



# Risk Perception and Security Attitudes: the Role of Human Values on Brazilian Police Officers and Civilians

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Accepted: 13 April 2022

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## Abstract

Studies on crime and parking facilities also appear to have a strong focus on car theft with small emphasis on psychological and cognitive variables to investigate potential crimes in this environment. Furthermore, there is limited literature on such crimes in South America, particularly in Brazil. This study has the objective of offering an instrument to assess risk perception in public and private parking lots of free circulation, as well as to understand and describe how individual values influence this variable regarding civilians' and police officers' perception of hazards present in free circulation public and private parking lots. A psychometrically valid risk perception and security attitude scale is presented. The scores of the two groups were predicted by human values. It was observed a mapping of risk situations in parking lots, as well as attitudes that can prevent crimes. Implications for the development of social public safety policies are discussed.

**Keywords** Humans values · Risk perception · Security attitude · Criminal prevention

## Introduction

Police psychology is an area of study concerned with the safety facets of human behavior, a specialty area that was formally recognized by the American Psychological Association in 2013 (Alispahić and Alispahić 2021; Navarro 1999). However, this area is still rather understudied in Brazil, with only very few studies investigating how security issues in Brazilian samples may compare with other regions of the world. In recent years, the State Secretariat for Public Security of the Brazilian Federal District (SSP-DF) has strived to adopt evidence-based interventions that aim to diminish crime rates in the region. However, cultural characteristics are likely to influence the behaviors related to safety and security, and a lack of studies developed in the Brazilian context makes it difficult to implement evidence-based approaches. The current paper aims to address this important

gap by presenting a measure of risk perception developed primarily for the Brazilian context. While doing so, we test the psychometric properties of this newly developed measure and explore the predictive value of such measure in relation to other established constructs in values theory (Schwartz 1992, 2012).

The development of this measure was based on samples of civilians and police officers. We sought to develop a psychological scale to assess the constructs of risk perception and security attitudes. To test for construct validity, we compared the scores of police officers and civilians regarding their perception of risk in parking lots of the Brazilian Federal District (DF). The police officers recruited in the study belong to the Brazilian Federal District Military Police (PMDF) which is comparable to the US State Police, a police force unique to each American state, having state-wide authority to conduct law enforcement activities and criminal investigations. In the present article, the term DF State Police will be used to designate the Brazilian Federal District Military Police (PMDF). One important implication of this study is to provide evidence-based tools for the development of public security policies for the surveillance of car parks and related environments.

Offenders typically take advantage of the anonymity facilitated by large crowds to target their victims (Felson and Boba 2010). Several crimes take place in these scenarios,

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such as illegal sales, use of substance, fights, thefts, robberies, rapes, and other types of violence are carried out in both public and private parking lots. Parking lots in commercial areas act as facilitators for crimes of opportunity, which are carried out without specific planning by the perpetrator and are encouraged when ideal conditions exist for the crime. Lino and Matsunaga (2018) also show that such environments can elicit specific conditions that create opportunities and motivate criminals to select their targets.

Based on the crime prevention through environmental design (Robinson 1996), we assume that the physical characteristics of parking lots can reduce crime. Searching the SSP-DF database for 2020, we observed a total of 10,362 crime occurrences related to parking lots. Situational crime prevention measures have been used in parking facilities resulting in reductions of both crime (Boyne 1991) and fear of crime (Smith 1996). Within this context, the general aim of this paper is to present an instrument to assess risk perception in public and private parking lots of free circulation, as well as to understand and describe how individual values influence risk perception among civilians and police officers. We tested whether the perceptions of these groups, who commonly use public and private parking lots, converge to a unique understanding of risk perception. Through the use of a psychometric valid measure, we seek to collect and gather data that can contribute to the development of a concept of risk perception, applicable to parking users. We hope that this tool can further provide guidance for crime prevention.

## Hypotheses Development

Most studies focusing on parking lots stem from the fields of traffic engineering (Vo and Wets 2016) and environmentalism (Vera-Gómez et al. 2016). Some research on parking lots address the expansion of many kinds of crimes in large cities (Newman and Freilich 2012) and effects of environmental design on crime prevention in American university parking lots. Based on crime prevention through environmental design principles, Tseng et al. (2004) explored design changes intended to create an environment that reduces parking lot crimes. Naturally, studies on crime and parking facilities also appear to have a strong focus on car theft (Clarke and Goldstein 2003; Laycock and Austin 1992). For instance, Roach et al. (2017) examined leaflet campaigns developed to advise vehicle owners into thinking more carefully when leaving their vehicles unattended overnight. The present study uses psychological and cognitive variables to investigate potential crimes in parking lots as well as perceptions of risk.

Perceptions of risk have long been of great interest to scholars, although it is still considered an emerging theme in empirical psychology (Aven and Renn 2010). The concept

of risk itself is intrinsically associated with social elements and its perception (Slovic 2010). Its definition concerns characterizing risk as the chance of injury, damage, or loss (Webster 1983) and involves understanding factors such as uncertainty, fear of crime, controllability, equity, and the prediction of harmful events for future generations (Slovic 2010). Kasperson et al. (1988) state that the study of risk perception plays a fundamental role in the social amplification of risk. Through the perception of risk, it is possible to visualize an occurrence of an adverse event, such as a robbery carried out in a parking lot for example, and its resulting social amplification that refers to the adverse impacts of such an event that may extend far beyond the direct damage to victims and property, resulting in massive indirect impacts on the society (Torquato 2011). Therefore, risk perception is a cognitive and conscious judgment (Sjöberg 1998) about the subjective probability of occurrence of a dangerous event. It is dependent on the properties of human perception and probability judgment (Sjöberg 2000).

As a perceptual variable, risk is intrinsically related to the concept of attitudes (Kasperson et al. 1988). Differently from behaviors, attitudes refer to subjective evaluations of ideas and people beliefs (Ajzen and Fishbein 2005), while behaviors are necessarily observable (Dedonder et al. 2010). Perhaps the best-known scholars in the study of attitude were Thurstone (1928) and Likert (1932), who developed different techniques to measure an attitude, both of which were named after them. Thurstone (1928) established the concept of attitude as an affect for or against a psychological concept. Allport (1961) conceptualized attitudes as a mental and neurological condition of readiness, which stems from personal experiences and may influence individuals' responses to a variety of situations.

An influential framework of attitudes describes this concept as including three components: cognitive, affective, and behavioral (Ajzen and Fishbein 2005). The behavioral component consists of a person's tendencies to behave in a particular way toward a situation. Eysenck and Gudjonsson (2018) understand this component as a strong predictor of crime and its prevention. For the authors, accurately perceiving criminal behavioral intent and its environment is an effective approach for crime prevention. This idea has been corroborated by several studies (e.g., Segal 2021), showing that perceptions of risk are directly related to how people react and behave in different environments, where safer attitudes may be better shaped to promote crime prevention (Glasman and Albarracín 2006; Sian 2017). Attitudes related to security and crime prevention must be interconnected with the perception of the risk that a given environment can represent.

