*

** p>0.05*

*** p>0.01*

Note: Mean and SDs of entry time, dwell time average fixation duration and first fixation duration are reported in ms

There were some more significant correlations which are not displayed in the tables. The correct answers correlated with the dwell time on critical cues $r(123) = .21$ ($p = .02$), and with the revisits on critical cues $r(123) = .21$ ($p = .02$). And the km driven per year correlated with the revisits on neutral cues $r(122) = .18$ ($p = .05$). An overview over all cross correlations is shown in the Appendix C. In addition, the descriptive analysis revealed that the AOI coverage of the critical cues (5.00) was higher than the AOI coverage of the neutral cues (2.62).

The one way ANOVA to test whether there were gender differences showed no significant differences in the eye-tracking measures between the male and female participants (entry time on neutral cues: $F(1,123) = 2.41$, $p = .12$, entry time on critical cues: $F(1,123) = 1.21$, $p = .27$, dwell time on neutral cues: $F(1,123) = .63$, $p = .43$, dwell time on critical cues: $F(1,123) = .80$, $p = .37$, average fixation duration on neutral cues: $F(1,123) = .64$, $p = .43$, and average fixation duration on critical cues: $F(1,123) = .07$, $p = .79$). There was also no significant difference between the male and female participant in the RFQ Promotion ($F(1,123) = .05$, $p = .83$). In the other chronical regulatory focus subscales, there were significant differences between male and female participants. In the RFQ Prevention subscale the difference between female participants ($M = 3.54$, $SD = .86$) and male participants ($M = 3.06$, $SD = .82$) was significant ($F(1,122) = 9.02$, $p < .01$). In the WRF Prevention subscale the difference between female participants ($M = 4.03$, $SD = .55$) and male participants ($M = 3.65$, $SD = .57$) was also significant ($F(1,122) = 13.47$, $p < .01$). And in the WRF Promotion subscale the difference between female participants ($M = 3.53$, $SD = .51$) and male participants ($M = 3.85$, $SD = .44$) was significant as well ($F(1,122) = 12.62$, $p < .01$).

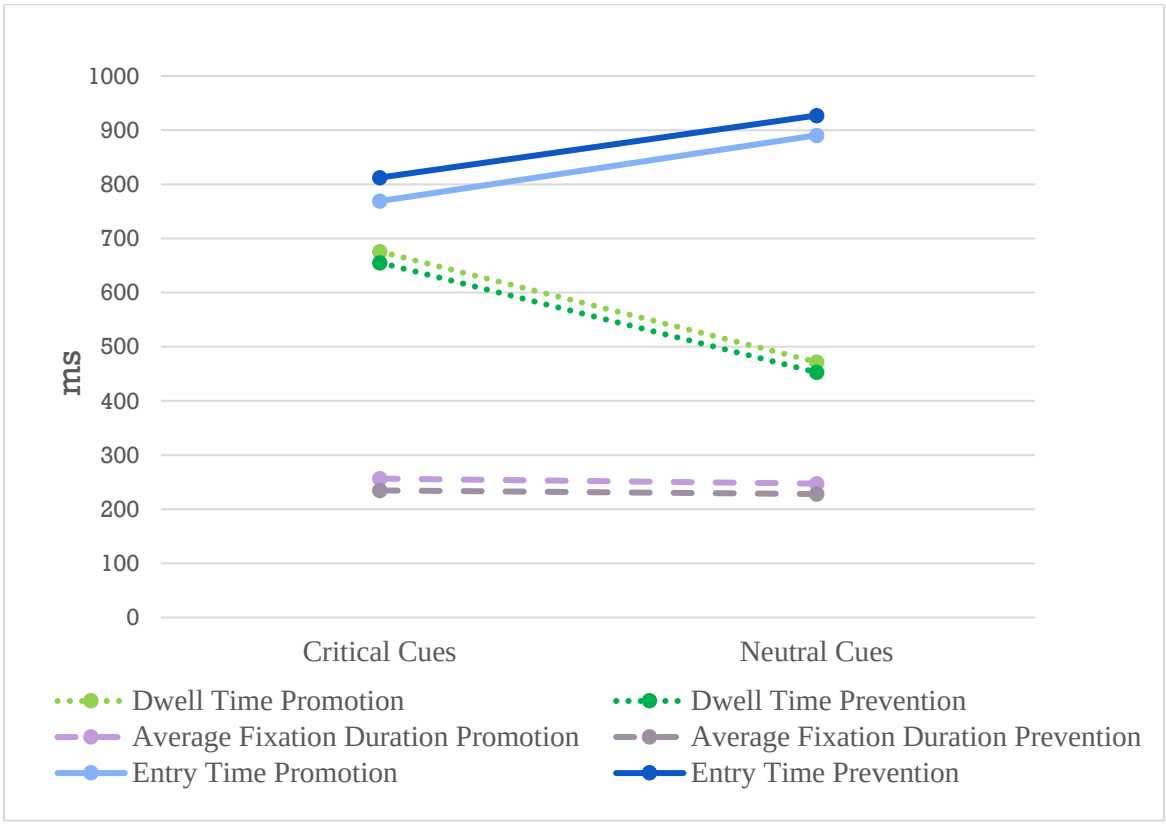
Test of the hypothesis. This data rejects the study hypothesis, which stated that individuals in prevention focus perceive a threatening cue faster than those in promotion focus while there is no difference in general perception speed. The ANCOVA to test the hypothesis

showed no significant difference in the entry time on critical cues between the promotion focus group and the prevention focus group when controlled for entry time on neutral cues with $F(1,122) = 2.09$ and $p = .15$. Participants in the promotion focus group had a shorter entry time on critical cues ($M = 768.87$ms, $SD = 158.05$ms) than participants of the prevention focus group ($M = 812.31$ms, $SD = 155.08$ms). The covariate entry time on neutral cues did not significantly predict the dependent variable entry time on critical cues ($F(1,122) = 1.54$, $p = .22$). The data requirements for the ANCOVA were all met. The independence of the samples was given through the randomized allocation of the participants to the groups. This assumption is true for all the exploratory analyses as well. The normal distribution was tested with the Shapiro-Wilk test and was given for both the entry time on the threatening cues ($p = .11$) and the entry time on neutral cues ($p = .11$). Homogeneity of variance was given as well, with the Levene-Test being non-significant ($p = .93$). The homogeneity of regression slopes was given with the interaction between the condition and the entry time on neutral cues being non-significant ($F(1,121) = .17$, $p = .69$). The scatterplot of the residuals showed no sign of heteroscedasticity. And the covariate entry time on neutral cues was homogenous in both conditions with the ANOVA being non-significant ($F(1,123) = .88$, $p = .35$). Therefore, there was no difference between the promotion focus group and the prevention focus group in the entry time on critical cues when controlled for the entry time on neutral cues. The analysis excluding outliers that are more than 2 *SD*s away from the mean showed approximately the same results and is displayed in the Appendix C.

Exploratory analysis. An exploratory analysis of the data was conducted to test if there were mean differences between the groups in other eye-tracking measures and whether there were interactions of the condition with the chronical regulatory focus and the points in Pac-Car for the eye-tracking measures as outcomes. Figure 3 shows the mean differences of the entry time, the dwell time, and the average fixation duration on both the critical and the neutral cues separately for the promotion focus group and the prevention focus group.

Figure 3

Mean Differences Between the Groups in the Eye-tracking Measures



Note: Promotion = promotion focus group, Prevention =prevention focus group

Mean Differences Between the Groups in the Eye-tracking Measures. The first exploratory ANCOVA to test if there was a difference in the dwell time on critical cues between the two groups was not significant ($F(1,122) = .33$, $p = .53$). So, there was no significant difference between the promotion focus group and the prevention focus group in the means of the dwell time on critical cues, while the participants in the promotion focus group dwelled on the critical cues (M = 675.95ms, SD = 121.45ms) slightly longer than those in the prevention focus group (M = 655.32ms, SD = 151.60ms). In this case the covariate dwell time on neutral cues did significantly predict the dependent variable dwell time on critical cues (F (1,122) = 11.73, p = .01). The test of the assumptions for the ANCOVA were all met except for the normal distribution of the dwell time on the neutral cues with a significant Shapiro-Wilk test (p = .04). Further examination of the data revealed that the

distribution was not skewed (skewedness = .33) but slightly leptokurtic (kurtosis = 1.13). The analysis of the histogram and P-P-Plot however showed that the main body of the data was still approximately normally distributed, and since the rest of the assumptions were met and the sample is not too small, the ANCOVA was calculated normally. The covariate dwell time on neutral cues was homogenous over both groups ($F(1,123) = .64$, $p = .42$). The homogeneity of the regression slopes was given ($F(1,121) = .61$, $p = .44$). The Levene-test was not significant ($p = .32$) and the scatterplot of the residuals showed no sign of heteroscedasticity.

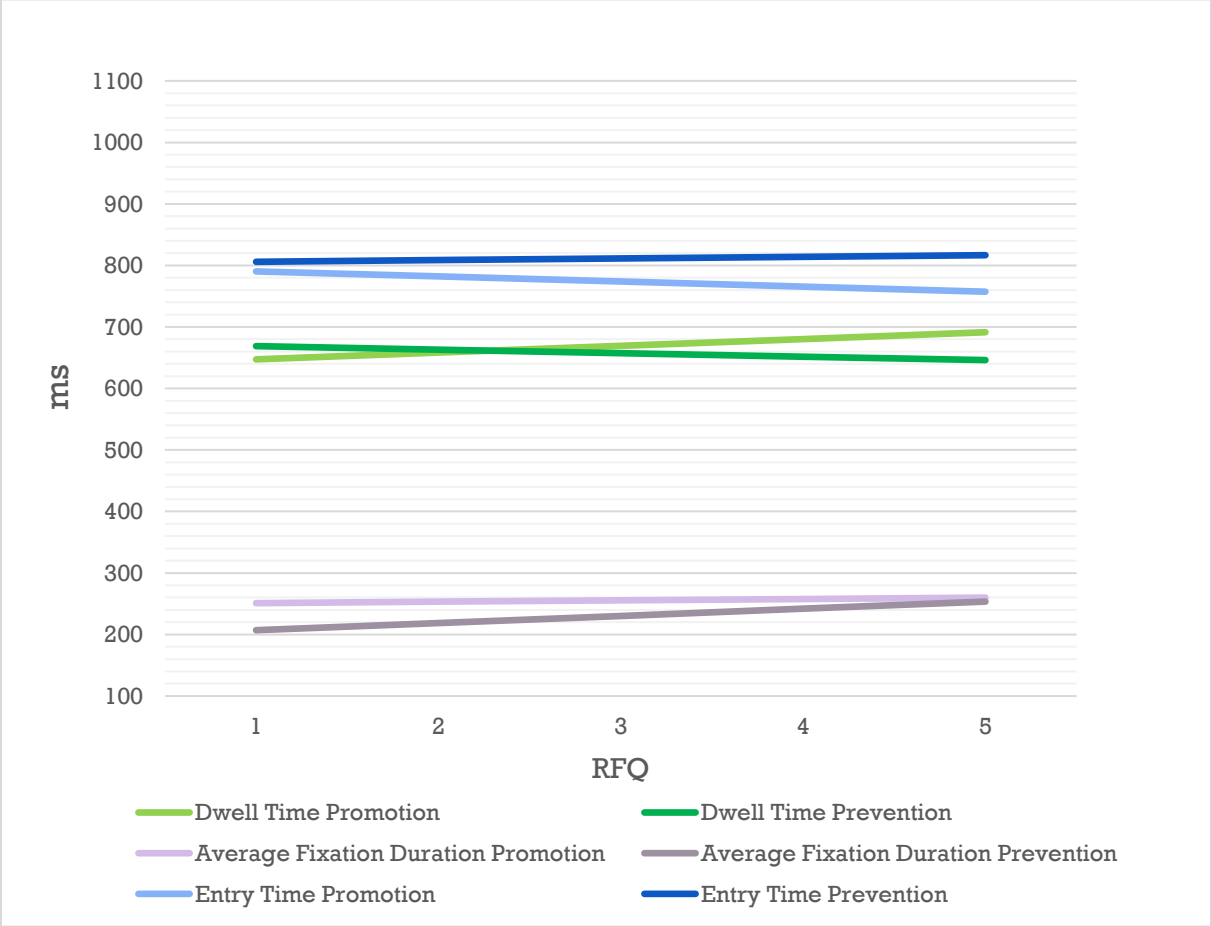
The second exploratory ANCOVA to test if there was a difference in the average fixation duration on the critical cues between the two groups was also not significant ($F(1,122) = 2.40$, $p = .12$). This means there was no significant difference in the means of the average fixation duration between the two groups, while participants in the promotion focus group fixated on average slightly longer on the critical cues (M = 256.47ms, SD = 61.40ms) than those in the prevention focus group (M = 234.69ms, SD = 47.95ms). In this case, all assumptions were met. The Shapiro-Wilk test of normal distribution was non-significant for both average fixation duration on critical cues ($p = .20$) and average fixation duration on neutral cues ($p = .20$). The Levene-test was not significant ($p = .55$). The independence of the covariate average fixation duration on neutral cues from the condition was given ($F(1,123) = 2.49$, $p = .12$), the regression slopes were homogenous over both groups ($F(1,121) = 3.16$, $p = .08$), and the scatterplot of the residuals showed no sign of heteroscedasticity.

