Revija za kriminalistiko in kriminologijo / Ljubljana 73 / 2022 / 4, 308–318

Fear of Crime – Measurement of Fear of Ordinary Crimes and Fear of Crimes in Cyberspace[1]

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The objective of this paper is to assess the validity and reliability of a questionnaire proposed for measuring fear of crime. Following extensive theoretical research in the field, the questionnaire was operationalised and defines fear of crime in three components: cognitive, affective and behavioural. It extends the measurement of the traditional fear of crime in the physical environment to the fear of cybercrime. The data were collected from 207 citizens of the city of Ljubljana. Convergent and discriminant validity were assessed by exploratory and confirmatory factor analysis. Reliability was assessed by Cronbach alpha and by Composite reliability. The measurement instrument exhibited good measurement characteristics. All three components of fear of crime had two dimensions – ordinary and cybercrime. To date, no consensus on the instrument to be used to measure fear of crime has been reached by researchers. Several measures that are used pertain to ordinary crime only – they omit the fear of cybercrime, lack information on validity and reliability, and tend to measure just the affective component of fear of crime. The proposed questionnaire attempts to overcome these shortcomings.

Keywords: fear of crime, measurement, validity, reliability, cybercrime, Ljubljana, Slovenia

UDC: 343.9(497.4)

1 Introduction

In the last 50 years or so, fear of crime has been an important research topic investigated by researchers from different academic backgrounds. It is regarded as an important social problem because it ultimately influences people's behaviour and their quality of life (Hale, 1996). People with a more pronounced fear of crime tend to go out less, which results in their social ties becoming looser, and in less cohesive neighbourhoods. Research shows a strong negative correlation between social cohesion and crime rates in local neighbourhoods (Hirschfield & Bowers, 1997; Villarreal & Silva, 2006). Conklin (1976) lists other consequences of fear of crime, such as the precautions people take to protect themselves and their homes from crime, moving to 'safer' neighbourhoods, avoiding 'dangerous' parts of a neighbourhood or 'dangerous' neighbourhoods. Fear of crime can lead to harsher penal policies and can undermine the legal system, forcing people to 'take justice into their own hands'. With the fear of crime having such wide-ranging consequences on everyday life, it must be continuously monitored to detect and prevent consequences in time. Thus, national victimisation surveys in the UK, the USA and elsewhere have included questions on fear of crime. In line with the importance of the phenomenon, its measurement is expected to be valid and reliable. Yet, to introduce valid and reliable measures, the phenomenon must first be well defined and conceptualised and later operationalised by providing survey items through which it is measured. The proposed measurement instrument should be pilot tested and validated to ensure that it really measures what is intended. It is precisely measurement of fear of crime that has been subject to much criticism throughout the history of research on this topic (Farrall, Bannister, Ditton, & Gilchrist, 1997; Farrall & Gadd, 2004; Ferraro & LaGrange, 1987; Hale, 1996).

There is no single, universal definition of fear of crime within the established literature. Several scholars define fear of crime as a negative emotional reaction or response to a perceived threat of crime (Ferraro & LaGrange, 1987; Hale, 1996; van der Wurff, van Staalduinen, & Stringer, 1989). Others have extended these early definitions to consider perceptions of risk and danger in the immediate environment (Chataway & Hart, 2016; Farrall & Gadd, 2004; Innes, 2014; Jackson, 2004). There have been calls by scholars to develop more universal definitions of fear of crime, with some arguing that the meaning of the phrase within the literature varies

[1] This article is based on a national research project Local Safety and Security – A comparison of rural and urban settings (P5-0397 (A), 2019–2024) financed by the Slovenian Research Agency.

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so substantially that it is in danger of losing any specificity (Warr, 1984). We agree with this viewpoint and argue that the concept of fear of crime cannot be operationalised accurately within survey instruments, without a consistent and more widely accepted definition. Indeed, as we will discuss later in our results, conceptual irregularities in the literature have led to inconsistencies in not just the measurement of fear of crime over time, but also the way in which the searchers examine the validity and reliability of indicators used to measure it in local and national surveys (Hart, Chataway, & Mellberg, 2022).

Methodologically speaking, translation, modification and testing of questionnaires from English to other languages is a research challenge due to the meaning of questions the respondents are asked. New questions about crime and fear of crime that have not been inherent in a specific culture in the past can contribute to people's thinking about crime, victimisations and state responses to crime and criminals (Meško, Vošnjak, Muratbegović, Budimlić, Bren, & Kury, 2012). Findings from non-English speaking countries contribute to a more complex debate about prevailing models of studying of fear of crime.

