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2　　　　　　　　　Personality and defensive behaviour:

3　　　　A factor analytic approach to threat scenario choices

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9

10   **Abstract**

11   Although people tend to react in specific ways in threatening situations, research

12   points to the importance of individual differences in these defensive behaviours. From the

13   perspective of the reinforcement sensitivity theory (RST), this study examined the role of

14   personality traits in predicting these fight, flight and freeze behaviours. Four RST

15   questionnaires and the Blanchards' threat scenarios were used with a total of 1,019

16   participants. Threat scenarios were modified and examined by exploratory factor analysis

17   (EFA), while their relationship with RST questionnaires was explored by correlational and

18   regression analyses. The EFA revealed an orthogonal two-dimensional structure of defensive

19   direction: Defensive direction toward threat, and defensive direction away threat while

20   defensive intensity was not separately extracted. Results revealed that different

21   operationalisations of the BAS, BIS and FFFS, from the various RST questionnaires,

22   produced different associations with the Blanchards' threat scenarios. In general, BIS, Flight

23   and Freezing scales predicted tendencies moving away from the threat, while Fight and some

24   BAS scales predicted tendencies moving toward threat in dangerous situations. These

25   findings challenge some aspects of RST, especially the lack of association between the BIS

26   and defensive direction toward threat. Directions for further research are indicated.

27

28   **Keywords: reinforcement sensitivity theory, personality, threat, defensive behaviour**

29   Personality and defensive behaviour:

30   A factor analytic approach to threat scenario choices

31   Imagine you are walking alone in the street. Suddenly a man with a knife starts

32   running in your direction. How would you react? Would you fight or flee? If there are no

33   individual differences in defensive behaviour, all people should behave in the same manner

34   in such a life-threatening situation. Certainly, when the influence of situations and traits are

35   compared, the situation has the greater impact at the behavioural level (Ein-Dor & Perry-

36   Paldi, 2014). Still, people differ in their levels of fear and anxiety, and as shown below these

37   differences should be expected to relate to differences in defensive reactions. For example, in

38   occupation life some people have a preference towards occupations such as soldiers, fire-

39   fighters, and during leisure activities some have a preference towards dangerous hobbies such

40   as free climbing and paragliding. Other people would not dream of engaging in these

41   occupations or activities. In the clinical domain, people who suffer from phobic disorders can

42   perceive even walking in a neighbourhood as a life dangerous activity. Hence, it seems that,

43   indeed, people do differ in the way they perceive and behave in potentially threating

44   situations.

45   Currently, RST is the most prominent theory explaining the role of individual

46   differences in fear and anxiety-related behaviours, and also approach-related behaviours. It is

47   a neuropsychological theory of personality that assumes the existence of three emotional-

48   motivational systems: one approach system (i.e., Behavioural Approach System, BAS); and

49   two avoidance systems (i.e., Behavioural Inhibition System, BIS; and Fight, Flight, Freeze

50   System, FFFS). The most distinctive features of the two avoidance systems are emotional

51   output and defensive direction: The BIS activates behavioural repertoire when moving

52   *toward* threat, eliciting the emotional state of anxiety; while the FFFS activates behaviour

53   that moves the individual *away* from threat and elicits the emotional state of fear (Corr, 2008;

54   Corr, 2011; Gray & McNaughton, 2000; McNaughton & Corr, 2004).

55   FFFS-related fear should occur in the context of much clearer danger, eliciting

56   avoidance and escape behaviours; whereas BIS-related anxiety should occur in ambiguous

57   threat situations, leading to risk assessment (checking out, exploration, investigation)

58   (Blanchard, Hynd, Minke, Minemoto, & Blanchard, 2001). In prediction of specific defensive

59   behaviour, situation factors need to be taken into account. When a place of

60   concealment/protection is present in clearly dangerous situations, hiding is elicited; but, in

61   the context of inescapable dangerous situations, two distinct defensive behaviours could be