Interactions with the Situational Regulatory Focus. The tables of coefficients of the 15 moderation analyses are displayed in the Appendix C. Figure 4 shows the interactions of the condition and the RFQ Prevention with the entry time, dwell time and average fixation duration on critical cues as dependent variables. The regression models with entry time ($p = .53$) and dwell time ($p = .79$) on critical cues were not significant. The regression model with

average fixation duration on critical cues was significant (p = .04), but the interaction was not (p = .44). So, RFQ Prevention did not moderate the connection between condition and entry time, dwell time, or average fixation duration on critical cues.

Figure 4

Interactions of Condition and RFQ Prevention on Eye-tracking Measures of Critical Cues



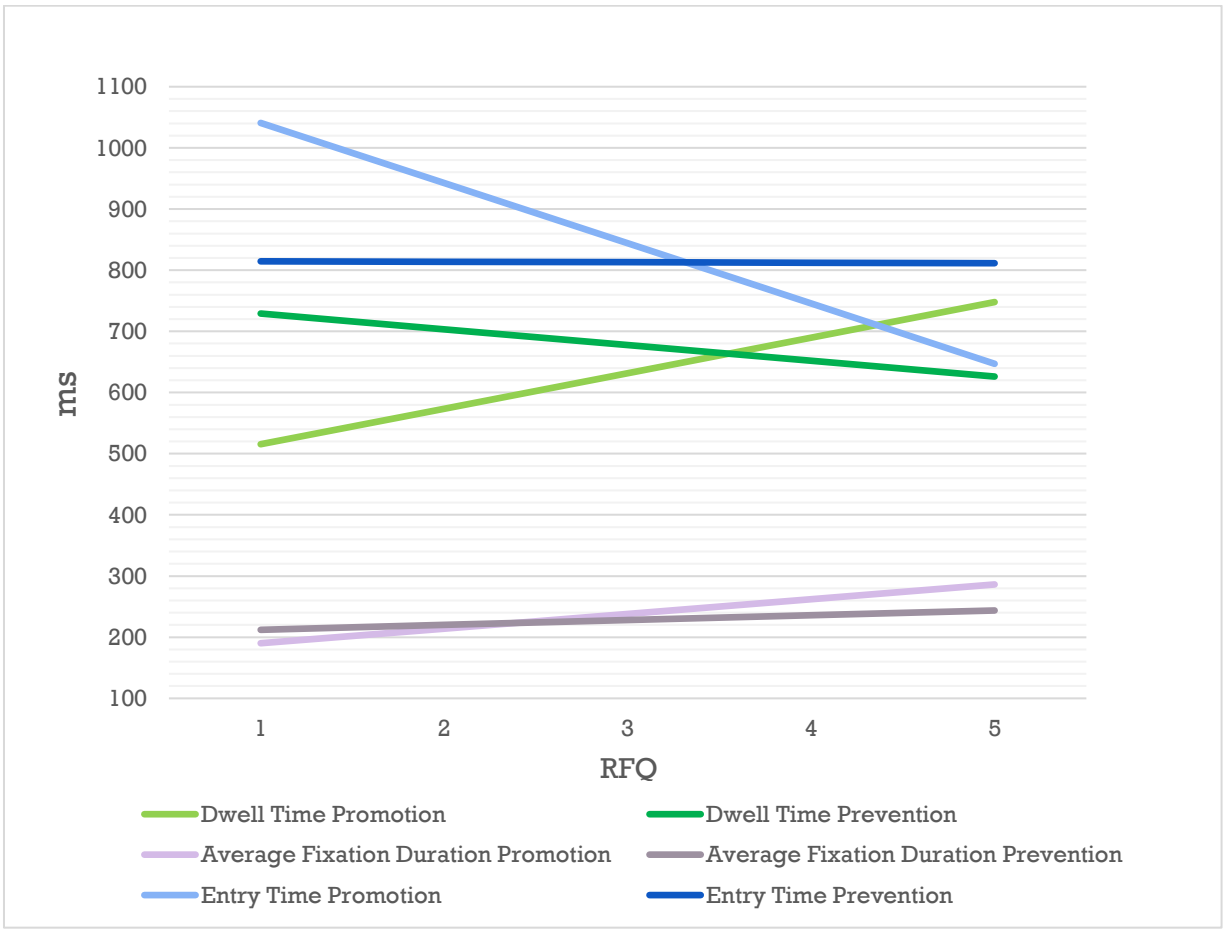
Note: Promotion = promotion focus group, Prevention =prevention focus group

Figure 5 shows the interactions of the condition and the RFQ Promotion for the eye-tracking measures of critical cues as dependent variables. RFQ Promotion significantly moderated the connection between condition and entry time on critical cues with R^2 = .02, p = .04, $F(1,121)$ = 4.18. The conditional effect of RFQ Promotion becomes significant for high scores in RFQ Promotion, starting at a score of 3.88 on the RFQ Promotion with p = .05 and becoming more significant for higher scores and is not significant for lower scores. Higher

scores in RFQ Promotion mean shorter entry time on critical cues for individuals in the promotion focus group, but not for those in the prevention focus group. The regression models with dwell time (p = .19) and average fixation duration (p = .06) on critical cues as dependent variables were not significant, so there was no interaction of condition and RFQ Promotion for these two outcomes.

Figure 5

Interactions of Condition with RFQ Promotion for the Eye-tracking measures of Critical Cues

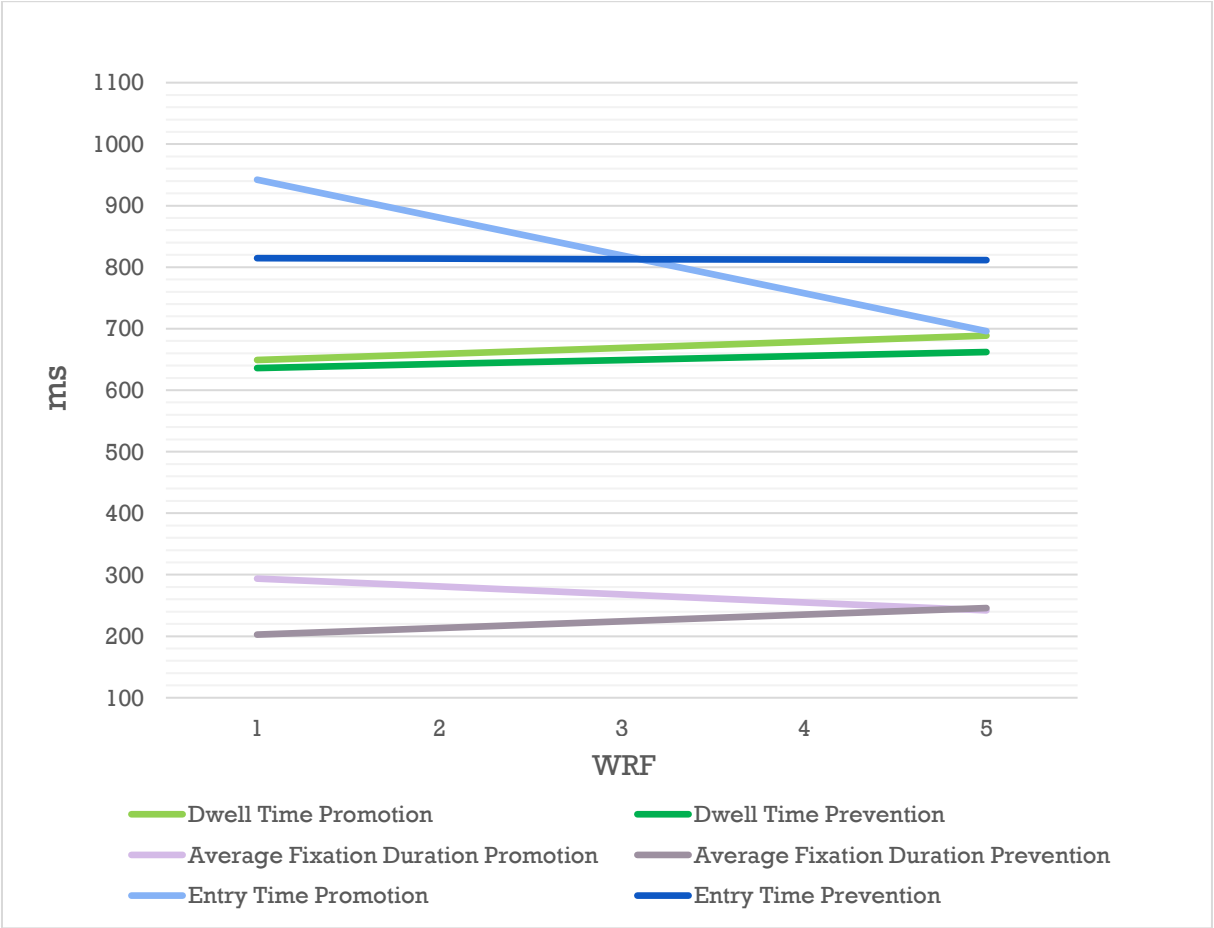


Note: Promotion = promotion focus group, Prevention =prevention focus group

Figure 6 shows the interactions of the condition and the WRF Prevention with the entry time, dwell time and average fixation duration on critical cues as dependent variables. The regression models with entry time on critical cues (p = .19) and dwell time on critical cues (p = .81) as outcomes were not significant. The regression model with average fixation duration as the outcome was significant with p = .05 for average fixation duration on critical cues, but the interaction was not significant with p = .15. Hence, there was no interaction of condition with the WRF Prevention for the eye-tracking measures of critical cues as outcomes.