Defining fear of crime still consists of different research findings and opinions of criminologists and victimologists. Our definition is in line with Jackson and Gouseti (2013), who distinguish between cognitive emotional behavioural components of fear of crime. Fear of crime is an emotion related to crime, no matter whether a person is a victim of crime or not (vicarious victimisation and non-victims), people think about crime, recognise signs of crime (subjectively) and they adjust their behaviour in potentially risky situations by e.g., avoidance strategies and other preventative measures.

Moreover, the current study builds on extensive research in the area and proposes a modernised operationalisation of the phenomenon by extending the measurement of fear of crime in the physical environment to the digital environment or cyberspace. The validity and reliability of the proposed measures are assessed within this paper.

2 Theoretical Background

The measurement process in a survey typically starts with a clear definition of the phenomenon (conceptualisation), the design and wording of the survey questions (operationalisation) and establishing the measurement characteristics of the measurement instrument (its validity and reliability). Fear of crime has faced several difficulties in this process. It has either been left undefined or its definition was incorrect (Hale, 1996). At the beginning, when the 'global measure' was used to gauge it, fear of crime was equated with the risk of victimisation (Gray, Jackson, & Farrall, 2008). The global measure included just one question, most often asked as: "How safe do you feel walking alone in your neighbourhood at night" or "How afraid do you feel walking alone in your neighbourhood at night" (Farrall et al., 1997; Hale, 1996). In an attempt to conceptualise fear of crime, Fattah and Sacco (1989) argued that such questions include an emotional response to crime. Other measures of fear of crime can, in their opinion, be grouped into two other categories: cognitive and behavioural. The first includes the likelihood of victimisation and the second the security precautions people take to prevent crime. Gabriel and Greve (2003) contend that all three components should exceed the threshold value for a state to be labelled as fear. A person should perceive a situation as threatening and thus feel afraid (affective experience), which results in fearful behaviour (avoidance or self-protection). As Jackson and Gouseti (2013) observed, researchers nowadays agree that fear of crime involves feelings, thoughts and behaviour, which are focused on the subjective personal threat of victimisation.

After the phenomenon has been conceptualised, the operationalisation begins. However, these two stages are closely intertwined. Several critiques of operationalisation of the concept include: the affective (emotional) component of fear was measured too vaguely; questions were not linked to specific crimes; they ignored the context (time or space), and a single indicator cannot capture all circumstances in which people fear becoming a victim of crime (Hale, 1996). Fear of crime should therefore be measured as a multi-faceted concept. An attempt along these lines was made by van der Wurff et al. (1989), who situated fear of crime in a social-psychological theory. They argued that fear of crime is associated with four psychological factors: attractivity, evil intent, power and criminalisable space. It is essential to measure to what extent people see themselves or their possessions as attractive targets of possible criminal acts (attractivity), the intent they attribute to the potential perpetrator (evil intent), how confident they are in themselves to control the possible assault of another (power), and the extent to which they perceive the circumstances or situation as threatening (criminalisable space). The model did not impose any causal relationships between the four components. Their social-psychological model was operationalised by introducing vignettes describing possible crime-related threatening situations, including geographical and temporal information. A comparison between Slovenia, Scotland and the Netherlands showed that all constructs of the social-psychological model were consistent in all three countries (Meško & Farrall, 1999). This was further corroborated in a comparative study, including another Eastern European country, Bosnia and Herzegovina (Meško et al., 2012; Meško, Fallshore, Muratbegović, & Fields, 2008).

Jackson (2005, 2009) operationalised fear of crime by measuring four dimensions: worry about crime, perceived control over crime, perceived likelihood of crime and perceived consequences of crime. The behavioural component of fear of crime was omitted from the proposed measurement model. However, the cognitive component was expanded to include perceived control and consequences of crime. The relationship between perceived risk of victimisation (likelihood of crime) and fear of crime (emotional component) is, according to Warr (1987), moderated by the perceived consequences of crime. People who are more sensitive to risk (perceive themselves as less able to defend themselves in criminal situations or judge they will suffer grave consequences from criminal acts) have a greater fear of crime. By including sensitivity to risk in the model, Warr was able to explain disproportional levels of fear of crime in groups that in reality are less frequently victimised, such as women and the elderly. These social groups perceive themselves as being more vulnerable. According to Killias (1990), vulnerability has three dimensions: physical, social and situational, which are related to three aspects of threat: exposure to non-negligible risk, loss of control, and seriousness of the consequences (Jackson & Gouseti, 2013). When the threat is estimated to be high, the emotional reaction – fear of crime – is stronger.