62   elicited: freezing or attack (defensive fight). If the source of threat is in near temporo-spatial

63   distance, and escape is not possible, then freezing ('playing dead') is an adaptive form of

64   immobilization in order evade detection – however, if spotted by the threat, then the only

65   viable behavioural reaction is to attack the source of threat in order (a) to protect oneself, and

66   (b) escape the situation. There are now extensive experimental animal studies supporting

67   these statements (Blanchard et al., 2001; Blanchard, Griebel, Pobbe, & Blanchard, 2011; Corr

68   & McNaughton, 2008; Shuhama, Del-Ben, Loureiro, & Graeff, 2007).

69   In marked contrast to animal studies, examination of human defensive behaviour

70   typically relies on self-report data, which is reasonable from ethical and convenience points

71   of view. Although self-report methodology has limitations, it still presents an invaluable

72   source of information (Pappens et al., 2013). However, issues are raised concerning the

73   compatibility of behavioural and questionnaire data, and how each set of data relates to

74   findings from experimental animals.

75   The best known self-report instrument for measuring defensive behavioural repertoire

76   in human was developed by Blanchard et al. (2001) on the basis of their extensive rodent

77   studies. Twelve scenarios present different threatening situations are modelled on distance to

78   threat and situational factors of avoidance/escapability. Additionally, ten behaviours are

79   provided from which participants must chose to match the 12 threat scenarios: hide; freeze,

80   immobilization; run away, try to escape; threaten to scream or call for help; yell, scream, or

81   call for help; threaten to attack; attack or struggle; check out, approach, or investigate; look

82   for something to use as a weapon; and, beg, plead for mercy, or negotiate. Studies have

83   indicated that threat scenarios can predict (Erber, Szuchman, & Prager, 2001) or even elicit

84   emotional and physiological reactions (Bernat, Calhoun, & Adams, 1999; Conklin, Tiffany,

85   & Vrana, 2000). Hence, findings suggest that it can be used as roughly fair measure of

86   defensive behavioural repertoire.

87   Previous data indicate that personality explains a significant portion of individual

88   variances in the Blanchard's threat scenarios. Perkins and Corr (2006) developed a coding

89   system to assess *defensive direction* and *defensive intensity* (see Figure 1). These constructs

90   present an important way to understand individual differences in defensive behaviours (Gray

91   & McNaughton, 2000; McNaughton & Corr, 2004). Defensive intensity presents a perceived

92   temporo-spatial distance of the threat, while defensive direction presents behavioural

93   tendencies that can be divided into direction *toward* or direction *away* from the threat.

94   Studies have shown that anxious and fear-prone individuals have shorter defensive distance

95   (i.e., they experience threatening stimuli as being more intense than others). In relation to

96   personality, Spielberger's trait anxiety is associated with a tendency to orientate towards

97   threat (Perkins & Corr, 2006); psychoticism (tough-mindedness) negatively relates to

98   defensive intensity; while the BIS scale positively correlates to both defensive intensity and

99   direction (Perkins, Cooper, Abdelall, Smillie, & Corr, 2010; Perkins & Corr, 2006).

100   - Figure 1 -

101   Studies showing the importance of personality in these threat scenarios pose some

102   methodological problems and unresolved issues. First, threat scenarios provide responses on

103   nominal measurement level, which limits the possible range of available statistical

104   procedures to analyse defensive behaviours. The first attempt to calculate total scores from

105   threat scenarios came from Perkins and Corr (2006). They developed a coding system for

106   defensive direction and distance upon theoretical assumptions of RST, but it has not yet been

107   empirically tested by means of exploratory factor analysis EFA. Secondly, a recent study

108   suggests differences in operationalization of the BIS and FFFS scales between various RST

109   purpose built questionnaires (Krupić, Križanić, Ručević, Gračanin, & Corr, 2015). Hence,

110   both the threat scenarios and personality questionnaires deserve further empirical

111   examination, before relation between personality and threat scenarios can be established.