Figure 6

Interactions of Condition with WRF Prevention for the Eye-tracking measures of Critical Cues

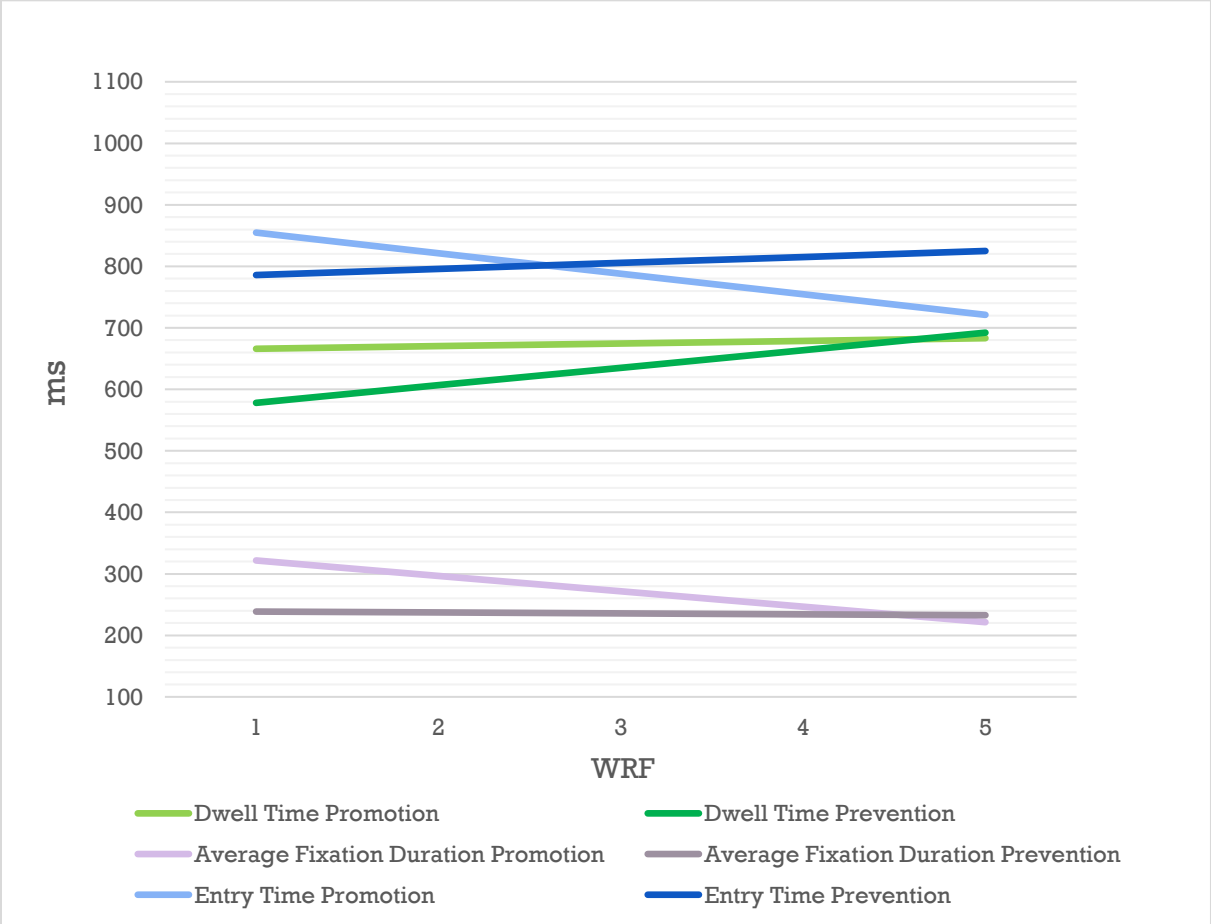


Note: Promotion = promotion focus group, Prevention =prevention focus group

Figure 7 shows the interactions of condition with WRF Promotion for the outcomes entry time, dwell time, and average fixation duration on critical cues. None of the regression models were significant with $p = .42$ for entry time, $p = .75$ for dwell time, and $p = .08$ for average fixation duration on critical cues. Therefore, there was no interaction of condition with WRF Promotion for the eye-tracking measures of critical cues as outcomes.

Figure 7

Interactions of Condition with WRF Promotion for the Eye-tracking measures of Critical Cues

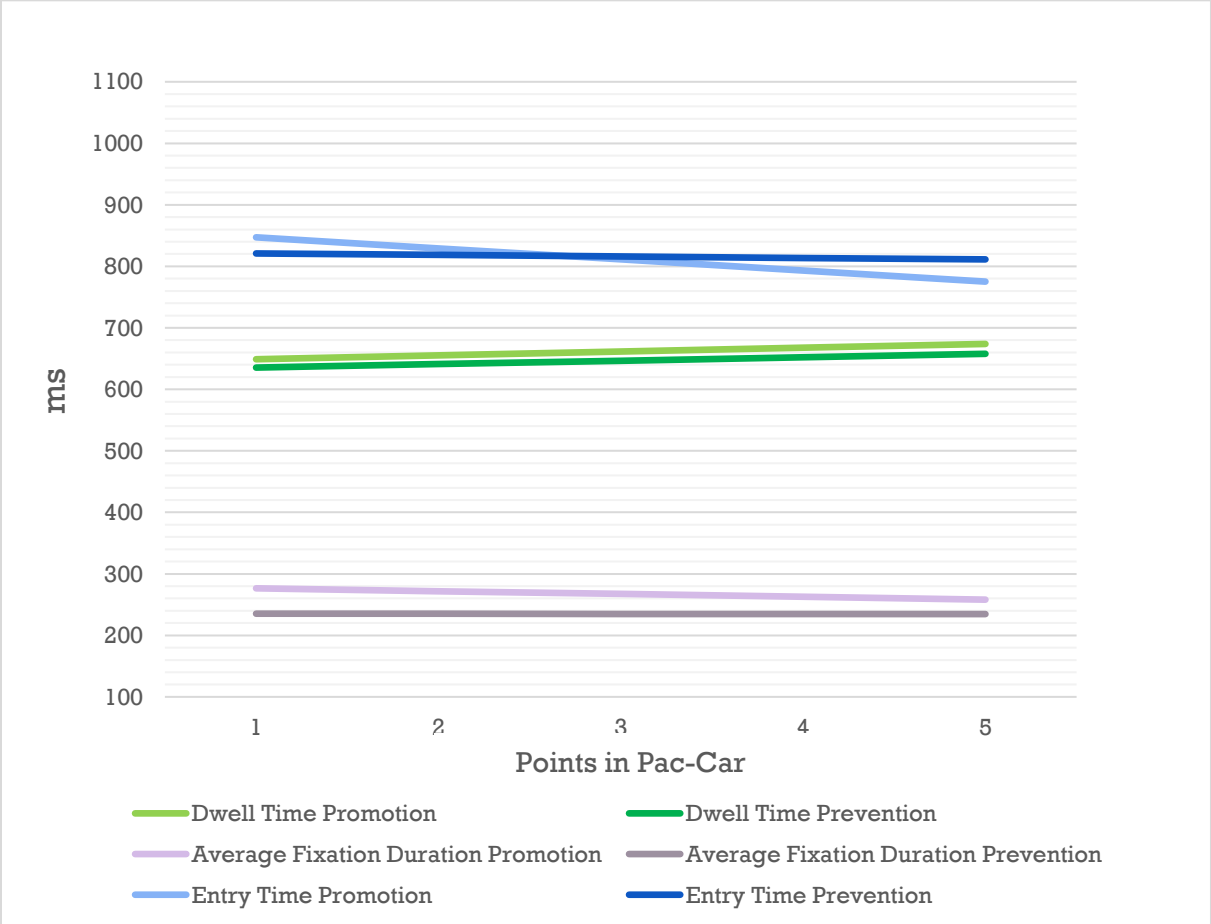


Note: Promotion = promotion focus group, Prevention =prevention focus group

Figure 8 shows the interactions of condition with points in Pac-Car for the dependent variables entry time, dwell time and average fixation duration on critical cues. None of the regression models were significant, with $p = .10$ for entry time, $p = .42$ for dwell time, and $p = .14$ for average fixation duration on critical cues. So, there was no interaction of condition with points in the game for the eye-tracking measures on critical cues as outcomes.

Figure 8

Interactions of Condition with Points in Pac-Car for the Eye-tracking measures of Critical Cues



Note: Promotion = promotion focus group, Prevention =prevention focus group

Discussion

The aim of this study was to investigate whether the motivational mindsets presented in the Regulatory Focus Theory (Higgins, 1997) could help drivers to behave adaptively in traffic situations through faster perception of possibly threatening cues. Therefore, it was tested whether individuals in prevention focus perceive those critical cues faster than individuals in promotion focus using an experimental design with eye-tracking measures. The data collected does not support this hypothesis. There was no significant difference in the perception speed of the threatening cues between promotion focused and prevention focused individuals, with the tendency being promotion focused individuals having a slightly faster perception of the critical cues. The exploratory analyses revealed that there was also no significant difference in the other eye-tracking measures dwell time and average fixation duration on the critical cues, with the tendency that promotion focused individuals had a slightly longer dwell time and a slightly longer average fixation duration on the critical cues. Only the interaction of the situational regulatory focus and the scores on the RFQ Promotion with entry time as the dependent variable proved to be significant. There, participants in the promotion focus group with high scores on that subscale had a faster entry time on critical cues. At first, possible reasons for the result of the test of the hypothesis are discussed. Afterwards, other interesting results that are found apart from the rejection of the hypothesis are considered.

Discussion of the Hypothesis

It seems there was no significant difference in the perception speed of threatening cues in traffic situations between promotion focused and prevention focused individuals found because there might not be a difference. The other study which found differences between regulatory foci in the traffic context used breaking speed as dependent measure (Werth & Förster, 2007). Therefore, the vigilance of the prevention focus leads only to faster breaking speed in ambiguous situations but not to faster perception of the cues that make the

situation possibly dangerous. Hence, Regulatory focus has no strong effect on perception speed but only on behavioral components. Consequently, prevention focused individuals perceive risks equally fast but engage in less risky behavior.

It is unlikely that the hypothesis was rejected due to an insufficient induction of the situational regulatory focus. The Pac-Car task used in this study was slightly different from the maze task used in other studies (Friedman & Förster, 2001, 2005; Werth & Förster, 2007). In the maze task participants had to navigate a mouse through a maze. For promotion focus there was a piece of cheese at the end of it and for prevention focus an owl was hovering over the maze. The approachable gain was the cheese, and the avoidable loss was being caught by the owl. In the Pac-Car task however, the approachable gain was collecting as many cherries as possible and the avoidable loss was being caught by the ghosts. Therefore, the concept was the same with only the change for the gamification in this study. This could lead to the success or failure while playing Pac-Car having an influence on the induction of the regulatory focus since success and failure are experienced differently in the two foci (Higgins, 1997; Scholer et al., 2019; Shah & Higgins, 2001). However, the tests whether the interaction of the success or failure, represented by the points in Pac-Car, with the condition had an influence on the eye-tracking measures were all not significant. Therefore, the gamification should not make a difference and the regulatory focus should have been induced properly by the Pac-Car task. In addition to the Pac-Car task, a second method to induce a regulatory focus was applied. The Pac-Car task and the eye-tracking task were framed in either a loss or a win situation, a technique that proved to be effective in the past (Crowe & Higgins, 1997; Florack & Hartmann, 2007; Herzenstein et al., 2007; P. Keller, 2006). Considering that both techniques combined should be more than enough to induce a strong regulatory focus, the induction should have been sufficient.