The growing number of Internet users and the digitalisation of society have seen cyberspace become an ever more important element of the components of attractivity and criminalisable space that van der Wurff et al. (1989) identified. Cybercrime is increasing the risks of victimisation and thereby adding to fear of (cyber)crime, leading people to protect themselves from possible (cyber)attacks. In their research, Bernik and Meško (2011, 2012) expanded the operationalisation of fear of crime beyond the physical environment – to cyberspace. They included indicators concerning the perception of the vulnerability of Internet users in Slovenia, the perceived severity of the threats, and perceived capability of users to control or avoid victimisation. The findings suggest that users perceive themselves as being less vulnerable to cybercrime and the consequences of cybercrime as having a small impact on their everyday lives, except for those threats aimed at their assets, personal information, or reputation.

No consensus can be found regarding which survey instrument to use to measure fear of crime. Although researchers rely on different instruments based on the same or similar conceptualisation of fear of crime, the most crucial feature of any instrument used is its measurement characteristics. An instrument must be valid and reliable. An instrument is valid if it measures what it is supposed to measure and reliable if it is internally consistent, or repetition of the measurement on the same subjects with the same instrument over a short time period yields consistent results (DeVellis, 2017).

Many researchers suggest (Farrall & Gadd, 2004; Farrall et al., 1997; Gray et al., 2008; Hale, 1996) that fear of crime can be measured by multiple indicators which are clearer and linked to specific crimes and take account of the difference between the perceived risk (cognitive) and the affective (emotional) components. Indicators used in surveys typically ask about personal and property crimes (Chataway & Hart, 2016; Jackson, 2005; Lytle, Intravia, & Randa, 2020; Scarborough, Like-Haislip, Novak, Lucas, & Alarid, 2010; Woo, Pedneault, Willits, Stohr, & Hong, 2020).

In Slovenian research of fear of crime, two sets of empirical studies predominated over the past 30 years. The first was based on the International Crime Victim Survey (ICVS) in 1992, 1996 and 2000. There was only one question related to fear of crime – "How safe do you feel walking alone after dark?" (Meško & Pavlović, 1998). The second set of studies was about socio-demographic and social-psychological perspectives of fear of crime (Meško & Farrall, 1999), consisting also of detailed studies of cognitive, emotional and behavioural perspectives (Erčulj, 2022; Meško, Hirtenlehner, & Vošnjak, 2009; Meško, et al., 2012).

Some recent surveys have mainly focused on measuring the affective component of fear of crime (Scarborough et al., 2010) and tended to overlook the phenomenon's complexity. In our research, we propose measuring all three components of fear of crime, including the moderating concepts of sense of control over victimisation and perceived consequences of victimisation. Building on national research on fear of cybercrime, indicators pertaining to cybercrime are added to more traditional indicators relating to property and personal crime.

Hart et al. (2022) discovered that only sixty percent of studies they included in a systematic review of quantitative empirical research publications on fear of crime published in English, reported for validity and reliability of the items used in studying fear of crime. Therefore, the psychometric properties of the proposed survey instrument are evaluated in this research paper.

3 Method

3.1 Sample Description and Data Collection

The sample included 207 participants (Table 1). There were 159 (77%) women in the sample. The mean (*SD*) age of the respondents was 33 (12.4) years. More than half the respondents (65%) had a university education or more. About half (56%) were employed and 37% were still studying. In comparison to the population of Ljubljana citizens, the sam-

ple included a bigger share of women and younger participants. According to the Statistical Office of the Republic of Slovenia (2020), the share of women living in Ljubljana in 2020 was 51.3%, and the average age of citizens in Ljubljana is 42.6 years.

Table 1: Sample description

	Sample (n = 207)
Gender	
Male	48 (23.2)
Female	159 (76.8)
Mean age (*SD*)	33 (12.4)
Education	
Higher vocational college or less	73 (35.3)
University or more	134 (64.7)
Working status	
Employed	117 (56.5)
Unemployed	8 (3.9)
(College) student	77 (37.2)
Retired	5 (2.4)

The data were collected via the web-survey platform "1KA". A link to the survey was made available between October 2019 and the end of January 2020. The survey was fully completed by 207 respondents. We announced the survey on Facebook aimed at respondents in Ljubljana, the capital city of Slovenia, and asking the respondents in Ljubljana to let others know about the survey. Only fully completed surveys were included in further analyses. Previous studies of fear of crime in Ljubljana were based on quota sampling that only measured fear of 'ordinary crime', while this study goes beyond that and explores the dimensions of fear of cybercrime.