Measures of perception of risk and security attitudes found in the literature commonly relate to risks associated with areas of marketing and economic decisions

(Finucane et al. 2000; Slovic 1987), public health (Blais and Weber 2006; Miller 2010), psychiatry (Lifshitz et al. 2016), financial decisions (Weber et al. 2002), tourism (Wolff et al. 2019), and more recently, the COVID-19 pandemic (Jaspal et al. 2020). All these studies were conducted in either the USA or Europe, so only few studies have examined perceptions of risk and security attitudes towards crime outside the so-called WEIRD countries (an acronym for Western, Educated, Industrialized, Rich, and Democratic societies; Henrich et al. 2010). A handful of those studies were conducted in Brazil. Pinto-Gouveia et al. (2003) studied the perception of risk in relation to specific psychopathologies. Klein and Luciano (2017) investigated the concept of perceived severity in the context of information security, while Pacheco (2012) studied the perception of risk in the context of occupational safety and health, and Egelman and Peer (2015) in terms of security in the use of computers. Considering this gap in literature regarding studies on perception of risk in Brazil, we propose that a measure of perception of criminal risk in parking lots should yield two factors, related to risk perception and security attitudes (H1).

Many models and theories aim to explain the role of human values in risky behaviors, security attitudes, and perception of risk. For instance, Satalaksana et al. (2019) investigated risk perception, risk behavior, and basic human values in Indonesia and found that risk perception correlated with risk behavior and the value of power, as described in Schwartz' values theory (Schwartz 1992, 2012). In a study conducted in 14 European countries, Goossen et al. (2016) suggested that values are relevant predictors when trying to account for variation in crime. Their results indicate that universalism and benevolence values are negatively associated with crime rates, while power, achievement and stimulation values are positively associated with odds of committing a crime. When investigating the relationship between basic human values and different security and violent attitudes among Swedish college students, Sundberg (2014) found that the power value was a predictor of violent attitudes especially for males. In the Brazilian context, there are no studies examining values, perception of risk, or security attitudes among Brazilian civilians or police officers. Based on the aforementioned literature, it is plausible to assume that human values can be as relevant in the study of crime and perception of risk in Brazil.

Values are conceptualized as fundamental principles that both shape the perspectives and actions of an individual. Schwartz's (1992) values theory suggests that values are desirable, trans-situational goals that carry different levels of importance for each person and serve as principles that guide people's interpretation of experiences, attitudes, feelings, and behaviors. Schwartz's theory suggests that values are often expressed as personal norms, which are principles that individuals maintain for themselves, but

influenced by societal factors (Schwartz et al. 2012). Moreover, values often connote virtues and morality or ethical stances (Lefkowitz 2017) and thus generate a motivational influence over decision choices, attitudes, and behaviors (Feather 1995; Schwartz 1992). Indeed, in earlier works, Lewin (1942) discussed the influence of values on behaviors, and considered that values define which perceptions are relevant, either negatively or positively, to an individual in a defined context.

Throughout the early 2000s, several measures of values were developed and validated in an attempt to demonstrate that values are a fundamental human concept. Schwartz Portrait Values Questionnaire (PVQ) describes 10 motivationally distinct value orientations suggested by the values theory (Schwartz 1992). After tests in more than 80 countries in different world regions, it was proposed a 19-values orientation of the Refined Values Theory (Ciecuch et al. 2014; Schwartz et al. 2012), and a four High Order Values model (HOV) emerged. These four higher order values specify the dynamics of conflict and congruence among the values and include all the core values recognized in most national and societal groups around the world. The four HOV form two basic conceptual dimensions: (1) *openness to change* versus *conservation*, where values that emphasize independent thinking and action (i.e., stimulation, self-direction, and hedonism, which form the openness to change HOV), oppose values that emphasize self-restraint, preservation of traditional practices and protection of stability (i.e., security, conformity, and tradition — the conservation HOV); and (2) *self-enhancement* versus *self-transcendence*, which includes in the first pole the values of power, achievement, and hedonism, and in the opposite, the values of universalism and benevolence. The latter dimension contrasts values that privilege the interests of the individual, even at the expense of others, to the former that expresses values which motivation refers to the concern for the well-being of others and nature. Hedonism is a component of both openness to change and self-enhancement. By 2012, Schwartz et al. presented a refinement to the theory of values; instead of the 10 initial value types, the researchers identified 17 value types, in addition to proposing 2 new value types, face and humility values. This 20-year period of research, from 1992 to 2012 improved the delimitation and conceptualization of values, better defining and describing the values previously presented by the theory, and empirically increasing their predictive value (Schwartz et al. 2012). For a detailed comparison between the values proposed in the theory, please see Table S1 in Supplementary Materials. It should be noted, however, that the refined theory of values did not invalidate the proposed structure of the 10 values discussed earlier. It presents the possibility of a refined value structure by grouping the values in a similar way to the original theory that proves to be more useful for the researcher, enhancing the

values' prediction over other variables (Torres et al. 2016). The 19 value types of the refined theory also focus on achieving personal or social results, promote growth and self-protection, express openness to change or preservation of the status quo, and promote self-interest or the transcendence of self-interest in the service of others (see Fig. 1).

Human values are important constructs in the psychosocial concepts that are considered central to the prediction of perception, attitudes, and behaviors (Schwartz et al. 2012), including those related to crime prevention. The values of conformity, tradition, security, self-restraint, preservation of traditional practices, and protection of stability are all considered to be important for crime prevention (e.g., Sian 2017). Other values may also be related with a hindrance to preventive attitudes and behaviors towards crime, such as self-direction, stimulation, independent thinking, and self-transcendence. Self-enhancement HOV includes the values of achievement and hedonism, which are clearly focused on the individual, even at the expense of others. Due to this characteristic and based on literature, no prediction can be made on the role of self-enhancement HOV on preventive attitudes or perception of risk. Thus, drawing from this theory, we suggest that:

H2: Values will predict risk perception and security attitudes in such a way that conservation HOV values will offer a positive prediction to these variables, while;

H3: A negative relation will be found in the prediction of perception of risk and security attitudes by openness to

change and self-transcendence HOVs, especially universalism values.

Although not investigating perception of risk, some studies support these relations between values and aggression. Knafo et al. (2008) observed that conservation HOV correlated with self-reported aggressive behavior, explaining 12% of the variance in aggression among Arab and Jewish Israeli. In another study in Israel, Knafo (2003) also found that universalism values related negatively to aggression, with power values correlating positively with it. Other study conducted in Italy (Menesini et al. 2013) found that self-transcendence HOV related negatively to self-report aggression (i.e., hurting someone directly). When others than the perpetrator are asked, evidence suggest that this relationship is maintained, with self-transcendence HOV and conservation (especially conformity and security values) relating negatively to aggression (Benish-Weisman 2015, 2019; Benish-Weisman and McDonald 2015). When individual values are studied, most investigations point out to universalism negatively relating to aggression (e.g., Vecchione et al. 2016). Perhaps this is so because universalism relates to a limited set of behaviors in such a way that these values present an exclusive and strong relation with aggression (Benish-Weisman 2019).