112   The aim of this study is to test the relevance of personality traits in threat scenarios.

113   Bearing in mind these methodological problems, the coding system will be examined and

114   several RST questionnaires that contain separate BIS and FFFS scales will be compared.

115   Psychometric examination of the coding system requires a slight methodological

116   modification of the threat scenarios. Beside the original procedure for the threat scenarios,

117   five point rating scales are provided for each of 10 defensive behaviours for the 12 threat

118   scenarios. This modification in procedure allows the computing of total scores for 10

119   defensive behaviours across 12 threat situations. This modified procedure permits closer

120   examination by exploratory factor analysis (EFA). These results may support or suggest

121   modifications to the operationalization of defensive intensity and defensive direction.

122   Furthermore, administering four RST questionnaires alongside the threat scenarios allows

123   detection of operational differences between competing questionnaires in relation to the

124   statistical derived factors of defensive behaviour.

125   On the basis of previous studies, we expected to replicate past findings: (a) the BIS

126   and FFFS correlate with defensive intensity, reflecting greater overall threat sensitivity; (b)

127   the FFFS positively correlates with defensive direction (moving away from the source of

128   threat); and (c) the BIS negatively correlates with defensive direction (moving towards the

129   source of threat).

130

131   **Method**

132   **Participant and procedure**

133   A total of 1,019 university students (412 males) ranging in age from 12 to 68 (M =

134   23.78, SD = 8.23) completed a battery of questionnaires online via Limesurvey software.

135   **Instruments**

136   *Threat scenarios* (Blanchard et al., 2001) have been studied previously (Mesquita et

137   al., 2011; Perkins & Corr, 2006; Perkins et al., 2010; Shuhama et al. 2008). They are

138   designed to measure 10 defensive behaviours in 12 threatening situations. This instrument

139   was administered in original procedure as in Blanchard et al's (2001). Defensive behaviours

140   were rated on a 5-point Likert type scale. Furthermore, scores for defensive direction and

141   defensive intensity were computed in accordance with the procedure detailed by Perkins &

142   Corr (2006) using the formula: *Defensive intensity* = (Risk assessment + Threaten to scream

143   + Threaten to attack + Begging) + 2 X (Looking for a weapon + Freeze + Run + Hide) + 3 X

144   (Attack + Yell/Scream); and *Defensive direction* = (Risk assessment + Threaten to scream +

145   Threaten to attack + Begging + Looking for a weapon + Attack + Yell/Scream) + 1.5 X

146   Freeze + 2 X (Run + Hide).

147   All subscales computed with the modified procedure achieved Cronbach's alpha

148   greater than .80, while Defensive intensity and direction bellow .70, α= .66 and .62,

149   respectively (*see Table 2*).

150   ***RST personality trait.*** Four RST questionnaires were administered to obtain measures

151   of the BAS, BIS and FFFS. The most widely used RST questionnaire, the 20-item BIS/BAS

152   Scales (Carver & White, 1994) contains the BIS scale and three BAS subscales: Drive, Fun

153   seeking and Reward Responsiveness. Later, Corr & McNaughton (2008) suggested splitting

154   the BIS scale into BIS and FFFS scale, which is applied in this study. Items "*Even if*

155   *something bad is about to happen to me, I rarely experience fear or nervousness"* and '*I have*

156   *few fears compared to my friends"* formed FFFS, whereas the other five formed BIS scale, as

157   used in Beck, Smits, Claes, Vandereychen, & Bijttebier (2009). One of the most recent RST

158   questionnaires, the 30-items Jackson 5 (Jackson, 2009), contains five scales: BAS, BIS,

159   Fight, Flight and Freezing, the same as 29-item Reinforcement Sensitivity Questionnaire

160   (RSQ; Smederevac, Mitović, Čolović & Nikolašević, 2014). Finally, a 73-item

161   Reinforcement Sensitivity Theory Personality Questionnaire (RST-PQ; Corr & Cooper,

162   2015) has four scales: BAS (with four subscales: Reward Interest, Goal-Drive Persistence,

163   Reward Reactivity, and Impulsivity), BIS and FFFS, accompanied with a separate measure of

164   Defensive Fight. All of the four RST questionnaires are well studied and possess adequate

165   psychometric characteristics. All questionnaires are translated and validated in Croatian

166   language (Krupić et al., 2015).