3.2 Measures

Fear/worry about crime, risk perception, and perceived consequences of crime were each measured by a ten-item scale, with six items on personal and property crime and four on cybercrime. All scale items used a five-point scale. Higher values indicated less worry about crime, a lower likelihood of crime and a smaller impact of crime on the respondent's life. Control over crime was measured by five items on a five-point scale, where lower values indicated higher control over crime. Eleven items measured behaviour indicating the protective or preventive measures the respondents were prepared to take to avoid becoming a victim of a crime. Seven items described behaviour in the physical world and four in the online environment. Respondents answered on a 5-point scale, where 1 indicates that the respondent always takes this preventive or protective measure and 5 that they never use the described measure.

3.3 Data analysis

The measurement model was evaluated using exploratory (EFA) and confirmatory factor analysis (CFA). Within EFA, the principal axis reduction technique with varimax (orthogonal) rotation was used. Principal axis factoring is preferred over the maximum likelihood reduction technique when the variables are not normally distributed (Fabrigar, MacCallum, Wegener, & Strahan 1999) or when there are few indicators per factor (de Winter & Dodou, 2012). In our case, both are true. The response distribution for all variables statistically significantly differed from normal as tested by the Shapiro–Wilk test ($p < 0.001$ for all), although when examining the skewness and kurtosis coefficients they rarely exceeded ± 2, which some authors believe still indicates an approximately normal distribution (George & Mallery, 2003). The robust maximum likelihood method of parameter estimation as proposed by Boomsma and Hoogland (2001) for data not following a multivariate normal distribution was used to evaluate the measurement model. Construct reliability as well as convergent and discriminant validity were evaluated. Reliability was measured using Cronbach's alpha. Values above 0.70 are considered to indicate adequate reliability, according to Nunnally (1978). Composite reliability and average variance extracted were also calculated. Composite reliability above 0.6 indicates good reliability and AVE above 0.5 good convergent validity (Fornell & Larcker, 1981). Convergent validity is further supported if each observable variable loads statistically significantly onto the factor it was supposed to measure (Anderson & Gerbing, 1988; Hair, Anderson, Tatham, & Black, 1995; Steenkamp & van Trijp, 1991; Vieira, 2011). Furthermore, item loadings on a factor are supposed to be higher than 0.50 (Hildebrandt, 1987; Steenkamp & van Trijp, 1991) or not lower than 0.40 (Avkiran & Ringle, 2018). Another sign of convergent validity is the good overall fit of the model (Steenkamp & van Trijp, 1991).

The correlation between latent variables is used to evaluate discriminant validity. As a rule of thumb, the correlation coefficient should not exceed 0.85. Otherwise, one may conclude that discriminant validity is lacking (Kline, 2011). Discriminant validity is supported further if the 95% confidence interval for the correlation coefficient between two

latent variables does not include 1 (Torkzadeh, Koufteros, & Pflughoeft, 2003) and if the AVE of the correlated latent variables is higher than the square of the correlation between the latent variables (Fornell & Larcker, 1981).

The goodness of the CFA model fit was evaluated using the Sattora-Bentler scaled Chi-Square, which is suitable for assessing models with non-normal data (Boomsma and Hoogland, 2001). Since χ^2 is statistically significant when the sample size is large, the χ^2/df ratio was also calculated. Values between 1 and 3 indicate a good overall fit of the model (Vieira, 2011). In addition, the Comparative Fit Index *(CFI)*, Incremental Fit Index *(IFI)*, non-normed fit index *(NNFI)*, the Root Mean Square Error of Approximation *(RMSEA)* and the Standardised Root Mean Square Residual *(SRMR)* were examined to evaluate the model fit. Values of 0.95 and/or above or 0.90 and above for *CFI, NNFI* and *IFI*, and values of 0.08 and below for *RMSEA* and SRMR indicate a good model fit (Hu & Bentler, 1998). Modification indices and standardised residuals were used to further improve the model. Smaller models were first evaluated due to the relatively small sample size and then the final measurement model with all constructs at the end. SPSS 26.0 was used for *EFA* and LISREL 9.30 for *CFA*.