The relationship between police and the civilian population has come under media scrutiny in the past few years due to incidents involving Black citizens, which is being reflected in the recent studies involving these two groups (e.g., Nix et al. 2020). However, it appears to be an agreement in literature that crime reports made by police officers are more complete or accurate than reports and identifications by civilian observers (Liberati 2008; Wilson and Herrnstein 1985), which has an impact on their perception of risk and security-related attitudes because police officers are more observant of the crime-relevant aspects of an incident than civilian observers (Vredeveltdt et al. 2017). On the other hand, data on police victimization are revealing about their perceptions of risk. Research indicates that the number of police officers killed by violent crimes in Brazil reached 194 in 2020 (FBSP 2021). This number represents an increase of 12.8% compared to 2019. It is interesting to note that about 60% of these cases occurred while the officer was not on duty. In addition, around 85% of those crimes were committed using firearms at night or dawn (58%). That is, officers become more frequent victims in specific contexts and circumstances. Thus, even being trained to act in risky situations, police officers are subject to several violent situations, which impacts their perceptions of risk and their attitudes. In this sense, by drawing from our findings, we also aim to provide insights for police training.

Finally, we expect that police officers will have higher scores on the risk perception and security attitudes measure when compared to civilians, since the former is more

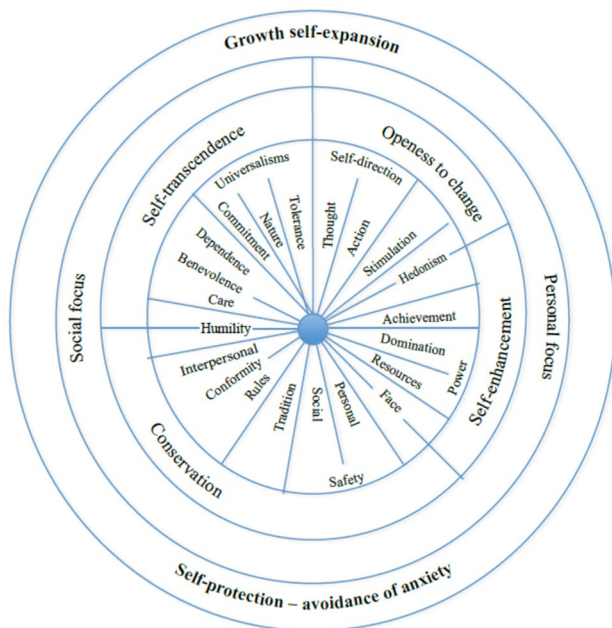


Fig. 1 Motivational circle according to the refined values theory (adapted from Schwartz et al. 2012)



knowledgeable of the hazards and risky behaviors in parking lots. However, and considering the assumption that values are principles that guide similarly all people's interpretation of experiences, we propose that:

H4: The relations described on H2 and H3 will be similar for police officers and civilians, with no difference between the groups.

## Method

The study included two phases. In Phase 1, two focus groups were conducted to generate items for the construction of a measure for risk perception and security attitude. After collection, these data were analyzed with a content analysis software and 20 items were generated. In Phase 2 new data were collected with police officers and civilians using the risk perception measure generated in Phase 1, along with the values scale. Data from this phase were then used to test the hypotheses proposed. Methodological details about each phase are presented as follows.

### Phase 1: Measure Construction

The first step in constructing a measure that would capture the risk perception and security attitudes of police officers and civilians towards hazards commonly present in parking lots involved a subsample of these two groups. Based on these participants' responses, the measure was tested as follows.

### Participants

Two focus groups were conducted with the purpose of development of items regarding the variable of interest. For the first group 6 civilians (even split in sex; age  $M=31.2$  years old;  $SD=10.8$ ; 70% college education, 30% high school) were recruited by investigators in shopping areas of Brasilia. Participants were invited aiming to compose a homogeneous group regarding their experiences using parking lots (Krueger and Casey 2015). The selection criteria were driven by convenience and not randomly assigned. The second group included 7 State police officers (85.7% male; age  $M=32.2$  years old;  $SD=6.7$ ; 100% college education) recruited from the Special Tactical Mobile Police Battalion, with daily experience with crime prevention in parking lots and other environments. Police officers were recruited after authorization was obtained from the General Command of the PMDF. In this case, the selection criterion was driven by police after our request to include the Special Tactical Mobile Police Battalion. After the focus groups were conducted and items were developed, new samples were recruited for an exploratory factor analysis (EFA) of the

proposed measure including 93 police officers and 104 civilians. In the police officers' sample, average age was  $M=46.5$  ( $SD=6.08$ ), 86.3% were married, 100% had college education and were male. A total of 78.1% drove a vehicle everyday and 20% at least 5 times a week. Average age for the civilians' sample was  $M=44.8$  ( $SD=9.78$ ), 51.9% were male, 62.9% married, 96.7% had college education, 64.4% drove a vehicle everyday and 32.7% at least 5 times a week.

All participants had a valid driver's license for at least 10 years and routinely used parking lots either public, private, or at their jobs. They were provided with a consent form consisting of information regarding confidentiality, purpose, procedures, and duration of the study (Krueger and Casey 2015). They were also presented with the contact information of the principal investigators and information regarding participant rights, such as the right to withdraw from participation at any time without penalty.

### Procedure and Materials

Focus groups (Creswell et al. 2011) were ran in psychology laboratories at the University of Brasilia, Brazil, containing sound recording equipments, and were moderated by trained researchers. After introductions, each participant received a demographics questionnaire containing questions about sex, age, education, place of work, occupation, qualification, time owning the drive's license, frequency of driving, and of usage of public parking lots. It was ensured that participants had understood the session's objective ("Today we would like to discuss behaviors, personal experiences, and observations associated with driving and parking in garages or parking lots, that is, when someone stops longer than necessary for loading/unloading or boarding/disembarking"). Police officers were also encouraged to talk about the most frequent types of occurrences in parking lots and the profile of victims attended to. Refreshments and snacks were provided for participants. Sessions lasted in average 1.5 h and recordings of the discussion were later transcribed. For the EFA phase, the 197 participants responded the items developed using an 7-points Likert-type scale (1 = totally disagree; 7 = totally agree) in paper-and-pencil format. In average, participants completed the questionnaire in 15 min.

### Data Analysis

Transcribed data from focus groups were submitted to a textual analysis performed with the IRAMuTeQ (*Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires* [R interface for Multidimensional Text and Questionnaire Analyses]) software (Ratinaud 2009). IRAMuTeQ provides qualitative analysis that goes from basic lexicography to multivariable analysis (Ramos et al. 2019). For this study, we proceeded a Descending Hierarchical

Classification (DHC), which aims to obtain classes of text segments that present similar vocabulary to each other, and different vocabulary from the text segments of other classes (Camargo and Justo 2013). The software identifies the text segments present in the text transcribed considering the frequency of words, vocabulary used, and lemmatization of words, producing a “dictionary” or *corpus* for that specific group (Ramos et al. 2019). From this point, a contrast analysis was conducted in which the similarities and differences between the elementary context units were identified. That way, the software indicates the main classes present in the speech from a statistical pattern inherent to the corpus submitted (Camargo and Justo 2013). Following the software’s requirements, the transcribed interviews were standardized to adjust punctuation and capitalization, exclude off topic sentences and meaningless expressions, correct grammar, and include words implied by the participants, when needed. The software was programmed to consider adjectives, verbs, and nouns. Groups were analyzed independently. Based on the results obtained from IRAMuTeQ, it was performed a content analysis of the categories obtained and the content of each category was described. Once content analyses were performed and items developed, we performed the Velicer’s minimum average partial test and the parallel analyses to determine the number of factors to be extracted. Next, we applied an exploratory factor analysis (EFA) using Stata 16.1 (StataCorp 2021) with the numbers of factors indicated.