167   **Results**

168   Results of EFA examining factor structure of Blanchard's threat scenarios are

169   presented in Table 1, and descriptive statistics and correlations with personality

170   questionnaires in Table 2. Measurement adequacy coefficient KMO was .79. We used

171   principal axis factoring as a method of extraction with oblique rotation. All three criteria

172   (eigenvalue larger than one, Scree plot and parallel analysis) suggested a two-factor solution

173   that explained 59.61% of variance. Correlation between two axes was $r = .02$. The two

174   factors are labelled *defensive direction away from threat* and *defensive direction toward*

175   *threat*.

176   For comparability with previous studies, defensive intensity and defensive direction

177   were computed upon original coding system. Defensive direction away and defensive

178   direction toward threat are reliable scales achieving Cronbach's α reliability coefficient .78

179   and .89, respectively, while defensive intensity and defensive direction have somewhat lower

180   reliability coefficients, $α = .66$ and .62, respectively. Correlations between defensive direction

181   and defensive direction away and defensive direction toward threat were $r = .52$ and $r = -.48$,

182   respectively; while defensive intensity correlated only with defensive direction away threat (r

183   $= .39$). Finally, defensive direction and defensive intensity correlated positively ($r = .41$),

184   which is very similar to ones obtained in Perkins & Corr (2006), and Perkins et al. (2010).

185   All correlation coefficients were significant at $p < 0.01$. These results suggest that

186   Defensive direction is not unidimensional, but rather is a two-dimensional and orthogonal

187   construct, while defensive intensity is not uniquely captured with modified threat scenarios.

188   -   TABLE 1 -

189   *Correlation between personality and behavioural defensive tendencies.* Data are

190   presented in 14 x 22 correlation matrix. Two main patterns of correlations are most relevant.

191   First, scales of BIS, Flight and Freezing correlate positively with defensive direction away

192   threat, and negatively with defensive direction toward threat. The only exception is the BIS

193   from Jackson 5, which correlated very poorly with all defensive behaviours. Secondly, all

194   fight scales correlated positively with defensive direction toward threat. Correlations with

195   defensive direction away threat were all very small and negative. Hence, individuals high on

196   BIS, Flight and Freeze have greater tendencies to move away from a threat in potentially life-

197   dangerous situations. The BIS from Jackson 5 is the only scale that show different pattern of

198   correlations. It achieves very small correlation with all defensive behaviours. On the contrary,

199   individuals high on Fight scales have tendency to actively defend themselves by attacking in

200   the same situations.

201   Additionally, there are two patterns of correlation between BAS scales and defensive

202   direction away threat and defensive direction toward threat. BAS scales that correlate

203   positively to defensive direction toward threat and not with defensive direction away threat

204   are: Drive, Fun Seeking, BAS (Jackson-5), Reward Interest and Impulsivity (RST-PQ), and

205   BAS (RSQ). Almost reversed pattern of correlation were observed with Reward

206   responsiveness, Goal-Drive persistence and Reward Reactivity. These results support

207   previous findings of existence of two BAS types of scales (Krupić & Corr, 2014; Krupić,

208   Gračanin, & Corr, 2015; Smillie, Jackson, & Dalgleish, 2006).

209   - TABLE 2 -

210   - TABLE 3 -

211   Predictive validity of RST questionnaires was further examined using hierarchical

212   regression analysis, controlling for the effects of gender and age. In first block we entered

213   gender and age, and in second block we entered scales for each of RST questionnaires

214   separately. R^2 change was used to compare predictive validity among different RST

215   questionnaires. They have explained between 4.5 to 18.50% of variance of defensive

216   direction away threat, and 3.7-16.7% of variances of defensive direction toward threat. The

217   Jackson-5 explained the most variance, then RST-PQ, RSQ, while significantly lower

218   predictive validity has shown the BIS/BAS Scales.