It is also implausible that the chronical regulatory focus was interacting with the induced situational regulatory focus in a way that would make the difference between the groups non-detectable. The theory on Regulatory Fit (Higgins, 2000), which is an extension of the RFT, states that the effects of regulatory focus increase when the situational regulatory requirements fit the chronical regulatory orientation of a person. So, when fit is given the performance of an individual is improved (J. Keller & Bless, 2006). In this case when the chronical regulatory focus of a participant was the same as the situationally induced regulatory focus, the effects should be high. And when the situational regulatory focus contradicts the chronical regulatory focus of the participant, the performance should be impaired (Lisjak, Molden, & Lee, 2012). This could mean that the effects of participants with regulatory fit could be outweighed by the effects of participants with non-fit. To check for this possible interference, the data was examined for interactions of the situationally induced regulatory focus, represented by the condition and the chronical regulatory focus, represented by the two subscales of the RFQ and the WRF. However, only the interactions with the promotion subscale of the RFQ were significant. Participants with high scores on that subscale that were in the promotion group had faster entry times on critical cues. This interaction is in line with the proposition of regulatory fit. But, if the regulatory fit would have had a high influence, the other interactions should have been significant as well, or at least the prevention subscale of the RFQ should have had the same results as the promotion subscale did. Therefore, the influence of the chronical regulatory focus seems not to be responsible for the lack of significant difference in perception speed between promotion and prevention focused individuals.

It is also improbable that the pictures used in the eye-tracking task were not adequate to measure the difference in perception speed. Research on regulatory focus and traffic used driving simulations to test their proposition (Werth & Förster, 2007). But the dependent measure was breaking speed and not perception speed. To measure perception speed in such a

setting, wearable eye-tracking devices would have to be used. Since the possibly dangerous cues can be very small, especially when they are farther away, it would be difficult to measure perception speed with the wearables because their resolution is not as good as the one of remote eye-tracking devices. To get the resolution needed and make a differentiation between critical cues and neutral cues possible, remote eye-tracking with pictures of the two categories was used. And to come as close to real driving experiences the participants were asked the behavioral question after each picture so they would look at the picture as if they were in this situation and would have to react accordingly. Furthermore, in the study from Werth and Förster (2007) the difference between the two foci was only found in ambiguous situations, where the threat is not yet dangerous but could become a threat in the very near future. So, it is possible that there is only a difference in the perception of ambiguous cues and not in the perception of unambiguous dangerous cues, where the threat is instant. In this study the critical cues were cues that pose a threat both instantly and in the very near future, so there was no distinction between how close the threat was. Aside from that, it could be the case that the critical cues used in this study were too powerful and the effect of the induced situational regulatory focus disappeared. Here it would mean that the critical cue is perceived as so dangerous that by seeing the cue, individuals automatically switch to a prevention focus to prevent this danger. This could also be the reason why Werth and Förster (2007) did not find a difference in the unambiguous traffic situations and only in the ambiguous traffic situation. In the ambiguous traffic situation, the dangerous cue is foreseeable and therefore does not have such a huge impact and the prevention focused individuals break faster. But in the unambiguous dangerous traffic situation the abrupt appearing danger induced a prevention focus, which makes interindividual differences between induced promotion and prevention focus nondetectable since all participants are in prevention focus and therefore break equally fast. To test this proposition, further research should be done with pictures of three categories: critical cues (instant threat), neutral cues, and ambiguous cues (possible threat in the very near

future). But despite this idea for further research, the study design should have been sufficient to test the proposition of this study. The pictures were especially rated to be either critical or neutral and the behavioral question should get participants to perceive the pictures as if they would be in the displayed situation. Therefore, it should have been possible to detect a difference if there is one in the perception of critical cues between the two regulatory foci.

A further reason for the lack of a significant difference in the perception speed could be that the focus on negativity in prevention focus only influences the perception of inherently negative cues, where the negativity is caused by the cue itself like words with negative meaning, and not only possibly dangerous cues, where the danger of the cue is dependent on the context. In this study, the cues in the pictures which were rated as critical contained only possible dangers, like the danger of causing an accident because of a person crossing the street without checking the road first. The person in this picture is not per se dangerous and is only posing a threat for their safety because of the context they are in. This can be transferred to all the pictures used in this study. In other studies (Herzenstein et al., 2007; Scholer et al., 2008), where individuals in prevention focus outperformed those in promotion focus in signal detection tasks when the stimulus was negative, e.g. words with a negative meaning, the stimulus in itself caused the negativity, and not the context. A car for example is not in itself dangerous, and only becomes dangerous when it cuts the lane directly in front of someone. In contrast, a gun barrel seen from the front is dangerous in every context. So it could be that there is only a difference in perception speed on inherently negative cues but not on cues that could become possibly dangerous like it is the case in traffic situations.

Discussion of Other Findings

Despite there being no significant difference, the tendency was in the opposite of the proposed direction. The promotion focused individuals showed a somewhat faster perception speed, on both the neutral and the critical cues. This could be due to participants seeing the

task as a normal signal detection task and not as a real traffic situation. But as already mentioned above, the behavioral question after each picture should force participants to look at the picture as if they were in this situation and would have to react accordingly. Therefore, it could be the case that individuals in promotion focus detect cues marginally faster than individuals in prevention focus.

In general, it could be observed in a descriptive manner that critical cues were perceived faster. Therefore, it might be that critical cues were perceived faster because they attract attention due to their quality of posing a possible threat. Normally when a cue is perceived faster, this means it is more salient (Palcu & Florack, 2016). The salience of a cue is determined by a variety of attributes of the cue (Palcu & Florack, 2016), like color, intensity, orientation etc.. But in this study, the pictures were processed to minimize salience of the critical cues. However, one difference that remained was that the critical cues were on average slightly bigger than the neutral cues. Therefore, the observed difference in perception speed of critical versus neutral cues could also be due to the different size of the cues. But since the rest of attributes that determine salience were minimized and the difference in the size of the cues was only small, it is also quite probable that the critical cues were perceived different because of them being critical cues independent of the regulatory focus of the recipient. Hence, it would mean that critical cues are being perceived faster than neutral cues due to the impact they can have on a situation. It would also mean the pictures used in this study were valid, since the critical cues were perceived and processed as such.

Critical cues were not only perceived faster, they were also looked at longer than the neutral cues in both groups. This hints towards a somewhat deeper processing of the cue (Palcu & Florack, 2016). If something has to be processed more deeply this could mean that either it is new, it is more complex, or it is more relevant (Palcu & Florack, 2016). The complexity of the cues themselves and the pictures in total were about the same for the neutral and critical

pictures. Therefore, it could be that the critical cues had a higher relevance than the neutral ones. Considering that both cues were selected for being relevant for the behavioral question, this is especially interesting. So, the higher relevance of the critical cues could be due to them being critical and therefore having a possibly higher impact on the situation because they could pose a threat to oneself or other traffic participants. In addition, critical cues could be processed more deeply because they were new. In this case all participants had a driving license and should therefore be familiar with the traffic situations displayed in the pictures. But this is only true for the neutral pictures because they displayed normal traffic situations. In the critical pictures the critical cue adds something to the situation that changes it to a possibly dangerous situation. That makes it necessary to decide whether to adapt the normal driving behavior and react accordingly to the critical cue. In sum, the critical cues seem to be looked at longer because they add something new and relevant to the situation which makes a deeper processing necessary to adapt the behavior accordingly.

In addition, prevention focused participants tend to need to process the cues less deeply than participants in promotion focus, since they showed the tendency to look at the critical cues for a shorter amount of time. This could be due to the focus on negativity and dangers of the prevention focused participants. This focus could make them expect possible dangers and therefore reduce the speed to process whether the cue is dangerous or not because they categorize them faster as threatening. This could also be the reason why prevention focused individuals break faster in ambiguous situations. When prevention focused individuals see a possibly dangerous cue, they categorize them faster as dangerous and therefore can react and break faster.

There were only relatively small correlations between RFQ & WRF, considering they both should measure chronical regulatory focus. This can be due to the two scales measuring two different aspects of the chronical regulatory focus. The RFQ measures differences in the

individual histories of being successful in the promotion or the prevention focus (Higgins et al., 2001). Therefore, high scores in the RFQ Promotion stand for high promotion pride, which means a history of successfully applying promotion related eagerness, and high scores on the RFQ Prevention stand for high prevention pride, which means a history of successfully using prevention related vigilance (Jones et al., 2009). The WRF measures which aspects are more in the focus of an individual in a work context - achievement, ideals, and gains for promotion focus - or - security, oughts, and losses for prevention focus (Neubert et al., 2008). It is therefore more related to the actual application of regulatory focus, meaning the use of approach versus avoidance strategies and tactics in a work context respectively. Thus, the two measures only correlate in a small way, because they measure different aspects of the chronical regulatory focus, which, concerning the RFQ was also found in other studies and with other chronical regulatory focus measures (Summerville & Roese, 2008).

The differences between the male and female participants in the RFQ and WRF subscales are also quite interesting. There was no difference in the RFQ Promotion but there was a difference in the WRF Promotion, where female participants scored lower on that subscale. Therefore, the male and female participants showed no difference in promotion pride but a difference in the regulatory focus they apply in a work or university context, indicating that female participants apply less promotion focused strategies and tactics. In addition, there was a difference in the RQF Prevention and the WRF Prevention, showing that female participants had higher scores in both prevention subscales. Female participants therefore had higher prevention pride and higher use of prevention focused strategies and tactics in a work or university context. These findings are in line with other research stating that women are more prevention focused and men are more promotion focused in a business context (McKay-Nesbitt, Bhatnagar, & Smith, 2013).

Another interesting correlation is the negative correlation of age and the prevention subscale of the WRF. But since the sample is very homogenous in age this finding can't be interpreted since there is not enough variance to do so.

The correlations of the points in Pac-Car with the chronical regulatory focus measures are also of interest. There was a positive correlation with the WRF Promotion but no correlation with the RFQ Promotion. This means that participants that said they were applying promotion focus in the work and study environment scored higher in Pac-Car. The negative correlation with the RFQ Prevention and the WRF Prevention indicates that participants who claimed to have lower prevention pride and apply less prevention focus scored higher in Pac-Car. This could either mean that in order to do well in Pac-Car, it is better to be more promotion focused. Or it could mean that participants with low chronical prevention focus, and high chronical promotion focus are more familiar with playing games on a computer in general, because they play similar games more often. Pac-Car was designed to induce a regulatory focus. Therefore, the focus that was applied while playing the game was manipulated and the chronical regulatory focus should not have a direct influence on the performance in the Pac-Car task. So, the first option is less likely. Hence, it could be that individuals with high chronical promotion focus and low chronical prevention focus in a work or study context and a low prevention pride, are more prone to being familiar with playing games on a computer.

Limitations and Further Research

Some limitations are also noteworthy. Since the sample consisted of undergraduate students of the University of Vienna, this sample is quite homogenous and is therefore not representative. In addition, the experiment took place in the laboratory, hence external validity is low. Furthermore, pictures were used instead of videos or driving simulators, making the study less realistic. So, despite the fact that the researcher tried to make the experiment as true

to reality as possible, the findings can only be cautiously transferred to real traffic situations and the population in general.

As stated above, it could be the case that there is only a difference in perception of ambiguous cues. To test this, further research is necessary. For example, another eye-tracking experiment could be conducted which distinguishes three categories of pictures and cues respectively: threatening, ambiguous, and neutral. Furthermore, the idea that there is only a difference in the perception of inherently dangerous cues and not cues that become dangerous due to contextual settings could be tested in continuative research as well. This could also be tested with an eye-tracking experiment which distinguishes between inherently dangerous cues, dangerous cues through contextual settings, and neutral cues. But since it is also very likely that there is no difference in the perception between promotion focused and prevention focused individuals future research should concentrate on behavioral aspects.

Conclusion

The main finding of this study is that there seems to be no difference in perception speed of threatening cues in traffic situations between the two regulatory foci, promotion and prevention focus. And there was also no difference found in the perception in general between the two foci. Hence, regulatory focus most likely only influences behavioral aspects, like reaction times and breaking speed. Therefore, prevention focus might not help to focus attention on threatening cues in traffic situations but could still be beneficial through faster processing of possible threats and faster breaking speed in ambiguous situations.