4 Results

4.1 Convergent Validity

Exploratory factor analysis for fear/worry of crime, risk perception and consequences of crime resulted in a two-factor solution for each construct. Items on ordinary crime loaded on the first and those on cybercrime on the second factor. Since all three constructs were measured by items on identical crimes, confirmatory factor analysis was performed on all three constructs. Two confirmatory factor analysis models were built, one with a single factor solution per construct and the other with a two-factor solution per construct. The model fit indices and results of the scaled chi-square difference test between the models are shown in Table 2. The model with a two-factor solution per construct fitted the data statistically significantly better than the model with a single factor. All fit indices for this model are within the proposed thresholds. The two-factor solution per construct is therefore retained and described in Table 3.

In the proposed baseline measurement model, worry about crime, perceived risk and consequences of crime were measured by ten indicators (Table 3). Each construct had two dimensions – ordinary crime, measured by six indicators and cybercrime, measured by four indicators. The mean values for fear of crime are below the mean scale point for all threats, except street (verbal) bullying with a mean (*SD*) value of 3.4 (1.1). In the opinion of the survey respondents, the greatest risk is from street (verbal) bullying ($M = 2.6$; $SD = 1.1$) and the lowest from a physical attack ($M = 3.9$; $SD = 0.8$), street robbery ($M = 3.8$; $SD = 0.8$) and burglary ($M = 3.7$; $SD = 0.8$). The gravity of the consequences according to the survey participants is highest in the case of a physical attack ($M = 1.6$; $SD = 0.9$) and burglary ($M = 1.7$; $SD = 0.9$). Street (verbal) bullying and fraud were removed from the final measurement model due to low factor weights and to improve the model's parsimony. Four items included ordinary crime and another four cybercrime. All items had standardised weights above the recommended thresholds of 0.40 and 0.50 and loaded statistically significantly on the factor they were intended to measure. The average variance extracted (AVE) was above the 0.50 threshold for all six factors, indicating good construct validity. The composite reliability for all six factors was above the recommended 0.60 threshold.

Of all actions proposed to control a possible threatening situation, the survey participants expressed greatest confidence in their ability to successfully run away from the attacker (Table 4). The mean (*SD*) value of this item was 2.9 (0.9). They were also confident that they could successfully defend themselves ($M = 3.2$; $SD = 0.9$). They were least confident that they could verbally calm the attacker ($M = 3.5$; $SD = 1$), avert the attacker by self-confidence or count on a passer-by to help them ($M = 3.4$; $SD = 1$, for both). The final measurement model included three items pertaining to one's ability to verbally calm the attacker, succeed in self-defence, or run away. All three had significant loadings on the factor. All loadings were higher than the 0.40 or 0.50 thresholds. AVE was close to the proposed threshold of 0.50 while composite reliability was above the 0.60 threshold.

Table 2: Fit statistics for the one-factor and two-factor solutions per construct of fear, risk perception and consequences of crime

No. of factors per construct	*df*	*SB* χ^2	*p*	χ^2/df	*RMSEA*	*NNFI*	*CFI*	*IFI*	*SRMR*	$\Delta\chi^2$	Δdf	*p*
One	246	726.9	< 0.001	2.95	0.106	0.85	0.86	0.86	0.078	–	–	–
Two	234	449.5	< 0.001	1.92	0.076	0.93	0.94	0.94	0.054	466.3	12	< 0.001

Table 3: Descriptive statistics, results of confirmatory *(CFA)* factor analysis (standardised regression weights are shown), average variance extracted *(AVE)* and reliability of measuring fear, likelihood and perceived consequences of crime

	Worry/fear		Risk perception		Consequences	
	Mean (*SD*)	**Std. weights**	**Mean (*SD*)**	**Std. weights**	**Mean (*SD*)**	**Std. weights**
Ordinary crime						
Street robbery	2.3 (1.2)	0.85	3.8 (0.8)	0.85	2.1 (1)	0.77
Fraud	2.8 (1.2)	–	3.5 (0.9)	–	2.6 (1)	–
Physical attack	1.9 (1.2)	0.88	3.9 (0.8)	0.80	1.6 (0.9)	0.80
Theft	2.2 (1.1)	0.85	3.4 (0.9)	0.81	2.3 (1)	0.82
Street (verbal) bullying	3.4 (1.1)	–	2.6 (1.1)	–	3.9 (1)	–
Burglary	1.7 (1.1)	0.83	3.7 (0.8)	0.79	1.7 (0.9)	0.81
Cronbach α		0.91		0.88		0.88
Composite reliability		0.91		0.89		0.88
AVE		0.73		0.66		0.64
Cybercrime						
Cyber bullying	2.6 (1.3)	0.76	3.4 (1)	0.71	2.9 (1.2)	0.78
Abuse of online data	2.3 (1.1)	0.81	3.3 (0.9)	0.84	2.4 (1)	0.83
Fraud in online payment	2 (1.1)	0.81	3.2 (1)	0.75	2.3 (1)	0.70
Fraud in use of e-banking	2 (1.1)	0.82	3.5 (0.9)	0.72	2.1 (1)	0.70
Cronbach α		0.89		0.82		0.81
Composite reliability		0.88		0.84		0.84
AVE		0.64		0.57		0.57