### Results for the Measure Construction

Data from both samples were analyzed independently. For both focus groups, two main categories were identified. The first was named perception and describes cognitive and perceptive strategies assessed by individuals in a dangerous situation, and the people involved on them. Attitudinal aspects such as readiness to act, intentions, and related social objects are consolidated through the attitude category (22.4%). Considering the DHC obtained with the civilian group, five classes were identified (please see Fig. S1 in the Supplementary Online Material). The first two classes are associated with the perception category (59.2%) and had content related to avoidance (with words such as *imagining, assault, situation, not reacting, and suffering*) and the profile of possible offenders (*perceiving, dressed, shorts, clothes and on drugs*). The remaining three classes are associated with attitudes (40.8%), referring to behavioral intentions (*intention, calling, observing, and ready to shout*), actions and pieces of the vehicle (*turning on, close window, door, key, booth, and exit*), and people possibly involved in the situation (*son, pick-up, mother, brother, miscreant, boy, man, stranger, and approaching*). The DHC for the police officers’ group (Fig. S2) also pointed out to 2 categories and 5 classes, but with some aspects not included by the

civilian’s responses. In this sample, the “perception” category (67.1%) included a class that relates to illegal acts commonly observed in parking lots (*robbery, larceny, and misdemeanor*). The profile of possible offenders seems to be more criminal-related and less descriptive of their status or dress code (*criminals, addicts, and rapist*). The third class is related to equipment and environment features that can help in crime avoidance (*camera, illuminated, and wilderness*). Within the category “attitudes” (32.9%), the two integrating classes refer to intentions that promote safe behavior on the part of victims (*alert, observe, and facilitate*) and actions that can be performed by police in the situation (*arrest, be present, and specialized job*).

Results found in the qualitative phase that aligned with literature on crime and offenders (Brantingham and Brantingham 1993; Felson and Boba 2010; Clarke and Derek 1985) were used in the development of 22 items covering the categories and classes presented. This first version of the items was analyzed by two specialists in public security who were familiar with the qualitative analysis, hereby considered experts for the item’s semantic revision. Experts were provided both with a version of the items and the definitions of “perception of risk” and “security attitudes” constructs and asked to indicate if items were broad and clear enough to cover the constructs. Once agreement was reached in this first step, a content analysis of the items was performed by five experts in public security and psychometrics. Following Zamanzadeh’s et al. (2015) recommendation experts evaluated items on three criteria: clarity/pertinence of language, theoretical relevance, and adequacy of items to construct definitions. Analyses for each item were made in 4-point ordinal scale (1 = not [*clear/pertinent; relevant; adequate*] to 4 = highly [*clear/pertinent; relevant; adequate*]). Experts’ agreement regarding each item was quantified by the Content Validity Ratio (CVR). CVR varies between 1 and 0, with higher scores indicating further agreement of experts on pertinence, relevance, and adequacy of an item to an instrument (Zamanzadeh et al. 2015). Items with CVR scores equal or larger than 0.80 reflect an acceptable level. All 22 items obtained CVR > 0.80 and were retained in this step (see Table S2).

In the final step for the development of the measure, EFA was performed based on polychoric correlation matrices. To compute the factorial scores, we used the mean scores of the valid items, with loading equal or greater than |0.40|. Reliability of the scales was examined by Cronbach’s alpha and McDonald’s omega. Two items did not reach the factor loading and hence were excluded. The 20-items final solution led to a 2-factorial structure. The first factor explained 40% of the variance and comprises 11 items related to environmental features that trigger perceptions of risky parking lots ( $\alpha=0.91$ ). The second factor explaining 33% of the variance was formed by 9 items related to behavioral intentions that

are associated to attitudes towards preserving safety in the same situation ( $\alpha=0.88$ ). We named the first factor as risk perception and second factor as security attitudes. Higher scores mean that respondents will present a higher expression of the two factors. Details about the EFA are provided in the Supplementary Table S3.

## Phase 2: Main Study

### Participants and Procedure

Respondents in Phase 2 were 211 police officers and 219 civilians recruited in a similar way as in the measure construction phase. All participants responded to a questionnaire in a paper-and-pencil format. In the sample of police officers, 91.4% were male, with average age  $M=44.7$  ( $SD=9.01$ ), 81.3% were married, 97% had college education or higher. Having most male participants with higher education is coherent with the DF State Police population. A college degree is required from cadets to be part of its ranks since 2012 (PMDF 2020). Also, data shows that PMDF has a 1% limit of female participation during the selection process (Costa et al. 2012). All of them had a driver's license and most for at least 3 years (88.5%). Of those 82.9% drove a vehicle every day, and only 0.3% rarely use a parking lot. Average age for the civilians' sample was  $M=43.1$  ( $SD=11.3$ ), 53.9% were male, 55.1% married, 88.2% had college education or higher, all had a driver's license (79.8% for at least 3 years) and 78.4% drove a vehicle every day and 2.2% rarely use a parking lot.

### Instruments

**Perception of Risk and Security Attitude** The 20-item scale assesses two factors regarding the sense of risk perception for being in parking lot (e.g., "Staying dating inside the vehicle in dark parking lots facilitates criminal action"; 11 items) and attitudes related to preserving safety in the same situation (e.g., "I should avoid parking the vehicle in isolated and empty parking lots"; 9 items). A higher score means higher perception of risk and security attitudes in a parking lot, respectively. Participants responded to items on a 7-point scale ("strongly disagree" to "strongly agree").

**The Portrait Values Questionnaire—Refined (PVQ-R)** PVQ-R (Schwartz et al. 2012) represents a refinement of the original PVQ aforementioned. The questionnaire includes 57 brief descriptions of different people, each one with the goals, aspirations, or desires implicitly related to the value in question. Of those, 3 items relate to each of 19 values described previously uses an ordinal scale with six points (1 = not like me at all; 6 = very much like me). A version of the PVQ-R

validated by Torres et al. (2016) in Brazil was used. Reliability indexes vary from  $\alpha=0.89$  to  $\alpha=0.82$ .

### Demographic Questionnaires

Fifteen questions about gender, age, education, owing a driver's license and for how long, how often they drive a vehicle, and usage of parking lots to park their cars.