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Figures

Tables

Abbreviations

RFT:	Regulatory Focus Theory
RFQ:	Regulatory Focus Questionnaire
RFQ Promotion:	Promotion subscale of the Regulatory Focus Questionnaire
RFQ Prevention:	Prevention subscale of the Regulatory Focus Questionnaire
WRF:	Work Regulatory Focus Scale
WRF Promotion:	Promotion subscale of the Work Regulatory Focus Scale
WRF Prevention:	Prevention subscale of the Work Regulatory Focus Scale
AOI:	Area of Interest
ANOVA:	Analysis of Variance
ANCOVA:	Analysis of Covariance

Appendix

Content

Appendix A

Abstract in English

This study aims to test whether the two motivational mindsets proposed in the regulatory focus theory (Higgins, 1997), the promotion focus and the prevention focus, could help drivers to be more attentive towards possible threats in traffic situations. It was hypothesized that a person in prevention focus would perceive threatening cues faster because they are motivated towards safety and should therefore be more attentive towards possible threats of this safety. To test this proposition, an eye-tracking experiment was conducted in the laboratory. The sample consisted of 125 undergraduate students. Regulatory focus was manipulated, and the sample was split into two groups, a promotion focus and a prevention focus group. The participants were shown pictures of 10 neutral and 10 possibly threatening traffic situations. To quantify perception speed, the entry time on the threatening cues in the possibly dangerous pictures was measured with a remote eye-tracking device. The entry time on the threatening cues was then compared between the two groups, while statistically controlling for general perception speed, represented by the entry time on neutral cues in the neutral pictures. The results showed no difference in the perception speed of possibly threatening cues. Therefore, the mindset of a person in prevention focus seems not to be able to help drivers to be more attentive in traffic situations. Reasons for this result as well as implications, limitations and other findings of this study are discussed.

Abstract in German

In dieser Studie wurde untersucht, ob die zwei motivationalen Denkweisen, die in der Regulatory Focus Theory (Higgins, 1997) vorgestellt werden, der Promotion Focus und der Prevention Focus, Autofahrer dabei unterstützen könnten, aufmerksamer für mögliche Gefahren in Verkehrssituationen zu sein. Die Hypothese war, dass Personen im Prevention Focus mögliche Gefahrenreize schneller wahrnehmen können, da sie motiviert sind, die eigene Sicherheit zu wahren und daher auch aufmerksamer für mögliche Gefährdungen dieser Sicherheit sein sollten. Um dies zu testen, wurde eine Eye-tracking Studie im Labor durchgeführt. Die Stichprobe bestand aus 125 Studierenden. Der Regulatory Focus wurde dahingehend manipuliert, dass zwei Gruppen entstanden, eine Promotion Focus Gruppe und eine Prevention Focus Gruppe. Den Teilnehmer:Innen wurden 10 Bilder von neutralen und 10 Bilder von möglicherweise gefährlichen Verkehrssituationen gezeigt. Die Wahrnehmungsgeschwindigkeit wurde mittels der Entry Time auf die gefährlichen Reize in möglicherweise gefährlichen Bildern gemessen. Diese Entry Time auf die gefährlichen Reize wurde dann zwischen den beiden Gruppen verglichen, wobei die generelle Wahrnehmungsgeschwindigkeit, gemessen mittels der Entry Time auf neutrale Reize in den neutralen Bildern, statistisch kontrolliert wurde. Die Ergebnisse zeigten, dass es keinen Unterschied in der Wahrnehmungsgeschwindigkeit zwischen den Gruppen gab. Die Denkweise im Prevention Focus kann Autofahrern daher nicht helfen generell aufmerksamer im Straßenverkehr zu sein. Ursachen für dieses Ergebnis sowie Implikationen, Limitationen, und andere Ergebnisse der Studie werden diskutiert.

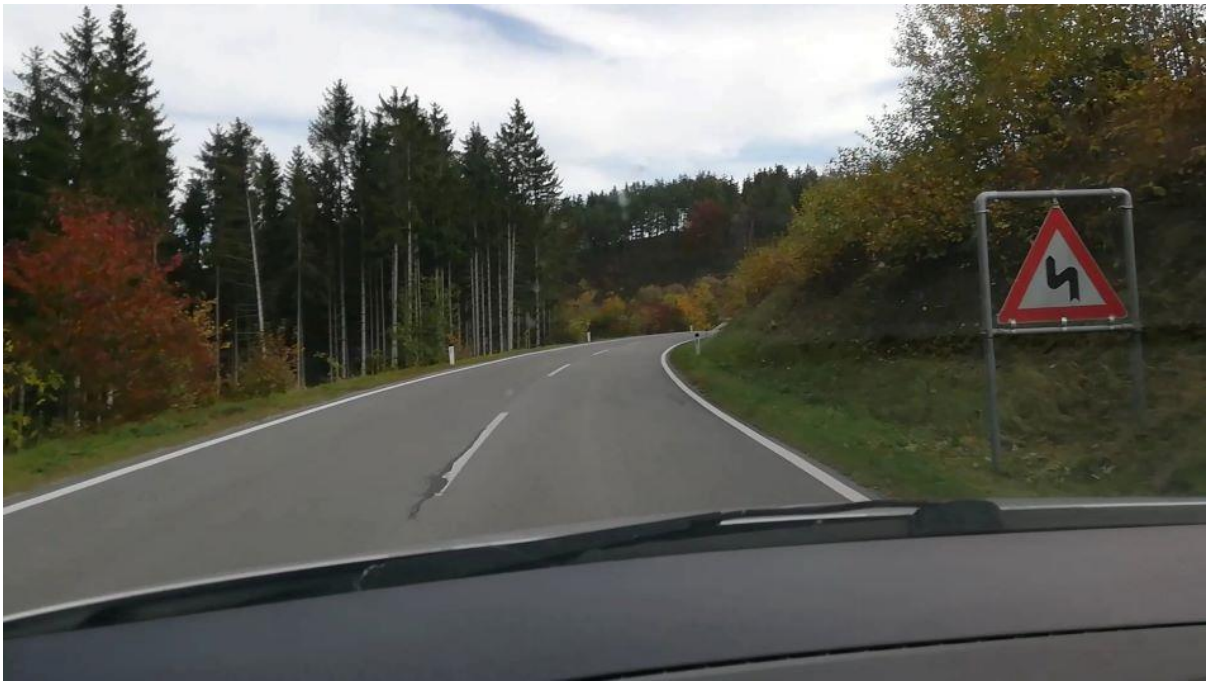
Appendix B

Eye-tracking Images

The pictures as they appeared during the eye-tracking are displayed below. The AOIs are marked in red. After each picture the possible answers are printed in German. The correct answer is printed in **bold**.

Image 1

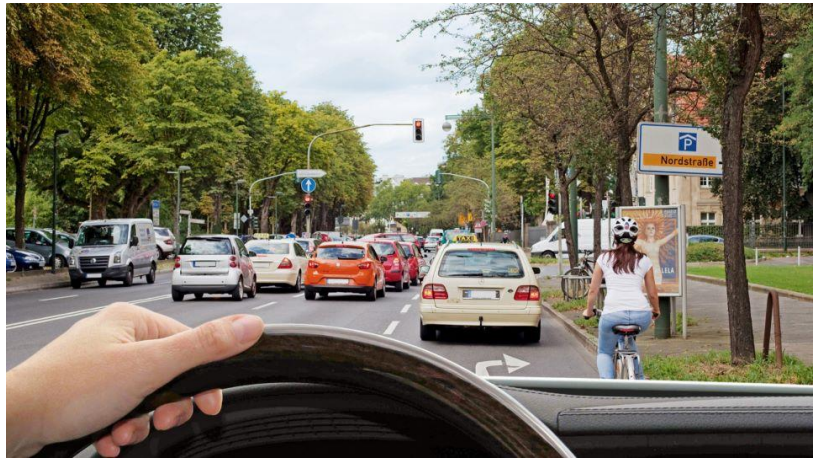
Test picture 1



1. **Ich reduziere meine Geschwindigkeit, da vor mir eine kurvenreiche Strecke kommt.**
2. Ich fahre weiter mit 100km/h, da die Straße vor mir frei ist.
3. Ich bremse, da von rechts ein Reh auf die Straße läuft.
4. Ich bremse, da das Auto vor mir auch bremst.

Image 2

Test picture 2



1. Ich biege normal an der Kreuzung ab, da die Ampel grün ist.
2. Ich biege vorsichtig an der Kreuzung rechts ab, da rechts von mir eine Radfahrerin ist, auf die ich aufpassen muss.
3. **Ich bremse, da die Ampel vor mir rot ist, und das Auto vor mir auch bremst.**
4. Ich fahre ungestört geradeaus.

Image 3

Critical Picture K1

1. Ich fahre mit 50 km/h ungestört durch die Siedlung.
2. Ich reduziere meine Geschwindigkeit, weil Kinder weiter vorne auf der Straße spielen.
3. **Ich bremse stark, weil direkt vor mir eine Person die Straße überquert, ohne zu schauen.**
4. Ich fahre weiter, eine Person wartet zwar darauf, die Straße zu überqueren, aber ich kann normal an Ihr vorbeifahren.

Image 4

Critical Picture K2

1. Ich fahre ungestört auf der Landstraße weiter.
2. **Ich warte mit dem Einscheren, da ich den Radfahrer noch nicht vollständig überholt habe.**
3. Mein Überholvorgang ist abgeschlossen und ich fahre wieder auf die rechte Fahrbahn.
4. Da ich viel schneller bin als der Radfahrer, lenke ich schon wieder nach rechts, obwohl ich den Radfahrer noch nicht vollständig überholt habe.

Image 5

Critical Picture K3

1. Ich fahre an dem LKW, wie das Auto vor mir, einfach vorbei.
2. **Ich mache mich bereit zum Bremsen, weil vor dem LKW ein Fußgänger über die Straße geht und das Auto vor mir wahrscheinlich gleich bremsen muss.**
3. Ich warte mit dem Vorbeifahren, da Gegenverkehr kommt.
4. Ich bremse stark, da der Traktor von links auf die Straße einfährt, ohne auf mich zu achten.

Image 6

Critical Picture K4

1. **Ich reduziere meine Geschwindigkeit, da eine Person weiter vorne über die Straße geht.**
2. Ich fahre normal weiter, da niemand über den Zebrastreifen geht.
3. Ich reduziere meine Geschwindigkeit auf 30km/h, da mich ein Straßenschild darauf hinweist.
4. Ich bremse, da eine Frau von links über den Zebrastreifen gehen möchte.

Image 7

Critical Picture K5

1. Ich fahre auch bei Dämmerung normal auf der Landstraße.
2. Auf der engen Straße kommt Gegenverkehr und ich weiche nach rechts aus.
3. **Ich bremse stark, da von links ein Reh jeden Moment auf die Straße rennen könnte.**
4. Da das Reh noch weit entfernt ist, fahre ich normal weiter.

Image 8

Critical Picture K6

1. Ich folge dem Einsatzfahrzeug, da die Straße frei ist.
2. **Ich passe auf, da rechts von mir ein weißes Auto fährt, es aber nur eine Fahrspur gibt, und mir ein entgegenkommender Lastwagen das Ausweichen erschwert.**
3. Ich habe Vorfahrt vor dem LKW und fahre weiter. Das rechts parkende Auto ignoriere ich.
4. Der Fahrer des weißen Autos signalisiert mir, dass ich vorbeifahren kann, deswegen fahre ich weiter.

