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The relationship between mood experienced during an exam, proneness to frustration and neuroticism

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ABSTRACT

We examined how proneness to experience feelings of aggression in frustrating situations and neuroticism are related to three mood dimensions – tense arousal (TA), energetic arousal (EA) and hedonic tone (HT) – measured before and after an exam. Individuals high in sensitivity to frustration had low HT and EA, and high TA after completing the exam. The analysis revealed that frustration was significantly associated with TA, even after controlling for neuroticism and TA before exam. Neuroticism was significantly correlated with mood in both measurements. The results suggest that the relationship between individual differences in response to frustration and mood is sensitive to situational factors, while neuroticism is rather chronically associated with negative emotionality.

1. Introduction

There are various factors determining mood and they generally can be categorized as internal and external. External factors are various situations able to improve or worsen mood, e.g., physical activity or listening to music are known to improve mood (Biernacki, Jankowski, Kowalczuk, Lewkowicz, & Dereń, 2012; Thayer, 1996; Thayer, Newman, & McClain, 1994), while an exam is known to worsen mood (Zajenkowski, Goryńska, & Winiewski, 2012). Internal factors pertain mostly to personality (Jankowski & Zajenkowski, 2012), with neuroticism showing the most robust associations (Matthews, Deary, & Whiteman, 2009; Zajenkowski et al., 2012). In the present study we examine other individual difference dimensions, which may be strongly correlated with mood in a specific situation.

As mentioned above, participation in an exam worsens mood; namely, in the exam situation hedonic tone and energetic arousal were lower, while tense arousal was higher in comparison to neutral conditions (Zajenkowski et al., 2012). The mood alteration was, however, less striking in individuals with low neuroticism, what suggests that a low level of this trait might act against mood worsening (Zajenkowski et al., 2012). In the present study, we aimed to test other individual characteristics that might be particularly relevant to stressful situations, theoretically even more than neuroticism itself. We explored the relationship between the tendency towards aggressive feelings in frustrating situations and mood experienced in potentially stressful conditions. In particular, we referred to a construct recently developed by Lawrence (2006) who argued that there might be individual differences in responses to situational triggers. Lawrence (2006) proposed two factors – sensitivity to frustrations and sensitivity to provocations – according to which people may vary in their susceptibility to certain situational aggressive triggers. The former factor reflects proneness to feel aggressive in response to having one's goals blocked and to uncontrollable negative events. This includes situations in which the individual lacks control, such as high ambient temperature, a crowded place, being stressed or having academic problems. Sensitivity to provocation reflects a predisposition to feel aggressive in reaction to goading and provocation from others (e.g., insult and betrayal).

Because situational context is particularly important in evoking aggressive feelings (e.g. Anderson & Bushman, 2002), we decided to focus on mood experienced in a specific setting. In particular, we examined the mood of students before and after an exam. We referred to the three-factor model of mood as the most relevant for understanding core affective experience within various concepts (Schimmack & Grob, 2000). The model proposed by Matthews, Jones, and Chamberlain (1990) distinguishes between three dimensions: tense arousal (TA; contrasting tension and nervousness with relaxation and calmness), energetic arousal (EA; vigor and energy vs. fatigue and tiredness), and hedonic tone (HT; contrasting pleasantness with unpleasantness), within the two factors proposed by Thayer (1989; TA and EA).

Because stress and negative stimuli can lead to aggression (Berkowitz, 1990), in the present investigation, we expected sensitivity

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to frustration (which might be related to academic problems) to be associated with mood assessed in a demanding academic situation, such as taking an exam (Lawrence, 2006). However, it is difficult to expect a specific direction for this relationship, since aggressive feelings may be associated with both positive and negative mood (Harmon-Jones, Harmon-Jones, Abramson, & Peterson, 2009). Moreover, previous research showed that neuroticism is an important predictor of both mood (e.g., Matthews et al., 2009; Zajenkowski et al., 2012), and sensitivity to frustration (Zajenkowska, Jankowski, Lawrence, & Zajenkowski, 2013). Therefore, we decided to control for this personality trait in our study to see the unique contribution of frustration to mood in a demanding situation. This paper extends previous work by exploring how the basic affective experiences are associated with an aggression-related construct, i.e., the tendency towards aggressive feelings.

2. Method

2.1. Participants and procedure

The study involved 217 (176 females) undergraduate students from the Academy of Special Education in Warsaw took part in the study. Their mean age was 21.10 (SD = 2.72). The course selected for the study ended with a written final exam. Participants were asked to assess their mood before and after the exam. After the exam, measures of personality and sensitivity to provocation and frustration were administered.

2.2. Measures

2.2.1. Mood

Mood was assessed using the Polish adaptation (Goryńska, 2005) of the UWIST Mood Adjective Checklist (UMACL; Matthews et al., 1990), a 29-item questionnaire which provides state measures of EA, TA and HT. Cronbach's alphas for each subscale are 0.78, 0.83, and 0.89, respectively.

2.2.2. Sensitivity to frustrations

The STAR scale (Lawrence, 2006) in Polish adaptation (Zajenkowska et al., 2013) was used to measure aggression-related sensitivities. The questionnaire consists of 22 items (10 reflect Sensitivity to Frustrations, and 12 Sensitivity to Provocations). Participants are presented with 22 situations and are asked to rate how aggressive each makes them typically feel on a 5-point scale. The instrument has high internal consistency ($\alpha = .80$ for Frustrations) and its validity has been examined previously (Lawrence, 2006).