### Data Analysis

H1 proposes a measure of perception of risk in parking lots with two factors, related to risk perception and security attitudes. Based on the EFA results in Phase 1, we ran a confirmatory factor analysis (CFA) using Stata 16.1 (StataCorp 2021). We used multiple fit indexes for the evaluation of the models' covariance structures, such as  $CFI>0.90$  (Bentler 1990),  $RMSEA<0.06$  (Browne and Cudeck 1993), and  $SRMR<0.08$  (Hu and Bentler 1999), and included the  $\chi^2/d.f.$  ratio which is a badness-of-fit index. The estimation method used was the weighted least square mean and variance adjusted (WLSMV), which is specifically designed for ordinal data and is less biased and more accurate than the robust maximum likelihood (Kline 2016). To achieve identification, the variance of latent factors was set at 1, allowing the loadings to have free estimates. The remaining hypotheses were tested with hierarchical regressions, also using Stata 16.1 (StataCorp 2021). Perceived risk and security attitudes were used as criteria variables, and both factor scores for the 19 values and the 4 HOV were entered as predictors.

## Results

Individuals and cultural groups differ in their use of the response scale (Closs 1996). These differences in scale use often distort findings and lead to incorrect conclusions, especially in the case of the PVQ-R (Schwartz et al. 2016). For most purposes, it is necessary to make a correction for individual differences in use of the response scale before performing analyses. Such correction refers to compute each respondent's mean score across all value items for centering the scores of each individual's 19 values around that individual's mean rating (Schwartz et al. 2017; Torres et al. 2016). These procedures were taken before obtaining the following results.

**Associations** The high number of men in the samples (91.4% of police officers, and 53.9% of civilians) might add a confounding variable in the analyses. Thus, a point-biserial correlation was performed to test the association of gender with the variables of interest. The point-biserial correlation is a special case of the Pearson correlation aimed to measure of

the strength of association between a binary and continuous-level variables (Howell 2004). To examine all other relationships across variables, we performed Pearson's correlations. Sixteen out of 25 correlations were significantly associated with gender, reinforcing the need to control this variable in further analyses. When applicable, ANCOVAs controlling for gender were used to test for differences between the variables investigated, and Glass'  $\Delta$  was used as the estimated effect size. Participants presented a higher score for the perception of risk ( $M=9.32$ ;  $SD=0.96$ ) when compared to security attitude ( $M=8.60$ ;  $SD=1.38$ ) ( $t=155.58$ ;  $d.f.=428$ ;  $p<0.001$ ; glass'  $\Delta=1.44$ ). When sample type was observed, it was found that police officers had higher scores for perception of risk ( $M=9.31$ ;  $SD=0.98$ ) when compared to civilians ( $M=8.94$ ;  $SD=1.41$ ), yielding a significant difference between groups ( $F=4.57$ ;  $d.f.=429$ ;  $p<0.001$ ), but not for security attitudes (police officers:  $M=8.64$ ;  $SD=1.30$ ; civilians  $M=8.56$ ;  $SD=1.46$ ; *n.s.*). Table S4 on Supplementary Materials displays descriptive statistics for all measures of the study.

Regarding values, police officers had higher significant scores for security-societal (police officers  $M=3.36$ ;  $SD=0.71$ ; civilians  $M=2.92$ ;  $SD=0.76$ ;  $F=11.13$ ;  $d.f.=429$ ;  $p<0.05$ ) and security-personal (police officers  $M=3.01$ ;  $SD=0.71$ ; civilians  $M=2.79$ ;  $SD=0.71$ ;  $F=14.04$ ;  $d.f.=429$ ;  $p<0.001$ ). Similar results were also found for tradition (police officers  $M=2.66$ ;  $SD=0.82$ ; civilians  $M=2.16$ ;  $SD=1.10$ ;  $F=40.39$ ;  $d.f.=429$ ;  $p<0.001$ ), conformity-rules (police officers  $M=2.96$ ;  $SD=0.71$ ; civilians  $M=2.85$ ;  $SD=0.84$ ;  $F=3.62$ ;  $d.f.=429$ ;  $p<0.05$ ), and power-rules (police officers  $M=1.09$ ;  $SD=0.93$ ; civilians  $M=0.98$ ;  $SD=0.96$ ;  $F=4.18$ ;  $d.f.=429$ ;  $p<0.05$ ). Differences were also observed for universalism-tolerance (civilians  $M=3.08$ ;  $SD=0.93$ ; police officers  $M=2.86$ ;  $SD=0.97$ ;  $F=14.54$ ;  $d.f.=429$ ;  $p<0.001$ ), universalism-nature (civilians  $M=2.54$ ;  $SD=0.96$ ; police officers  $M=2.39$ ;  $SD=0.97$ ;  $F=3.67$ ;  $d.f.=429$ ;  $p<0.05$ ), and universalism-concern police officers (civilians  $M=2.90$ ;  $SD=0.75$ ; police officers  $M=2.65$ ;  $SD=0.48$ ;  $F=17.51$ ;  $d.f.=429$ ;  $p<0.001$ ), but in an opposite direction, with civilians scoring higher than police officers in these values. When just HOV are observed, police officers presented higher scores for conservation (police officers  $M=2.60$ ;  $SD=0.56$ ; civilians  $M=2.43$ ;  $SD=0.66$ ;  $F=23.27$ ;  $d.f.=427$ ;  $p<0.001$ ), while civilians had higher scores for self-transcendence (civilians  $M=2.93$ ;  $SD=0.58$ ; police officers  $M=2.79$ ;  $SD=0.62$ ;  $F=31.59$ ;  $d.f.=428$ ;  $p<0.001$ ).