Image 9

Critical Picture K7

1. **Ich mache eine Vollbremsung, da vor mir ein Kind mit dem Fahrrad auf die Straße gefallen ist.**
2. Ich fahre weiter, da die Ampel Grün ist.
3. Ich reduziere meine Geschwindigkeit, da die Ampel rot ist.
4. Ich weiche dem Kind auf der Straße leicht aus, da die Spur neben mir frei ist und noch genügend Abstand zum Kind besteht.

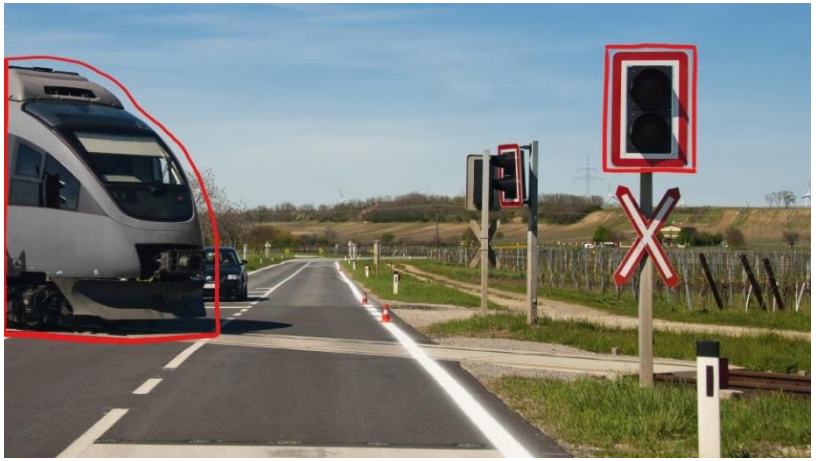
Image 10

Critical Picture K8

1. Ich überhole das Auto normal.
2. **Ich mache eine Vollbremsung, da das Auto, das auf meine Spur zieht, direkt vor mir bremst.**
3. Ich reduziere meine Geschwindigkeit, da vor mir eine Baustelle ist.
4. Ich hupe, damit das Auto vor mir wieder auf die rechte Spur zurück zieht, fahre ansonsten aber normal weiter.

Image 11

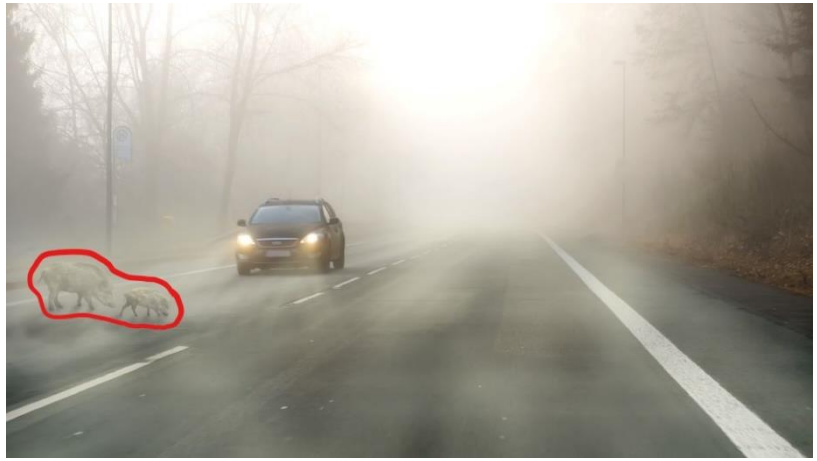
Critical Picture K9



1. Ich habe Vorfahrt und fahre normal weiter.
2. Ich fahre weiter, da die Ampel am Bahnübergang nicht blinkt und kein Zug kommt.
3. **Ich komme zum Stehen, obwohl die Ampel am Bahnübergang nicht blinkt, da ein Zug von links kommt.**
4. Ich komme zum Stehen, weil die Ampel am Bahnübergange rot blinkt, und ein Zug von links kommt.

Image 12

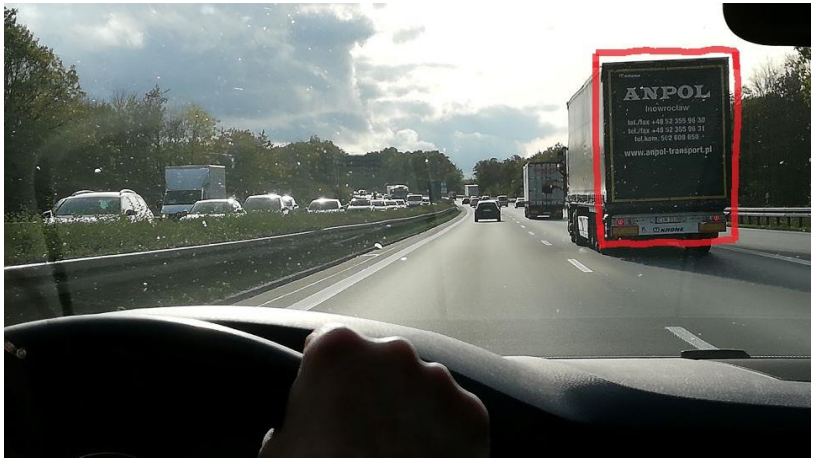
Critical Picture K10



1. **Ich bremse stark, da von links zwei Wildschweine die Straße überqueren**.
2. Ich passe meine Geschwindigkeit lediglich den schlechten Sichtverhältnissen an.
3. Ich fahre normal weiter, da die Straße frei ist.
4. Ich fahre weiter, weil die Wildschweine meine Spur bereits wieder verlassen haben.

Image 13

Neutral Picture N1



1. **Ich überhole den LKW normal.**
2. Ich bremse stark, da der LKW vor mir links blinkt und gerade auf meine Spur wechselt.
3. Ich reduziere meine Geschwindigkeit, da ab hier die Maximalgeschwindigkeit auf 80km/h reduziert wird.
4. Ich reduziere meine Geschwindigkeit, da ich auf ein Stauende zufahre.

Image 14

Neutral Picture N2

1. Ich mache mich bereit zum Anfahren, da die Ampel grün ist.
2. **Ich warte weiter, da die Ampel rot ist.**
3. Ich fahre weiter, da ich Vorfahrt habe.
4. Ich mache mich bereit zum Anfahren, da ich nur Vorfahrt achten muss, weil die Ampel ausgeschaltet ist.

Image 15

Neutral Picture N3

1. Ich fahre weiter, da ich Vorfahrt habe.
2. Ich bremse stark, da von rechts ein Reh auf die Straße läuft.
3. **Ich reduziere meine Geschwindigkeit, da ich an dieser Kreuzung Vorfahrt achten muss.**
4. Ich fahre mit meiner normalen Geschwindigkeit weiter, da auf der Straße kein Auto kommt, das vor mir Vorfahrt hat.

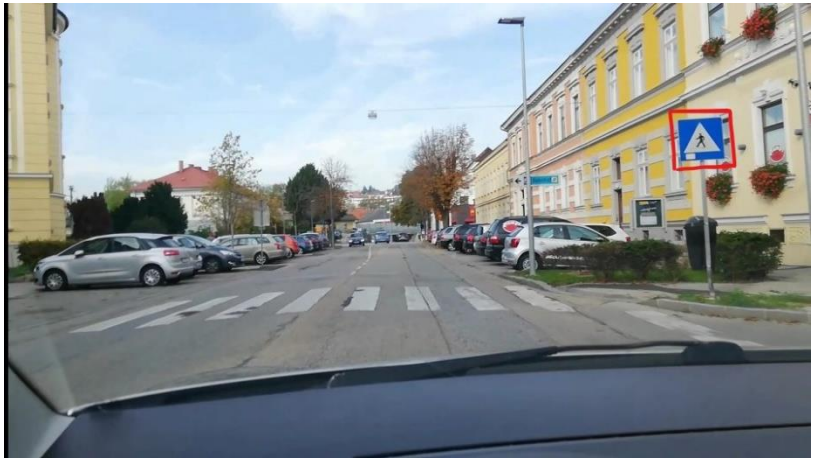
Image 16

Neutral Picture N4

1. **Ich komme zum Stehen, da hier ein Stoppschild ist.**
2. Ich fahre über die Kreuzung, da ich Vorfahrt habe.
3. Ich lasse das Auto von rechts zuerst fahren, da hier rechts vor links gilt.
4. Ich bleibe stehen, da das Kind hinter dem roten Auto über die Straße auf dem Zebrastreifen überqueren möchte.

Image 17

Neutral Picture N5



1. Ich bremse stark, da vor mir Personen die Straße überqueren.
2. **Ich fahre normal durch den Ort weiter, da die Straße frei ist.**
3. Ich reduziere meine Geschwindigkeit, da ab hier eine Spielstraße beginnt.
4. Ich passe auf, da vor mir ein Auto ausparkt.

Image 18

Neutral Picture N6

1. Ich bleibe stehen, da die Ampel vor mir rot ist.
2. **Ich reduziere meine Geschwindigkeit etwas, da bald eine Ampel kommen wird.**
3. Ich bremse, da ich gerade in einen Ort einfahre.
4. Ich bremse stark, da hinter dem Schild ein Reh auf die Straße springen möchte.

Image 19

Neutral Picture N7

1. **Ich fahre normal durch den Ort weiter, da die Straße frei ist.**
2. Ich bremse stark, da vor mir Personen die Straße auf dem Zebrastreifen überqueren möchten.
3. Ich bremse, da ich an dieser Kreuzung Vorfahrt achten muss.
4. Ich reduziere meine Geschwindigkeit, da ab hier Tempo 30km/h gilt.

Image 20

Neutral Picture N8

1. Ich bremse stark, da direkt vor mir ein Auto bremst.
2. Ich reduziere meine Geschwindigkeit leicht, da ich an der kommenden Kreuzung Vorfahrt achten muss.
3. **Ich fahre normal durch den Ort weiter, da die Straße vor mir frei ist.**
4. Ich reduziere meine Geschwindigkeit, da ab hier Tempo 30 km/h gilt.

Image 21

Neutral Picture N9

1. Ich bremse stark, da von links ein Reh auf die Straße rennt.
2. **Ich reduziere meine Geschwindigkeit, da vor mir ein Moped ist und ich wegen der Kuppel nicht sehen kann, ob ich dieses überholen kann.**
3. Ich fahre normal weiter, da die Straße vor mir frei ist.
4. Vor mir fährt ein Moped, ich werde es gleich überholen, da die Gegenfahrbahn frei ist.

Image 22

Neutral Picture N10

1. **Ich reduziere meine Geschwindigkeit, da ich an dieser Kreuzung Vorfahrt achten muss.**
2. Ich fahre weiter, da ich an dieser Kreuzung Vorfahrt habe.
3. Ich bremse stark, da vor mir Personen über die Straße gehen, ohne zu schauen.
4. Ich reduziere meine Geschwindigkeit, da ich in einen Kreisverkehr einfahren möchte.

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Prof. Dr. Arnd Florack

Probandeninformation

Titel des Projektes: *Wahrnehmung von Verkehrssituationen*

Sehr geehrte Dame, sehr geehrter Herr,

wir bitten Sie, an einem Forschungsvorhaben des Institutes für Angewandte Psychologie der Universität Wien teilzunehmen. Wir untersuchen wie unterschiedliche Verkehrssituationen visuell wahrgenommen werden.

Ablauf und zeitlicher Aufwand der Studie

Diese Studie besteht aus 3 Teilen. Zuerst werden Sie einen kurzen Fragebogen ausfüllen. Danach spielen Sie ein kleines Konzentrationsspiel. Im Anschluss werden Ihnen 20 Bilder von Verkehrssituationen gezeigt und Sie geben jeweils nach jedem Bild an, wie Sie sich in dieser Situation verhalten würden. Während Sie die Bilder betrachten werden wir ihr Blickverhalten mittels Eye-tracking aufzeichnen. Diese Studie dauert ca. 30 min.