219   Both BIS scales from BIS/BAS Scales, Jackson-5 and RST-PQ correlated positively

220 with defensive direction away threat, and only BIS from RST-PQ correlated negatively to

221 defensive direction toward threat. All Flight/Freezing scales have predicted defensive

222 direction away threat, while only RST-PQ have predicted defensive direction toward threat.

223 All fight scales have predicted defensive direction toward threat. Finally, BAS from RSQ,

224 Impulsivity and Drive predicted defensive direction toward threat, while rests of BAS

225 subscales were not significant predictors.

226   **Discussion**

227   The main aim of this study was to examine the role of personality traits in predicting

228 defensive behavioural repertoire in Blanchard et al.'s (2001) threat scenarios using a new

229 methodological approach. The second aim was to explore potential bias in results due to

230 differences between various RST purpose built questionnaires. Using a 5-point scale, and

231 measuring 10 threat reactions for all 12 scenarios, defensive intensity and defensive

232 directions as defined by nominal measurement were replaced by two orthogonal dimensions

233 of defensive direction toward threat and defensive direction away threat. This modified

234 procedure revealed a different set of results: originally, defensive direction represented a

235 bipolar continuum, while our data indicate that two sides of the continuum reflect two

236 orthogonal dimensions.

237   In line with our first hypothesis, we replicated the findings using the original coding

238 system of defensive intensity and defensive direction. Specifically the BIS and FFFS of all

239 four RST questionnaires correlated positively with defensive intensity and defensive

240 direction (Perkins & Corr, 2006; Perkins et al., 2010). Furthermore, theoretically congruent

241 findings are correlations between fight, flight, freezing behavioural reactions and their same-

242 named personality traits, indicating good predictive validity. However, the BIS from all four

243   questionnaires did not correlate with either risk assessment or with defensive direction

244   toward threat, which did not meet the RST prediction and also confirm previous findings

245   (Perkins & Corr, 2006; Perkins et al., 2010). The BIS and Flight and Freezing scales

246   represents defensive behaviour that moves away from the threat, while fight scales represent

247   defensive behaviours that moves individual toward threat. According to the theory, the BIS

248   should show an opposite pattern. The one crumb of comfort was the higher correlation of

249   RST-PQ fear with defensive direction away threat, as compared with RST-PQ anxiety.

250   Overall, results provide partial support for the theoretical assumption. The Flight/Freeze

251   scales predict defensive direction away threat, while Fight scales predict defensive direction

252   toward threat.

253   The most problematic finding is the positive correlation between the BIS and

254   defensive direction away threat, instead with defensive direction toward threat (particularly

255   with risk assessment), as was predicted. This finding is not in line with pharmacologic study

256   of Perkins et al. (2013), where anxiolytic drug lorazepam had decreased risk assessment

257   behaviour in anxious individuals. This discrepancy may be caused by difference between

258   self-report and behavioural experiments. However, in the same study, Perkins et al. (2013)

259   also discuss on joint effects of lorazepam on panic and anxiety symptoms. They explain that

260   it is possible that anxiolytic drugs effects on threat perception that can trigger both anxiety

261   and phobia. This may be relevant for evaluation of the items in RST questionnaires in this

262   study. Items in BIS scales in all four RST questionnaires refer to end states of anxiety that are

263   very similar to end-states of fear. It may be more appropriate if the BIS scales focuses on

264   situations that *trigger* anxiety and related defensive behaviours. According to RST, anxiety

265   rises when approaching a threat and in the end it will result in similar emotional state of fear

266   (high arousal). On other hand, fear should rise momentary after presence of the threat and

267 should result in moving away from threat. According to this view, highly anxious individuals