## Hypothesis Testing

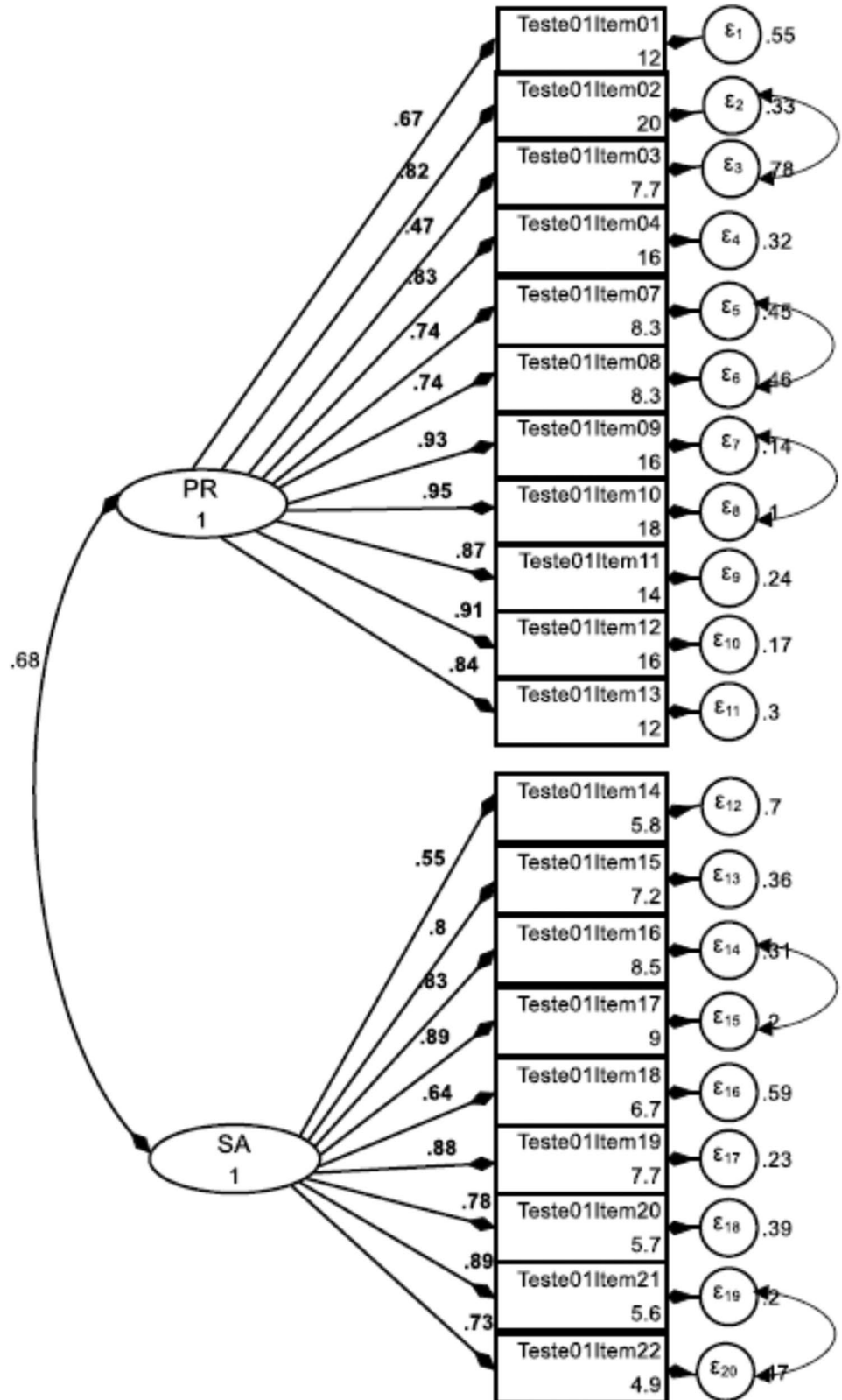
Hypothesis 1 was tested with a Confirmatory Factor Analysis (CFA) to evaluate the structure of the measure. The model was based on the structure described in the

“measure construction” section. To achieve identification, the variance of latent factors was set at 1, allowing the loadings to have free estimate. The CFA was performed with the factor scores of 20 items. The use of factor scores reduces the impact of biases (e.g., acquiescence) and, at the same time, has no effect on the distances between the data (Borg and Groenen 2005). The model yielded a bifactorial solution. Modification indexes led to the insertion of five correlated errors between items 2 and 3, 7 and 8, and 9 and 10 of perception of risk, and items 16 and 17, and 21 and 22 of security attitude. Loadings of the correlated errors varied between 0.17 and 0.24. The inclusion of correlated errors did not change the final fit of the model. All indices of final models met the fit criteria. West et al. (2012) suggest that smaller values of the  $\chi^2/d.f.$  ratio indicate better fit up to the value of 5. We obtained a ratio for  $\chi^2/d.f.=3.45$ ,  $SRMR=0.06$  with  $RMSEA=0.058$  (PClose Values: Lo90-0.046; Hi90-0.066,  $p=0.77$ ), and  $CFI=0.93$ . Most fit indexes commonly used as criteria to evaluate a model's covariance structure are sensitive to factor scores (West et al. 2012), more importantly among them, the RMSEA. In fact, only the GFI is not affected. The obtained  $GFI=0.93$  is an acceptable measure of goodness of fit of the model. Figure 2 presents the final model obtained.

As mentioned before, most respondents in both samples were men (91.4% of police officers, and 53.9% of civilians), yielding significant correlations with most variables investigated (Table S4). This calls for the control of gender in the analyses. Thus, hierarchical multiple forced-entry regressions were conducted to test the remaining set of hypotheses. Gender was added as the control variable to the model in Block 1, and it was observed whether adding the predictor variables (i.e., either HOVs or individual values) would significantly improve the final model's ability to predict the criterion variable. This is a well-established method for controlling dichotomous variables (Mandracchia and Smith 2015) and does not presume a difference in importance between predictor variables (Field 2013). Independence error and normality residues assumptions were acceptable both for perception of risk (Durbin-Watson = 1.81;  $D_{(50)}=0.09$  n.s.) and security attitudes (Durbin-Watson = 2.02;  $D_{(50)}=0.07$  n.s.). Regression findings are presented on Table 1. After controlling for gender, Block 2 of the regression with perception of risk as the criterion-variable indicated the prediction of values on the criterion ( $R^2$  change = 0.11;  $F_{(d.f.=19,406)}=3.19^{***}$ ), suggesting that some values had a higher positive effect on the criterion, such as security-societal ( $\beta=0.15$ ;  $p<0.01$ ) and personal ( $\beta=0.17$ ;  $p<0.001$ ), conformity-rules ( $\beta=0.16$ ;  $p<0.01$ ), conformity-interpersonal ( $\beta=0.16$ ;  $p<0.001$ ), and tradition ( $\beta=0.14$ ;  $p<0.01$ ). Other values contributed to the prediction, but with a negative effect on perception



**Fig. 2** Confirmatory factor model for the perception of risk and security attitude measure



of risk: universalism-nature ( $\beta = -0.19$ ;  $p < 0.001$ ), universalism-concern ( $\beta = -0.15$ ;  $p < 0.01$ ) benevolence-dependability ( $\beta = -0.25$ ;  $p < 0.01$ ), self-direction of

thought ( $\beta = -0.17$ ;  $p < 0.001$ ), and self-direction of action ( $\beta = -0.16$ ;  $p < 0.01$ ). For security attitude, a prediction was also found ( $R^2 \text{ change} = 0.11$ ;  $F_{(d.f.=19,403)} = 3.99^{***}$ ),

**Table 1** Hierarchical regression analyses perception of risk and security attitude on values controlled for gender ( $N=430$ )