Table 4: Descriptive statistics, results of confirmatory *(CFA)* factor analysis (standardised regression weights are shown), average variance extracted *(AVE)* and reliability of measuring perceived control over crime

	Control	
	Mean *(SD)*	***CFA***
Successfully defend yourself	3.2 (0.9)	0.51
Successfully run away	2.9 (0.9)	0.62
Verbally calm the attacker	3.5 (1)	0.91
Avert attacker through self--confidence	3.4 (1)	–
Somebody helps you	3.4 (1)	–
Cronbach α		0.71
Composite reliability		0.73
AVE		0.49

As summarised in Table 5, the precaution measures the survey participants most often rely on in the physical world are avoiding carrying large sums of money (M = 2; SD = 1.1), avoiding strangers at night (M = 2.5; SD = 1.2) and avoiding certain streets, parks and areas (M = 2.7; SD = 1.1). In the digital world, they avoid publishing personal data online (M = 2.1; SD = 1.1) and protect their electronic devices (M = 2.6; SD = 1.3).

Exploratory factor analysis for the behavioural component of fear of crime resulted in a three-factor solution. One factor includes items describing the consequences of ordinary crime and two the consequences of cybercrime. Regarding the latter, one includes items describing protective behaviour linked to the disclosure of personal data and the other to the disclosure of financial data. The three-factor solution resulted in an AVE of 0.46 for the factor pertaining to the disclosure of personal data and protection of electronic devices indicating the unsatisfactory convergent validity of measuring this factor. Therefore, the two-factor solution was proposed (Table 5). As the standardised weights of the items describing protective behaviour regarding electronic devices and online personal data on the cyberspace protective behaviour factor were below the 0.40 threshold, these two items were omitted from

the final measurement model. The final measurement model fitted the data well (χ^2 = 18.6; *df* = 13; *p* = 0.136; *RMSEA* = 0.051; *CFI* = 0.99; *IFI* = 0.99; *NNFI* = 0.98; *SRMR* = 0.035). Five indicators pertaining to the behaviour component of fear of ordinary crime remained in the final measurement model. All had standardised weights above the recommended 0.40 threshold, and four also above the 0.50 threshold. AVE equalled 0.50. Composite reliability was 0.83 and Cronbach alpha 0.82. Both were above the recommended respective 0.60 and 0.70 thresholds.

Protective behaviour in cyberspace includes two indicators describing precaution regarding online financial transactions. Both indicators had high factor loadings on the factor. The measure of AVE was above the 0.50 threshold. The composite reliability and Cronbach alpha indicated reliable measurement of this factor.

The final measurement model including all nine factors exhibited a good overall fit (χ^2 = 711.8; *df* = 456; *p* < 0.001; *RMSEA* = 0.059; *CFI* = 0.94; *IFI* = 0.94; *NNFI* = 0.37; *SRMR* = 0.053).

4.2 Discriminant Validity

The correlation coefficients between the constructs are summarised in Table 6. All correlation coefficients are below 0.85, indicating good discriminant validity. The highest correlation is found between fear of ordinary crime and cybercrime (*r* = 0.78), but the 95% confidence interval does not include 1 (95% *CI:* 0.72–0.83). The squared correlation is 0.61 and is lower than the AVE of each construct (0.73, 0.64, respectively), further supporting the good discriminant validity of measuring these two factors. The second-largest correlation coefficient is between the physical and cyber-related conse-

Table 5: Descriptive statistics, results of confirmatory *(CFA)* factor analysis (standardised regression weights are shown), average variance extracted *(AVE)* and reliability of measuring the behaviour component of fear of crime