268 should have lower threshold of experiencing anxiety when *entering* in threat situations, while

269 more fearful individuals should express more intense behavioural reaction when threat is

270 already present. Similarly, this argument also applies for Blanchard's threat scenarios. All

271 items describe final behavioural manifestations, without describing processes that precedes

272 the final behavioural output. In light of this, the BIS and FFFS both predicting defensive

273 direction away threat can be interpreted as being consistent with RST if we assume that they

274 concern end-state. Therefore, before coming to any final conclusions concerning defensive

275 direction of anxiety it may be more suitable to use behavioural tasks or more carefully

276 planned experimental studies that could operationalize processes underlying the BIS.

277   To conclude, four RST questionnaires highly converge, except the BIS scale from

278 Jackson-5. Further, the BIS/BAS scales show the lowest predictive validity for defensive

279 behaviours, and it should be more suitable to use RSQ and RST-PQ in study of defensive

280 behaviour. Finally, Blanchard's threat scenarios differentiate two defensive behaviours that

281 are distinguished by direction, and it is not appropriate as an instrument of defensive

282 intensity. We suggest future studies use more experimental designs to study anxiety and fear-

283 related behaviours.

284

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375

376 *Table 1. Pattern matrix of defensive behaviours scale*

	Factor		
	Defensive direction away from threat	Defensive direction toward threat	h^2
Yell scream	**.869**	.085	.759
Threaten to scream	**.849**	.162	.740
Run	**.795**	-.167	.666
Hide	**.741**	.015	.549
Freeze	**.694**	-.231	.543
Beg plead negotiate	**.644**	.168	.437
Attack	-.028	**.907**	.824
Threaten to attack	.076	**.876**	.770
Look for a weapon	.188	**.639**	.438
Risk assessment	-.252	**.408**	.235

377 * Loadings above 0.30 are bolded. The eigenvalue of the third, unretained factor was 0.84 .

378 h^2 = communality coefficient.

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386 *Table 2. Correlation matrix of four RST questionnaires and defensive intensity, defensive*

387 *direction, defensive tendency moving away and toward threat and ten distinct defensive*