Dependent variable	Independent variable	R <sup>2</sup>	R <sup>2</sup> change	$\beta$	F	<i>df</i>
<b>Perception of risk</b>	<b>Gender (Control):</b>	<b>.02</b>		<b>0.104**</b>	<b>15.33***</b>	<b>1,425</b>
	<b>Values:</b>	<b>.11</b>	<b>.09</b>	<b>-0.172***</b>	<b>3.19***</b>	<b>19,406</b>
	SDT	<b>.024</b>	<b>.046</b>	<b>-0.158**</b>	<b>15.33***</b>	<b>1,425</b>
	SDA	<b>.070</b>		<b>0.147**</b>	<b>9.73***</b>	<b>4,222</b>
	SES			<b>0.172***</b>		
	SEP			0.099		
	POD			0.091		
	POR			-0.109		
	AC			-0.135		
	FAC			-0.201		
	HE			-0.063		
	ST			<b>0.162***</b>		
	COI			<b>0.157**</b>		
	COR			<b>0.141**</b>		
	TR			<b>-0.151**</b>		
	UNC			<b>-0.188***</b>		
	UNN			-0.103		
	UNT			0.097		
	BEC			<b>-0.251**</b>		
	BED			-0.036		
	HUM			<b>0.155**</b>		
	<b>Gender (Control):</b>			<b>-0.176*</b>		
<b>HOV:</b>			<b>-0.175*</b>			
Self-transcendence			-0.058			
Openness			<b>0.300**</b>			
Self-enhancement						
Conservation						
<b>Secure Attitude</b>	<b>Gender (Control):</b>	<b>.005</b>		0.051	2.68 <i>n.s.</i>	1,425
	<b>Values:</b>	<b>.11</b>	<b>.11</b>	<b>-0.206***</b>	<b>3.99***</b>	<b>19,403</b>
	SDT	<b>.003</b>	<b>.029</b>	<b>-0.174***</b>	2.96 <i>n.s.</i>	1,425
	SDA	<b>.036</b>		<b>0.146**</b>	<b>5.73***</b>	<b>4,222</b>
	SES			<b>0.306***</b>		
	SEP			<b>0.145*</b>		
	POD			<b>0.148*</b>		
	POR			-0.049		
	AC			-0.204		
	FAC			-0.127		
	HE			<b>-0.187**</b>		
	ST			<b>0.217***</b>		
	COI			0.190		
	COR			<b>0.166**</b>		
	TR			-0.161		
	UNC			<b>-0.221***</b>		
	UNN			-0.158		
	UNT			-0.013		
	BEC			-0.051		
	BED			-0.027		
	HUM			0.069		
	<b>Gender (Control):</b>			<b>-0.182**</b>		
<b>HOV:</b>			<b>-0.281***</b>			
Self-transcendence			0.099			
Openness			<b>0.214***</b>			
Self-enhancement						
Conservation						

*HOV* high order values, *n.s.* non-significant, *UNT* universalism tolerance, *UNN* universalism nature, *UNC* universalism concern, *BEC* benevolence care, *BED* benevolence dependability, *HUM* humility, *COI* conformity interpersonal, *COR* conformity rules, *TR* tradition, *SES* security societal, *SEP* security personal, *POR* power resources, *POD* power dominance, *AC* achievement, *FAC* face, *HE* hedonism, *ST* stimulation, *SDT* self-direction of thought, *SDA* self-direction of action. Self-transcendence: combine means for universalism-nature, universalism-concern, universalism-tolerance, benevolence-care, and benevolence-dependability; self-enhancement: combine means for achievement, power dominance and power resources; openness to change: combine means for self-direction thought, self-direction action, stimulation, and hedonism; conservation: combine means for security-personal, security-societal, tradition, conformity-rules, and conformity-interpersonal

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

with security societal ( $\beta = 0.15$ ;  $p < 0.01$ ) and personal ( $\beta = 0.31$ ;  $p < 0.001$ ), power dominance ( $\beta = 0.14$ ;  $p < 0.05$ ) and resources ( $\beta = 0.15$ ;  $p < 0.05$ ), conformity-interpersonal ( $\beta = 0.22$ ;  $p < 0.001$ ), and tradition ( $\beta = 0.17$ ;  $p < 0.001$ ) positively contributing to the prediction. We found individual negative contributions for universalism-nature ( $\beta = -0.22$ ;  $p < 0.001$ ), stimulation ( $\beta = -0.9$ ;  $p < 0.01$ ), and self-direction of thought ( $\beta = -0.21$ ;  $p < 0.001$ ) and of action ( $\beta = -0.17$ ;  $p < 0.001$ ).

Other regressions were performed using the four HOV as predictors of perception of risk and security attitudes, also after controlling for gender. Findings indicated a prediction of perception of risk ( $R^2$  change = 0.05;  $F_{(d.f.=4,422)} = 9.73^{***}$ ), with conservation ( $\beta = 0.30$ ;  $p < 0.001$ ), openness to change ( $\beta = -0.17$ ;  $p < 0.05$ ), and self-transcendence ( $\beta = -0.18$ ;  $p < 0.05$ ) contributing to the relation. For security attitude, a prediction was also found ( $R^2$  change = 0.03;  $F_{(d.f.=4,420)} = 6.50^{***}$ ), also with the contribution of conservation ( $\beta = 0.21$ ;  $p < 0.001$ ), openness to change ( $\beta = -0.21$ ;  $p < 0.001$ ), and self-transcendence ( $\beta = -0.18$ ;  $p < 0.01$ ) to the prediction. Interestingly, self-enhancement did not offer any individual prediction in both models. H2 suggested that conservation would offer a positive prediction to risk perception and security attitudes, while H3 proposed that universalism and openness to change values would have a negative effect in these predictions. Taken together, these results indicate that both hypotheses were confirmed.

Our last hypothesis predicted that the relations described on H2 and H3 would be similar for the police officers and civilians' subsamples, with no difference between the groups. Regression analyses controlling for gender by subsample are presented in Table S5 (in Supplementary Materials). Examining the perception of risk results, it was observed that both for police officers and civilians, security-societal, security-personal, conformity-rules, conformity-interpersonal, and tradition, and conservation HOV yielded positive effects to the prediction, with self-direction of thought, self-direction of action, universalism-nature, benevolence-dependability, and self-transcendence HOV presenting individual significant contributions to the prediction. When regressions ran with security attitude as the criterion, also controlling for gender, in both samples the values of security societal and personal, conformity-interpersonal, and tradition, and conservation HOV presented positive contributions to the criterion's prediction, while self-direction of thought, stimulation, universalism-nature, and self-transcendence HOV resulted in negative contributions to the predictions. Although the absolute unit of the  $\beta$  or the individual, the estimated coefficients of the criteria variables are different depending on the criteria, and the predicting variables are the same. Hence, we can suggest that those predictors were the same across samples, confirming H4.

## Discussion

Across all participants, scores for perception of risk were higher than scores for security attitude. Considering that an attitude is an appraisal one makes about an event or object and is highly subjective, while the perception is what one thinks about something after analyzing some concrete logical facts about it, this finding is in line with Allport's (1961) previous discussion about the two concepts. For the author, as perception, we must refer to a recognition and interpretation of sensory information, while attitudes are general evaluations people hold regarding social objects and issues. A perception should be a more "basic" and consciousness-dependent process, mediated by the sensory information. In turn, attitudes depend on the use of reason, cognition, and affect, being regularly less accurately accessed by individuals than perception when self-report measures are used. The use of self-report in the present study and the difference in scores obtained only appear to confirm Allport's (1961) observations. This study utilized a self-report survey. Reliance on self-report measures must take into consideration that some measures might not be fully independent of one another. Although a difficulty exists in isolating the implication of values from other variables related to it, finding significant effects suggests that we are unlikely encountering problems of common method variance (Aiken and West 1991). Future research might consider longitudinal and experimental designs to further test causality in our model. Additionally, in exploring the utility of human values, how they explain variance in perception of risk and security attitudes, it will be necessary (1) to distinguish values from personality attributes and (2) contextualize these relationships through qualitative studies. Thus, we recommend future studies consider a mixed-method design when feasible. For these authors, such a method was beyond the agreed upon scope of research agreed upon with leadership of the DF State Police.