Welche Risiken sind mit der Studie verbunden?

Alle Analysen, die bei Ihnen durchgeführt werden, sind nicht invasiv und daher besteht kein Risiko. Alle Fragebogen und Aufgaben entsprechen standardisierten, vielfach publizierten und risikofreien Verfahren.

Freiwilligkeit der Teilnahme, Rücktrittsrecht ohne nachteilige Folgen

Die Teilnahme an dieser Studie ist freiwillig. Die Einwilligung zur Teilnahme kann jederzeit ohne Angabe von Gründen zurückgezogen werden. Es entsteht Ihnen kein Nachteil daraus. Mit einem Rücktritt werden alle von Ihnen erhobenen Daten automatisch gelöscht.

Datenschutz

Im Rahmen der Studie werden Ihre Daten kodiert, d.h. die persönlichen Daten wie z.B. Ihr Name werden strikt von den Untersuchungsdaten (z.B. Fragebogendaten) getrennt. Durch diese Kodierung wird im Rahmen der wissenschaftlichen Auswertung kein Unbefugter Ihre persönlichen Daten erhalten. Nach Beendigung der Untersuchung werden alle Daten gelöscht, die einen Bezug zu Ihrer Person erlauben. Die Daten werden nicht an Personen weitergegeben, die an der Studie nicht beteiligt sind. In eine mögliche Veröffentlichung der Resultate der Untersuchung gehen die Daten anonymisiert ein. Wir sichern Ihnen zu, dass alle von uns erhobenen Daten entsprechend dem Datenschutzgesetz geschützt werden.

Falls Sie mit einer Teilnahme einverstanden sind, bitten wir Sie die Einwilligungserklärung zu unterzeichnen. Sollen Sie weitere Fragen haben, können Sie sich jederzeit an uns wenden. Vielen Dank für Ihre Teilnahme!

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Einwilligungserklärung

Titel des Projektes: *Wahrnehmung von Verkehrssituationen*

„Ich bin über das Forschungsvorhaben des Institutes für Angewandte Psychologie der Universität Wien informiert worden und erkläre mich freiwillig zur Teilnahme bereit.

Ich bin damit einverstanden, dass meine Angaben ausschließlich für wissenschaftliche Zwecke auf dem Institut für Angewandte Psychologie: Arbeit, Bildung, Wirtschaft aufbewahrt und ausgewertet werden. Nach Beendigung des Forschungsvorhabens werden alle Daten gelöscht, die einen Bezug zu meiner Person erlauben.

Ich kann die Teilnahme an dieser Studie zu jedem Zeitpunkt ohne Angabe von Gründen abbrechen und die getroffenen Zusagen wieder rückgängig machen.

Ein Doppel des Informationsblattes und dieser Einverständniserklärung habe ich erhalten.

Des weiteren bestätige ich, dass KEINER der folgenden Punkte 1. – 4. auf mich zutrifft.

1. Ich selbst Covid-19 Symptome habe.
2. Ich in den vergangenen 14 Tagen Covid-19 Symptome hatte oder bei mir eine Infektion bestätigt wurde.
3. Ich in den vergangenen 14 Tagen mit einer Person Kontakt hatte bei der eine Infektion bestätigt wurde.
4. Ich mich in den vergangenen 14 Tagen in einem Risikogebiet aufgehalten habe, für das eine Reisewarnung besteht.

Ich verpflichte mich die Versuchsleitung zu kontkatieren, wenn in den nächsten 10 Tagen nach der Experimentalteilnahme Covid-19 Symptome bei mir auftreten.

Ich bin außerdem damit einverstanden, dass meine Kontaktdaten, Name, Email-adresse und Zeitpunkt der Studienteilnahme, für die Zwecke der Infektions-Nachverfolgung auf dem Institut für Angewandte Psychologie: Arbeit, Bildung, Wirtschaft, aufbewahrt werden.“

Vor- und Nachname: _____

_____ _____

Ort, Datum Unterschrift

Questionnaire

VP____ Cond_____

Fragebogen Eye-Tracking – Wahrnehmung von Verkehrssituationen

Vielen Dank, dass Sie sich dazu bereit erklären an dieser Studie teilzunehmen. In dieser Studie wird untersucht, wie verschiedene Verkehrssituationen wahrgenommen werden. Bevor wir mit dem Eye-Tracking beginnen, bitten wir Sie die folgenden Fragen zu beantworten.

Geschlecht: ☐ männlich ☐ weiblich ☐ sonstiges

Alter: _____

Haben Sie den Autoführerschein? ☐ Ja ☐ Nein

Wie lange haben Sie den Führerschein schon? _____ Jahre

Wie oft fahren Sie mit dem Auto? (Fahrten als Beifahrer zählen **NICHT**!)

☐ mehrmals in der Woche
☐ 1x in der Woche
☐ mehrmals im Monat
☐ 1x im Monat
☐ weniger als 1x im Monat

Wie viele Kilometer fahren Sie ungefähr im Jahr? _____ km (grobe Schätzung genügt)

Zum Beantworten der untenstehenden Fragen kreuzen Sie bitte das Zutreffende an.	Nie oder selten		Manchmal		Sehr häufig
Fällt es Ihnen im Vergleich zu anderen schwer, Ihre Vorstellungen umzusetzen?	○	○	○	○	○
Haben Sie in Ihrer Jugend Grenzen überschritten und Dinge getan, die Ihre Eltern nicht tolerierten?	○	○	○	○	○
Wie oft haben Sie Dinge erreicht, die Sie anspornten, sich danach noch mehr anzustrengen?	○	○	○	○	○
Strapazierten Sie in Ihrer Jugend häufig die Nerven Ihrer Eltern?	○	○	○	○	○
Wie oft hielten Sie sich an die Regeln und Vorschriften Ihrer Eltern?	○	○	○	○	○
Taten Sie in Ihrer Jugend Dinge, welche Ihre Eltern als verwerflich bezeichnet hätten?	○	○	○	○	○
Sind Sie häufig erfolgreich, wenn Sie etwas Neues versuchen?	○	○	○	○	○

Zum Beurteilen der untenstehende Aussagen kreuzen Sie bitte das Zutreffende an.	Überhaupt nicht zutreffend		Manchmal zutreffend		Sehr zutreffend
Mangelnde Sorgfalt hat mir schon ab und zu Probleme bereitet.	○	○	○	○	○
In den Bereichen die mir wichtig sind, bin ich nicht so erfolgreich wie ich möchte.	○	○	○	○	○
Ich bin auf dem Weg zum Erfolg.	○	○	○	○	○
Es gibt nur wenige Hobbys und Tätigkeiten, die ich aus Interesse verfolge.	○	○	○	○	○

Bitte wenden Sie nun das Blatt und beantworten Sie die Fragen auf der Rückseite!

Bitte geben Sie jeweils an, wie sehr Sie der untenstehenden Aussage zustimmen. Sie können "Arbeit" auch durch "Studium" ersetzen, falls dies besser zu Ihnen passt.	stimme überhaupt nicht zu	stimme eher nicht zu	stimme teilweise zu	stimme eher zu	stimme voll und ganz zu
Bei der Arbeit strebe ich danach, den Verpflichtungen und Aufgaben, die mir Andere übertragen, nachzukommen.	○	○	○	○	○
Ich tue alles, was ich kann, um bei der Arbeit einen Verlust zu vermeiden.	○	○	○	○	○
Bei der Arbeit motivieren mich meine Hoffnungen und Ambitionen.	○	○	○	○	○
Bei der Arbeit sind meine Prioritäten von einer klaren Vorstellung dessen beeinflusst, was ich anstrebe zu sein.	○	○	○	○	○
Ich konzentriere mich darauf, meine Arbeitsaufgaben korrekt zu erledigen, um meine Arbeitsplatzsicherheit zu erhöhen.	○	○	○	○	○
Arbeitsplatzsicherheit spielt für mich eine wichtige Rolle bei der Jobsuche.	○	○	○	○	○
Bei der Arbeit bin ich oft darauf fokussiert, Aufgaben zu erfüllen, die mein Bedürfnis nach Sicherheit unterstützen werden.	○	○	○	○	○
Ich bin darauf fokussiert, Arbeitsaufgaben zu erfüllen, die meine Weiterentwicklung vorantreiben.	○	○	○	○	○
Die Chance auf persönliches Wachstum ist für mich ein wichtiger Faktor, wenn ich nach einem Job suche.	○	○	○	○	○
Bei der Arbeit liegt der Fokus meiner Aufmerksamkeit darauf, die mir zugewiesenen Aufgaben zu erfüllen.	○	○	○	○	○
Die Erfüllung meiner Arbeitsaufgaben ist mir sehr wichtig.	○	○	○	○	○
Bei der Arbeit neige ich dazu, Risiken einzugehen, um Erfolge zu erzielen.	○	○	○	○	○
Bei der Arbeit bin ich bereit, Risiken einzugehen, um meine Arbeitsmöglichkeiten zu maximieren.	○	○	○	○	○
Ich bin sehr darauf bedacht zu vermeiden, mich bei der Arbeit der Gefahr möglicher Verluste auszusetzen.	○	○	○	○	○
Ich verbringe einen großen Teil meiner Zeit damit, mir vorzustellen, wie ich meine Wünsche erfüllen kann.	○	○	○	○	○
Bei der Arbeit bin ich darauf fokussiert, Misserfolge zu vermeiden.	○	○	○	○	○
Wenn ich die Chance hätte, an einem risikoreichen, aber vielversprechenden Projekt teilzunehmen, würde ich in jedem Fall zusagen.	○	○	○	○	○
Gäbe es in meinem Job keine Aufstiegsmöglichkeiten, würde ich mir höchstwahrscheinlich einen neuen suchen.	○	○	○	○	○

Vielen Dank! Wenn Sie alle Fragen beantwortet haben, wenden Sie sich bitte an die Testleitung.

Instructions

Prevention Focus. Am Ende der Erhebung, wenn alle Daten erhoben sind, werden unter den Teilnehmern vier 20€ Gutscheine verlost. An dieser Verlosung nehmen sie allerdings nicht teil, wenn sie in den nun folgenden 2 Experimentalteilen schlechter abschneiden als der Durchschnitt bzw. weniger Punkte haben als der Durchschnitt. Sie beginnen mit 30 Punkten. Bei jeder der zwei folgenden Teile, dem Konzentrationsspiel sowie dem Eye-tracking können Sie jeweils Punkte verlieren.

Pac-Car Task. Bei dem nun folgenden Konzentrationsspiel haben Sie 10 Leben, die Herzen unten links. Jeder Verlust eines Lebens bedeutet einen Punkt Abzug von Ihren 30 Punkten. In dem Spiel steuern Sie ein Auto durch ein Labyrinth, während Sie von Geistern verfolgt werden. Wenn Sie von einem Geist gefangen wurden, verlieren Sie ein Leben und somit einen Punkt. Es gibt mehrere Level. Sobald sie in einem Level 30 sec vor den Geistern geflüchtet sind, kommen Sie automatisch in das nächste Level. Die 30 sec. laufen unten in der Mitte ab. Insgesamt werden Sie 5 min spielen. Wenn diese Zeit abgelaufen ist, endet das Spiel automatisch. Das Auto Steuern Sie mit den Pfeiltasten der Tastatur und mit Enter startet das Spiel.

Eye-tracking Task. Bei dem nun folgenden Eye-Tracking werden Ihnen 20 Bilder gezeigt. Nach jedem Bild wird Ihnen eine Frage gestellt. Sobald Sie eine falsche Antwort geben wird ihnen ein weiterer Punkt von ihrer verbleibenden Punktzahl […] abgezogen.