388 *behaviours of threat scenarios threat scenarios and descriptive data for threat scenarios*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BIS/BAS scales														
Drive	.02	-.05	-.05	-.06	.01	.04	.03	.01	-.00	.10**	.08*	.09**	.11**	.14**
Fun seeking	.02	-.01	-.05	-.06	.02	-.01	.01	-.02	-.02	.07*	.08*	.07*	.09**	.10**
Reward	.09**	.15**	.04	.08*	.19**	.10**	.14**	.03	.13**	-.07*	-.10**	-.04	.08*	-.04
Responsiveness														
BIS-Anxiety	.17**	.26**	.24**	.33**	.28**	.20**	.27**	.13**	.32**	-.14**	-.15**	-.16**	.01	-.15**
BIS-Fear	.20**	.27**	.19**	.31**	.22**	.16**	.22**	.14**	.25**	-.11**	-.13**	-.22**	-.03	-.18**
Jackson 5														
BAS	-.03	-.02	-.05	-.07*	.02	.00	.02	.00	-.01	.04	.04	.15**	.07*	.11**
BIS	.06*	.09**	.07*	.11**	.16**	.10**	.13**	.07*	.14**	.01	-.04	.05	.10**	.07*
Fight	.04	-.24**	-.11**	-.18**	-.14**	-.05	-.05	-.09**	-.14**	.36**	.38**	.16**	.37**	.44**
Flight	.32**	.36**	.39**	.43**	.40**	.38**	.44**	.30**	.53**	-.05	-.08**	-.27**	.07*	-.11**
Freezing	.28**	.35**	.40**	.52**	.36**	.32**	.36**	.31**	.50**	-.07*	-.12**	-.28**	.03	-.16**
RST-PQ														
Reward Interest	-.07*	-.08*	-.08**	-.09**	-.04	-.010	-.02	-.02	-.06	.07*	.06	.16**	.02	.11**
Goal Drive	-.00	.05	-.02	.02	.09**	.07*	.07*	.02	.06*	-.04	-.05	.05	.02	.02
Persistence														
Reward	.09**	.10**	.09**	.13**	.18**	.14**	.18**	.09**	.18**	.05	.01	.03	.11**	.07*
Reactivity														
Impulsivity	.07*	-.02	-.01	.03	.02	.10**	.08**	.00	.05	.20**	.15**	.08**	.16**	.18**
BIS	.21**	.32**	.28**	.38**	.29**	.24**	.26**	.18**	.36**	-.06	-.10**	-.20**	.04	-.12**
FFFS	.33**	.43**	.38**	.52**	.42**	.37**	.42**	.27**	.53**	-.10**	-.15**	-.31**	.01	-.19**
Defensive Fight	.01	-.20**	-.12**	-.14**	-.12**	-.07*	-.08**	-.11**	-.14**	.29**	.29**	.19**	.27**	.35**
RSQ														
BAS	-.04	-.14**	-.09**	-.14**	-.08*	-.01	-.04	-.05	-.08**	.19**	.17**	.19**	.10**	.22**
BIS	.21**	.27**	.29**	.39**	.26**	.24**	.27**	.23**	.37**	-.06	-.10**	-.23**	-.01	-.15**
Fight	09**	-.19**	-.07*	-.10**	-.09**	.02	.01	-.06	-.07*	.30**	.30**	.12**	.28**	.33**
Flight	.19**	.39**	.35**	.38**	.44**	.29**	.34**	.26**	.45**	-.16**	-.20**	-.23**	.02	-.20**
Freeze	.26**	.30**	.35**	.53**	.31**	.29**	.32**	.28**	.46**	-.09**	-.14**	-.25**	-.05	-.20**
Cronbach's á	.66	.62	.85	.93	.86	.90	.89	.92	.78	.88	.88	.86	.89	.89
M	20.67	16.16	22.78	26.99	36.54	27.69	30.08	22.04	166.10	28.24	29.14	37.40	34.57	129.18
SD	3.26	2.31	7.86	10.97	9.78	10.01	10.31	9.10	46.85	9.53	9.25	9.98	10.03	30.14
Skewness	.12	.00	.71	.40	-.50	.13	-.06	.83	.02	.23	.34	-.08	-.12	.21
Kurtosis	1.29	.12	.29	-.71	-.14	-.79	-.77	-.00	-.43	.34	-.20	-.32	-.60	-.27

389 **Note:** 1- Defensive intensity; 2 - Defensive direction; 3 - Hide; 4 - Freeze; 5 - Run; 6 - Threaten to scream; 7 - Yell scream; 8 - Beg plead/

390 negotiate; 9 - Total - Defensive direction away from threat; 10-Threaten to attack; 11-Attack; 12 –Risk assessment; 13-Look for a weapon;

391 14-Total - Defensive direction toward threat

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393   *Table 3. Hierarchical regression analysis for RST questionnaires in prediction of Defensive*

394   *direction away threat and Defensive direction toward threat controlled for effects of*

395   *gender and age*

		Defensive direction away threat				Defensive direction toward threat			
BIS/BAS Scales									
Predictors and step		β	R^2	ΔR^2	ΔF	β	R^2	ΔR^2	ΔF
1	Gender	-.498**	.265	.265	173.488**	.295**	.087	.087	45.899**
	Age	-.096**				.000			
2	Gender	-.433**	.310	.045	12.602**	.268**	.124	.037	8.073**
	Age	-.092**				.000			
	Drive	-.001				.143**			
	Fun Seeking	-.030				.066			
	Reward Responsiveness	-.003				-.069			
	BIS-Anxiety	.150**				-.024			
	BIS-Fear	.115**				-.078*			
Jackson -5									
Predictors and step		β	R^2	ΔR^2	ΔF	β	R^2	ΔR^2	ΔF
1	Gender	-.498**	.265	.265	173.488**	.295**	.087	.087	45.899**
	Age	-.096**			64.166**	.000			
2	Gender	-.341**	.450	.185		.207**	.254	.167	42.903**
	Age	-.067**				-.017			
	BAS	.000				.017			
	BIS	.080**				-.052			
	Fight	-.112**				.415**			
	Flight	.273**				-.014			
	Freezing	.197**				-.069			