	Behaviour	
	Mean *(SD)*	**Std. weights**
Ordinary crime		
Avoid certain streets, parks and areas	2.7 (1.1)	0.78
Avoid strangers at night	2.5 (1.2)	0.84
Avoid using public transport at night	3.9 (1.3)	0.69
Avoid having large sums of money	2 (1.1)	0.42
Leave apartment at night only in case of necessity	3.3 (1.4)	0.74
Carry something to defend myself with	4.1 (1.2)	–
Take care that the apartment does not look empty when absent	2.8 (1.4)	–
Cronbach α		0.82
Composite reliability		0.83
AVE		0.50
Cybercrime		
Protection of electronic devices	2.6 (1.3)	–
Avoid publishing personal data online	2.1 (1.1)	–
Avoid online payments	3.5 (1.4)	0.82
Avoid using e-banking	3.9 (1.4)	0.84
Cronbach α		0.81
Composite reliability		0.82
AVE		0.69

quences of fear of crime ($r = 0.72$). Also in this case, the AVE for these measures is higher (0.64 and 0.57, respectively) than the squared correlation between the measures ($r^2 = 0.52$).

Fear of ordinary crime is not statistically significantly correlated to the perceived risk of ordinary crime ($r = 0.13$; $p = 0.062$) but is positively and statistically significantly related to perceived consequences of ordinary crime ($r = 0.55$; $p < 0.001$) and to avoiding or controlling the behaviour of possible ordinary criminal behaviour ($r = 0.25$; $p < 0.001$). Yet fear of cybercrime is directly related to perceived risk of cybercrime ($r = 0.29$; $p < 0.001$) and perceived consequences of cybercrime ($r = 0.52$; $p < 0.001$), but not to finance-related protective behaviour in cyberspace ($r = 0.11$; $p = 0.115$). Interestingly, people's sense of control over crime is not statistically significantly correlated to any of the factors measured.

good discriminant validity. Composite reliability was above the proposed 0.60 threshold and Cronbach α above the 0.70 threshold for all constructs, indicating good measurement reliability.

Good measurement characteristics have also been established for certain other instruments relating to fear of crime (e.g., Jackson 2005). However, the instrument proposed here offers several improvements over other similar ones.

First, all scales include descriptions of several victimising situations, as proposed by Hale (1996) to overcome the drawback of past measures that captured the fear too vaguely or diffusely. Several items also include the geographical (street, home, for example) and temporal (night, for example) context.

Table 6: Correlation between the constructs

	1	2	3	4	5	6	7	8	9
(1) FearP	1								
(2) FearC	0.78***	1							
(3) Control	–0.04	–0.01	1						
(4) Risk–P	0.13	0.07	–0.05	1					
(5) Risk–C	0.12	0.29***	–0.02	0.7	1				
(6) Behaviour–P	0.25***	0.25***	–0.22	0.3	0.21	1			
(7) Behaviour–C	0.08	0.11	–0.09	0.16*	0.17*	0.42	1		
(8) Consequences–P	0.55***	0.43***	–0.05	0.12	0.07	0.33***	–0.04	1	
(9) Consequences–C	0.32***	0.52***	–0.13	0.21**	0.23***	0.25***	0.05	0.72***	1

* $p < 0.05$; ** $p < 0.01$; ***$p < 0.001$.
[a] C = cyberspace; P = physical space.

5 Discussion

The proposed instrument shows good measurement properties. It exhibits convergent and discriminant validity and reliability. The final measurement model fits the data well. All indicators have high (> 0.40) and statistically significant loadings on the factors they were intended to measure. The amount of variance captured by each factor in relation to the amount of variance due to the measurement error *(AVE)* is close to or above Fornell and Larcker's (1981) proposed 0.50 threshold. The highest correlation between factors was 0.78 and did not exceed the 0.85 threshold. Furthermore, the 95% confidence interval for the highest correlation coefficient did not include 1. For all constructs, AVE was higher than the squared correlation coefficient, further supporting

Second, the instrument takes account of the complex nature of the phenomenon being measured. It is based on the conceptualisation of psychologists who perceive fear of crime as a combination of cognitive, affective and behavioural components (Gabriel & Greve, 2003). In the proposed instrument, the cognitive component is measured by the perceived risk of becoming a victim of crime. The results suggest the study participants perceived a verbal attack on the street as the most likely to occur to them, while a physical attack, street robbery and burglary seemed less likely. The estimated likelihood of all digital criminal acts was, on average, above the mean scale point, suggesting the participants perceive the occurrence of digital criminal acts as less probable.