Yet, it is interesting to notice that police officers significantly presented higher scores for perception of risk when compared to civilians. Zanna et al. (1981) had already suggested that training may improve the accessibility and salience of perceptions when compared to attitudes about the same object due to the fact that a perception is inferred from past behaviors toward an object and is more consistent with the behavior than the attitude-behavior consistency. In fact, these results are in line with Ilijazi et al. (2019) findings showing that police officers are better equipped than civilians to access relevant information about security issues (e.g., where and how to pay attention, when and how crimes are committed) in order to effectively perform their work duties, including their perceptions of places prone to crime (i.e., hotspots).

Results also suggest that the police officers' sample scored higher than civilians on conformity values (i.e.,

security, conformity, and tradition). The DF State Police is a highly hierarchical organization, with organizational values of conformity, hierarchy, and tradition being highly emphasized (Nascimento 2014). Arieli et al. (2020) pulled together nearly 30 years of theoretical and empirical literature to suggest that organizational culture has a direct implication on personal values, proposing that the link person-organization fit actually have positive results performance. Furthermore, Sagiv and Roccas (2021) point out that organizational values may shape the individual values endorsed by people in a specific occupation. Our results seem to corroborate these previous findings. It is also interesting to observe that our results suggest that self-transcendence HOV values, such as universalism and benevolence, may either not be affected by an emphasis of organizational values or are diminished by them, as pointed out by our findings that civilians scored higher on universalism than police officers. It has been suggested that prioritizing self-transcendent values such as the welfare of family and friends over non-transcendence values such privilege is associated with positive health behaviors (Tal and Yinon 2002). Kang et al. (2016) have also noticed that endorsing self-transcendence values can reduce specific responses in the brain in the context of potentially threatening situations, in such a way that attenuated neural reactivity to potentially threatening situations may be a novel way that prioritizing self-transcendence values could lead to positive health behaviors. Yet, specific studies should be designed aiming to test this relationship between self-transcendence values and threatening situations.

An approach to study risk suggests that it can be understood in terms of the chances of injury, damage, or potential loss caused to someone (Webster 1983). Another conceptualization of risk suggests that the phenomenon incorporates considerations such as perception of uncertainty, controllability, equity, as well as the prediction of harmful events for the future of generations (Slovic 1987). This second interpretation seems to have been captured with our instrument. As for attitudes, those include the affective, cognitive, and behavioral intention components, with intention probably being the component that best predicts behavior (Ajzen and Fishbein 2005). By measuring security attitude with a focus on intent, our instrument is intended to be useful for crime prevention through attitude change programs aimed in particular at parking lot users. Hence, the study sought to include civilians, not just police officers. The corroboration of our H1 suggests that the two constructs, risk perception, and security attitudes are correlated, with robust validity evidence and meeting the expected predictions, the proposed measure can be useful for assessments in campaigns aimed at the development of public policies for the policing forces in urban areas.

Our results also suggested that security, conformity, and tradition values positively predict both perception of risk

and security attitudes, while universalism, self-direction, and to a lower degree, benevolence negatively predicting both variables. Equally important, this trend appears to exist for conservation and self-transcendence HOVs across samples, but with a stronger predominance in the police officers' group. An inherent idea behind the values theory is the notion of human values as motivational principles in people's lives. The motivation behind conservation HOV emphasizes self-restraint, preservation of traditional practices, and protection of stability. This seems to be coherent with the salience of perception of risk and security attitudes in environments where crimes systematically occur, such as parking lots. The individually-focused values that privilege the interests of the individual, even at the expense of others may represent a hindrance to the development of such cognitions when in the presence of environments that may present situations that enable the occurrence of harmful acts, not only to some individuals but also to a community or society (Cane et al. 2008).

The corroboration of our H2, implying that the values predict risk perception and security attitude of individuals may provide relevant contributions to public safety policies. Specifically, confirming that conservation values positively predict risk perception and security attitudes (H2) suggests that an increase in the endorsement of such values is important to increase crime prevention. For instance, strategies that provide information about parking security can contribute to crime prevention in these spaces. Based on CPTED's bulk of research, interventions related to territoriality (e.g., lighting adequacy, pruning of tall grass, etc.) of these spaces can impact people's perception of risk and safe attitudes (Cozens and Love 2015). Similarly, police agencies conducting educational campaigns in schools, community associations, or residential condominiums are a resource related to situational crime prevention related to the cognitive dimension of risk perception.

Our H3 was only partially confirmed, since it was observed that there is a negative prediction of the variables of interest by high order values of self-transcendence HOV, specifically universalism values. However, openness to change HOVs had a negative relation with the dependent variables only for security attitudes and only for civilians. There is a growing interest in the psychology of values and a growing recognition of the need for a deeper understanding of the ways in which values are embedded in our attitudes and perception (Schwartz et al. 2012; Knafo et al. 2011). It has been indicated manners of how values can be modified to elicit different behaviors and attitudes (e.g., Maio 2017), all such manners based on three organizing principles: accessibility, interpretation, and control (Sagiv and Roccas 2021). Our study provides a glimpse of psychological research looking at how we mentally represent and use our values and how they can affect our ways to prevent



crime. These findings may serve as foundation for training designs to modify antecedents of attitudes and understanding of risky environments that are not interesting for maintaining safe situations. The test of our H4 was able to demonstrate that there is a common understanding between different social segments (trained police and lay civilians) as to the meaning of risk perception and safe attitude. This suggests that a common understanding of attitudes and risk perception can prevent crimes, which may serve as a guide for crime prevention. Our results suggest implications for the safety of police officers. Initially, evidence indicates that police officers' risk perception and safe attitudes were higher compared to civilians. Still, police officers are subject to crimes because of their occupation (FBSP 2021). Therefore, agencies should be concerned with training their professionals in specific techniques of personal safety, particularly when off duty. For instance, there are training programs designed to evaluate elements of situational crime prevention, such as observation of places, attitudes towards suspicious behavior, and reaction techniques. Acquadro-Maran et al. (2015) portend that training courses and support programs are useful and effective in preventing crime before they get out of hand, harming police officers and the police institution as a whole. To reduce adverse outcomes associated with values, Coelho et al. (2016) recommended increasing police officers' sense of control over their own lives, increasing their sense of purpose in life and in work, as well as fulfillment and satisfaction of life, and increasing their feeling of connectedness with their peers and the society. Such factors were also found to increase physical, psychological, and social health (Antloga 2009). Indeed, our findings corroborate these recommendations, as an investment in training aimed at values change (Maio 2017) may mitigated the negative consequences of self-transcendence HOV on risk perception and safer attitudes. In other words, training programs that can make some values more or less salient could help reduce the deleterious consequences among the PMDF officers.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s11896-022-09511-z>.

**Author Contributions** CVT was responsible for the conception and design of the study; data collection, analysis, and interpretation of the findings; and writing the manuscript submitted. MJSM and TGN have given substantial contribution in analysis and interpretation of data. The former has also contributed to critically revising the manuscript's intellectual content. WCdS and LLdS have contributed to the data collection, especially in the recruitment of participants, as well as participated in the critical review of the manuscript. We hereby confirm that we have access to the original data on which the article reports.

**Funding** This study was sponsored by the Brazilian Ministry of Education's Institutional Internationalization CAPES/PROCAD, grant no.8888.516167/2020-01.

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