RST-PQ

Predictors and step	β	R²	ΔR²	ΔF	β	R²	ΔR²	ΔF
1 Gender	-.498**	.265	.265	173.488**	.295**	.087	.087	45.899**
Age	-.096**				.000			
2 Gender	-.336**	.424	.158	37.498**	.232**	.216	.129	22.404**
Age	-.061*				-.013			
Reward Interest	-.020				-.030			
Goal Drive Persistence	-.007				-.053			
Reward reactivity	.077*				.047			
Impulsivity	-.004				.092**			
BIS	.072*				-.081*			
FFFS	.346**				-.089*			
Defensive fight	-.144**				.297**			

RSQ

Predictors and step	β	R²	ΔR²	ΔF	β	R²	ΔR²	ΔF
1 Gender	-.498**	.265	.265	173.488**	.295**	.087	.087	45.899**
Age	-.096**				.000			
2 Gender	-.374**	.409	.143	46.435**	.248**	.206	.119	28.678**
Age	-.073**				.003			
BAS	-.035				.100**			
BIS	.027				.003			
Fight	.021				.271**			
Flight	.210**				-.034			
Freezing	.229**				-.078*			

397   Figure 1

DEFENSIVE INTENSITY

3	Attack Yell/scream
2	Look for a weapon
1	Risk assess Threaten to scream Threaten to attack Beg/plead/negotiate

Freeze

Run
Hide

1	1.5	2
(Towards threat)	**DEFENSIVE DIRECTION**	*(Away from threat)*
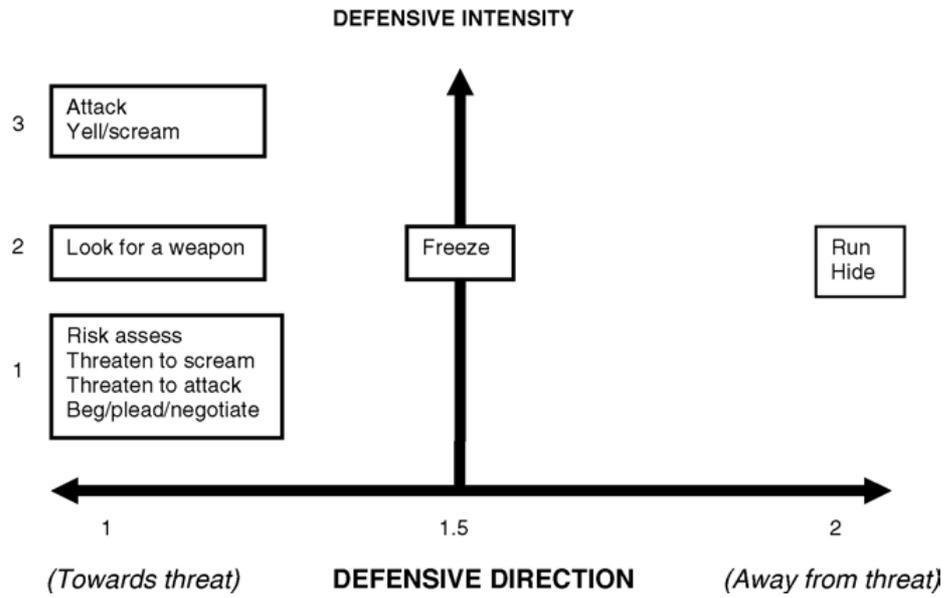
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399   Fig. 1. Threat scenario response choices coded for defensive intensity and defensive direction

400   (Perkins & Corr, 2006)

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