Researchers have also engaged in a lively discussion on the terminology for measuring the emotional or affective component of fear of crime, with a consensus being reached that the word "worry" captures this part of the phenomenon better than the word "fear" (Gray et al. 2008). The proposed affective scale thus includes questions asking about worry with respect to an individual crime. Farrall and Gadd (2004) also argued that the frequency of people experiencing fear should be taken into account. The scale used only takes account of intensity, which according to the research of Farrall and colleagues (Farrall & Gadd, 2004; Gray et al., 2008) leads to an overestimation of the phenomenon. This should be considered while interpreting the results of the affective component of fear of crime. The greatest worry the survey participants expressed with respect to the physical world concerned burglary and physical attack. In the digital world, they are most worried about fraud pertaining to online financial transactions. Interestingly, those criminal acts which the participants worry about the most are, in their opinion, less likely to occur to them. This supports the non–interchangeability of emotional response and perceived risk relating to crime, as Ferraro already argued in the late 1980s (Ferraro & LaGrange, 1987) and psychologists further elaborated later (Gabriel & Greve, 2003).

The instrument also includes the behavioural component of fear of crime, which some proposed instruments used for the same purpose omitted (Jackson, 2005; Scarborough et al., 2010). People take certain precautionary measures when afraid or worried about possible crime. The survey participants indicated they most often exhibit avoidance behaviour. In the physical world, they avoid some areas, streets or parks and avoid carrying large sums of money, while in the digital world, they avoid publishing personal data online. They do not avoid, however, the use of online financial instruments.

Third, the proposed instrument also measures fear of cybercrime, which poses an ever more significant threat as the digitalisation of society continues. The number of ICT and Internet users is growing rapidly year after year. The COVID–19 pandemic has further boosted the move from the physical to the digital world. All three components of cybercrime were evaluated. Confirmatory factor analysis showed there is a clear distinction between fear of digital and ordinary crime, on all three components. As concerns online protective behaviour, the validity and reliability of the measurement was highest for the use of online financial transactions.

Finally, contextual variables closely linked to fear of crime were proposed. Control over crime and perceived consequences were both measured since they moderate the relationship between the perceived risk of crime and fear or worry about crime. In line with sensitivity to the risk model (Warr, 1987), more vulnerable citizens might be especially worried about certain crimes whose risks are low but consequences severe. Regarding the sense of control over crime, the proposed scale should be expanded by the sense of control while dealing with online threats.

Overall, the proposed instrument builds on the foundation of over half a decade of research on fear of crime, as reflected in its good measurement characteristics. It may be used to validly and reliably measure both citizens' fear of regular crime and cybercrime.

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Strah pred kriminaliteto – merjenje strahu pred običajno kriminaliteto in strahu pred kriminaliteto v kibernetskem prostoru

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Namen pričujočega prispevka je oceniti veljavnost in zanesljivost predlaganega vprašalnika za merjenje strahu pred kriminaliteto. Po obsežnih teoretičnih raziskavah na tem področju je bil vprašalnik operacionaliziran in opredeljuje strah pred kriminaliteto s tremi komponentami: kognitivno, afektivno in vedenjsko. Razširja merjenje tradicionalno preučevanega strahu pred kriminaliteto v fizičnem okolju na strah pred kibernetsko kriminaliteto. V raziskavi je sodelovalo 207 občanov Ljubljane. Konvergentna in diskriminantna veljavnost sta bili ocenjeni z raziskovalno in potrditveno faktorsko analizo. Zanesljivost je bila ocenjena s Cronbachovim koeficientom alfa in kompozitno zanesljivostjo. Merski instrument je pokazal dobre merilne lastnosti, saj so imele vse tri komponente strahu pred kriminaliteto dve razsežnosti – fizično (običajno) in kibernetsko kriminaliteto. Raziskovalci do danes še niso dosegli soglasja o instrumentu, ki bi ga univerzalno uporabljali za merjenje strahu pred kriminaliteto. Več merskih instrumentov meri običajno kriminaliteto v fizičnem svetu, zanemarjajo pa strah pred kibernetsko kriminaliteto. Poleg tega manjkajo informacije o veljavnosti in zanesljivosti vseh treh dimenzij, saj merijo predvsem čustveno komponento strahu pred kriminaliteto. Predlagani vprašalnik poskuša odpraviti te pomanjkljivosti.

Ključne besede: strah pred kriminaliteto, merjenje, veljavnost, zanesljivost, kibernetska kriminaliteta, Ljubljana, Slovenija

UDK: **343.9(497.4)**