Promotion Focus. Es gibt nun die Möglichkeit an der Verlosung von vier 20€ Gutscheinen teilzunehmen. An dieser Verlosung nehmen Sie allerdings nur teil, wenn sie in den folgenden 2 Experimentalteilen besser abschneiden als der Durchschnitt bzw. mehr Punkte sammeln als der Durchschnitt. Bei jedem der zwei folgenden Teile, dem Konzentrationsspiel sowie dem Eye-tracking können Sie jeweils Punkte sammeln.

Pac-Car Task. Bei dem nun folgendem Konzentrationsspiel ist es Ihre Aufgabe ein Auto durch ein Labyrinth zu steuern und dabei Kirschen zu sammeln. In dem Spiel gibt es mehrere Level. Sobald Sie alle Kirschen in einem Level gesammelt haben, kommen Sie automatisch in das nächste Level. Für jedes angefangene Level bekommen Sie einen Punkt. Insgesamt werden Sie 5 min spielen. Wenn diese Zeit abgelaufen ist, endet das Spiel automatisch. Das Auto Steuern Sie mit den Pfeiltasten der Tastatur und mit Enter startet das Spiel.

Eye-tracking Task. Bei dem nun folgenden Eye-Tracking werden Ihnen 20 Bilder gezeigt. Nach jedem Bild wird Ihnen eine Frage gestellt. Sobald Sie die richtige Antwort geben, bekommen Sie einen weiteren Punkt zu ihren bisherigen […] Punkten dazu.

Appendix C

Regression Models of Moderation Analyses

Table 1

Regression Model with RFQ Prevention as Moderator, Condition as Predictor, and Entry Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	791.53 [763.01, 820.05]	14.41	54.95	<.01
Condition (centered)	-41.48 [98.52, 15.56]	28.81	-1.44	.15
RFQ Prevention (centered)	-2.78 [-36.35, 30.79]	16.95	-.16	.87
Condition x RFQ Prevention	-10.94 [-78.07, 56.19]	33.91	-.32	.75

Note: R^2 = .02, p = .53, F (3,121) = .74

Table 2

Regression Model with RFQ Prevention as Moderator, Condition as Predictor, and Dwell Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	664.39 [639.59, 689.19]	12.53	53.04	<.01
Condition (centered)	17.95 [-31.64, 67.55]	25.05	.72	.48
RFQ Prevention (centered)	2.67 [-27.28, 32.62]	15.13	.18	.86
Condition x RFQ Prevention	16.69 [-43.21, 76.58]	30.25	.55	.58

Note: R^2 = .01, p = .79, F (3,121) = .35

Table 3

Regression Model with RFQ Prevention as Moderator, Condition as Predictor, and Average Fixation Duration as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	245.40 [235,39, 255.41]	5.05	48.55	<.01
Condition (centered)	21.79 [1.77, 41.81]	10.11	2.16	.03
RFQ Prevention (centered)	6.93 [-5.02, 18.89]	6.04	1.15	.25
Condition x RFQ Prevention	-9.37 [-33.28, 14.55]	12.08	-.78	.44

Note: R^2 = .23, p = .04, F (3,121) = 2.87

Table 4

Regression Model with RFQ Promotion as Moderator, Condition as Predictor, and Entry Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	787.90 [760.23, 815.56]	13.97	56.39	<.01
Condition (centered)	-48.56 [-101.92, 6.79]	27.96	-1.74	.08
RFQ Promotion (centered)	-50.14 [97.17, -3.11]	23.76	-2.11	.04
Condition x RFQ Promotion	-97.20 [-191.31,-3.09]	47.54	-2.04	.04

Note: R^2 = .27, p = .01, F (3,121) = 4.10

Table 5

Regression Model with RFQ PROMOTION as Moderator, Condition as Predictor, and Dwell Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	667.88 [643.16, 692.59]	12.49	53.49	<.01
Condition (centered)	22.28 [-27.25, 71.81]	25.02	.89	.38
RFQ Promotion (centered)	16.63 [-32.70, 65.96]	24.91	.67	.51
Condition x RFQ Prevention	83.31 [-15.59, 182,21]	49.96	1.67	.10

Note: R^2 = .03, p = .19, F (3,121) = 1.61

Table 6

Regression Model with RFQ Promotion as Moderator, Condition as Predictor, and Average Fixation Duration as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	246.08 [236.16, 256.00]	5.01	49.11	<.01
Condition (centered)	23.42 [3.62, 43.22]	10.00	2.34	.02
RFQ Promotion (centered)	16.00 [-2.01, 34.02]	9.10	1.76	.08
Condition x RFQ Promotion	15.95 [-20.09, 52.00]	18.21	.88	.38

Note: R^2 = .07, p = .06, F (3,121) = 2.60

Table 7

Regression Model with WRF Prevention as Moderator, Condition as Predictor, and Entry Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	788.29 [760.26, 816.32]	14.16	55.68	.01
Condition (centered)	-48.18 [-104.25, 7.88]	28.32	-1.70	.09
WRF Prevention (centered)	-31.27 [-82.03, 19.49]	25.64	-1.22	.23
Condition x WRF Prevention	-60.71 [-162.24, 40.81]	51.28	-1.18	.24

Note: R^2 = .04, p = .19, F (3,121) = 1.62

Table 8

Regression Model with WRF Prevention as Moderator, Condition as Predictor, and Dwell Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	666.28 [641.35, 691.21]	12.59	52.91	<.01
Condition (centered)	22.93 [-26.93, 72.80]	25.18	.91	.36
WRF Prevention (centered)	8.26 [-38.14, 54.67]	23.44	.35	.73
Condition x WRF Prevention	3.38 [-89.43, 96.19]	46.88	.07	.94

Note: R^2 = .01, p = .81, F (3,121) = .32

Table 9

Regression Model with WRF Prevention as Moderator, Condition as predictor, and Average Fixation Duration as the dependent variable

	b	*SE B*	*t*	*p*
Constant	245.11 [235.09, 255.13]	5.06	48.43	<.01
Condition (centered)	22.50 [2.45, 42.54]	10.12	2.22	.03
WRF Prevention (centered)	-1.01 [-17.37,15.34]	8.26	.-12	.90
Condition x WRF Prevention	-23.67 [-56.39, 9.04]	16.52	-1.43	.15

Note: R^2 = .06, p = .05, F (3,121) = 2.62

Table 10

Regression Model with WRF Promotion as Moderator, Condition as Predictor, and Entry Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	789.12 [759.88, 818.36]	14.77	53.43	<.01
Condition (centered)	-45.04 [-103.52, 13.44]	29.54	-1.52	.13
WRF Promotion (centered)	-11.81 [-68.49, 44.86]	28.62	-.41	.68
Condition x WRF Promotion	-42.82 [-156.18, 70.54]	57.25	-.75	.46

Note: R^2 = .03, p = .42, F (3,121) = .96

Table 11

Regression Model with WRF Promotion as Moderator, Condition as Predictor, and Dwell Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	665.28 [640.25, 690.31]	12.64	52.63	<.01
Condition (centered)	23.99 [-26.07, 74.05]	25.28	.95	.34
WRF Promotion (centered)	16.62 [-40.91, 74.15]	29.06	.57	.57
Condition x WRF Promotion	-24.97 [-140.03, 90.10]	58.12	-.43	.67

Note: $R^2 = .01$, $p = .75$, $F(3,121) = .41$

Table 12

Regression Model with WRF Promotion as Moderator, Condition as Predictor, and Average Fixation Duration as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	245.18 [235.43, 254.94]	4.93	49.78	<.01
Condition (centered)	20.79 [1.28, 40.29]	9.85	2.11	.04
WRF Promotion (centered)	-13.33 [-32.14, 5.49]	9.50	-1.40	.16
Condition x WRF Promotion	-23.85 [-61.48, 13.78]	19.00	-1.26	.21

Note: $R^2 = .07$, $p = .08$, $F(3,121) = 2.32$

Table 13

Regression Model with Points in Pac-Car as Moderator, Condition as Predictor, and Entry Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	793.47 [765.84, 821.11]	13.96	56.85	<.01
Condition (centered)	-35.49 [-90.77, 19.79]	27.92	-1.27	.21
Points (centered)	-10.62 [-20.73, 0.20]	5.29	-1.94	.05
Condition x Points	-15.58 [-36.46, 5.30]	10.55	-1.14	.14

Note: R^2 = .06, p = .10, F (3,121) = 2.14

Table 14

Regression Model with Points in Pac-Car as Moderator, Condition as Predictor, and Dwell Time as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	665.60 [640.55, 690.64]	12.65	52.62	<.01
Condition (centered)	15.99 [-34.19, 66.17]	25.35	.63	.53
Points (centered)	5.91 [-2.60, 14.43]	4.30	1.37	.18
Condition x Points	.61 [-16.39, 17.62]	8.59	.07	.94

Note: R^2 = .02, p = .42, F (3,121) = .94

Table 15

Regression Model with Points in Pac-Car as Moderator, Condition as Predictor, and Average Fixation Duration as the Dependent Variable

	b	*SE B*	*t*	*p*
Constant	246.54 [236.30, 256.78]	5.17	47.69	<.01
Condition (centered)	23.63 [3.20, 44.06]	10.32	2.29	.02
Points (centered)	-2.40 [-6.27, 1.46]	1.95	-1.32	.22
Condition x Points	-4.45 [-12.15, 3.25]	3.89	-1.14	.25

Note: $R^2 = .06$, $p = .14$, $F(3,121) = 1.88$

Cross Correlations

Table 16

Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Age																			
2	Correct Answers	.07																		
3	Points in the Game	.16	.13																	
4	Duration of having the license	.96**	.07	.14																
5	Frequency of driving	-.13	.11	-.11	-.07															
6	Km driven per yeah	.14	.17	.10	.22*	.38**														
7	RFQ Promotion	.12	.10	-.02	.12	.17	.13													
8	RFQ Prevention	-.07	-.09	-.26**	-.05	.07	-.13	.13												
9	WRF Promotion	.01	.08	.26*	.03	.10	.20*	.20*	-.25**											
10	WRF Prevention	-.27**	-.11	-.18*	-.27**	.19*	.07	.13	.34**	.07										
11	Entry Time critical	.10	-.06	-.16	.10	-.13	-.04	-.16	-.01	-.03	-.08									
12	Entry Time neutral	-.01	-.08	-.15	.07	.17	-.03	.06	.06	-.06	.06	.12								
13	Dwell Time critical	-.01	.21*	.13	.03	.02	.14	.07	.02	.04	.02	-.37**	.08							
14	Dwell Time neutral	0	.05	.07	-.01	-.10	.09	-.13	-.08	-.06	.04	.05	-.24**	.30**						
15	Avergae Fixation Duration critical	.11	.04	-.06	.12	-.08	.01	.13	.10	-.17	-.02	-.10	.02	.40**	.43**					
16	Average Fixation Duration neutral	.04	0	.01	.02	-.09	-.11	-.07	.10	-.11	-.04	.01	-.12	.25**	.59**	.62**				
17	First Fixation Duration critical	.08	.03	.09	.09	-.07	.08	.11	.08	-.12	-.04	-.12	-.02	.39**	.39**	.87**	.50**			
18	First Fixation Duration neutral	.03	-.01	.01	.01	-.14	-.14	-.10	.08	-.16	-.03	.05	-.07	.18*	.55**	.54**	.93**	.44**		
19	Revisits critical	-.15	.21*	.05	-.13	.01	.04	.04	-.03	.18	.06	-.32**	.04	.51**	-.06	-.22*	-.18*	-.08	-.20*	
20	Revisits neutral	-.10	.16	.01	-.10	-.01	.18*	-.11	-.15	.07	.06	-.09	-.15	.26**	.50**	0	-.13	.03	-.10	.19*

** p>0.05*

*** p>0.01*