2.2.3. Neuroticism

The NEO-FFI (Costa & McCrae, 1992) in Polish adaptation (Zawadzki, Strelau, Szczepaniak, & Sliwinska, 1998) was used to measure neuroticism. This scale contains twelve items and its internal consistency (α) equals .80.

3. Results

First, we correlated all variables used in the study (see Table 1). The relationship between sensitivity to frustration with mood was numerically stronger during the second mood measurement as compared to the before exam situation. Individuals tend to relate their tense arousal mood with their frustration levels more after an exam than before it (the correlations statistically differ at the .05 level, following the procedure suggested by Mylonas, Veligekas, Gari, & Kontaxopoulou, 2012). However, the differences for the HT and EA remained at the numerical level only (the differences between the respective correlations before and after the exam were not statistically significant). With respect to neuroticism, the same pattern of correlations for both mood measurements (before and after the exam) was found, all differences remaining at non significant levels. Moreover, neuroticism and frustration were positively related which is in agreement with other investigations (Zajenkowska et al., 2013).

Next, we analyzed the changes of mood between measurements (the correlations of mood dimensions can be found in Table 1). The analyses revealed the decrease of HT ($t(197) = 4.96$; $p < 0.001$), EA ($t(197) = 4.30$; $p < 0.001$), and TA ($t(197) = 4.80$; $p < 0.001$) after the exam. We have also tested for possible sex differences in the mood experienced after the exam. Analysis of variance showed no significant effects for HT ($F(1, 215) = 0.85$; $\eta^2 = 0.004$), TA ($F(1, 215) = 0.28$; $\eta^2 = 0.001$) and EA ($F(1, 215) = 1.60$; $\eta^2 = 0.008$). The latter results are consistent with previous research with UMACL dimensions (Zajenkowski et al., 2012).

In order to analyze the effect of frustration on mood, partial correlations were calculated, controlling for mood before the exam and neuroticism (see Table 2). Doing so, we wanted to examine the

Table 1
The intercorrelations and descriptive statistics of all variables used in the study.

				Before exam			After exam		
		Frustration	N	HT1	TA1	EA1	HT2	TA2	EA2
Frustration			.24**	−.07	.06	−.11	−.14*	.27**	−.20**
N				−.32**	.30**	−.18*	−.31**	.25**	−.29**
HT1					−.54**	.59**	.47**	−.38**	.45**
TA1						−.16*	−.32*	.35**	−.19**
EA1							.28**	−.22**	.64**
HT2								−.63**	.66**
TA2									−.44**
α		.83	.87	.91	.88	.85	.93	.86	.86
Mean	Men	30.20 (8.63)	20.00 (10.13)	28.14 (5.71)	22.60 (5.20)	26.26 (6.01)	26.21 (6.60)	22.21 (6.25)	24.90 (6.73)
(SD)	Women	29.91 (7.90)	25.30 (8.00)	27.40 (5.40)	24.40 (5.70)	27.80 (5.50)	25.24 (6.02)	21.70 (5.54)	26.27 (6.10)
	Overall	29.96 (8.02)	24.26 (8.68)	27.54 (5.41)	24.05 (5.68)	27.50 (5.61)	25.42 (6.13)	21.80 (5.67)	26.01 (6.27)
Skewness	Men	.19	.15	0.20	.00	−.22	−.09	.10	.40
	Women	−.35	−.15	−.27	−.30	−.13	−.07	.14	.02
	Overall	−.22	.22	−.20	−.22	−.17	−.06	.14	.08
Kurtosis	Men	−.19	.36	−.84	−.32	−.39	−.21	−.77	−.39
	Women	−.03	.22	−.54	−.25	−.49	−.47	.35	−.34
	Overall	−.07	.29	−.58	−.32	−.44	−.42	.06	−.41
Minimum–maximum	Men	15–50	1–48	16–39	11–33	13–37	11–38	11–35	13–39
	Women	10–50	3–46	13–39	9–35	13–40	13–38	9–36	10–40
	Overall	10–50	1–48	13–39	9–35	13–40	11–38	9–36	10–40

* $p < 0.05$.
** $p < 0.001$.

Table 2
Partial correlations of frustration and mood after exam controlling for neuroticism and mood before exam (first raw) and neuroticism and mood after exam controlling for frustration and mood before exam (second raw).

	HT2	TA2	EA2
Frustration (controlling for neuroticism and mood before exam)	−.08	.24**	−.12
Neuroticism (controlling for frustration and mood before exam)	−.17*	.11	−.21**

* $p < 0.05$.
** $p < 0.001$.

role of frustration on mood immediately after the stressful situation, controlling for baseline mood and personality trait important for both analyzed variables. The analyses revealed that frustration was significantly associated with TA after exam, while its relationship with EA reached a tendency level ($p < 0.1$). Moreover, we also calculated correlations between neuroticism and the second mood measurement controlling for frustration and baseline mood. We found a significant relationship between neuroticism and HT and EA, and weak (non-significant) association with TA.

4. Discussion

The current study examined how proneness to experience feelings of aggression in frustrating situations is related to basic mood dimensions in a naturally demanding situation. We found that students' sensitivity to frustration was correlated with mood after an exam. Specifically, those who were high on frustration had low HT and EA, and high TA after completing the exam. Furthermore, frustration remained related to TA after the exam (the correlation being statistically significant), even after controlling for baseline mood and neuroticism. Neuroticism was statistically significantly related to HT and EA after the exam, even when controlling for baseline mood and frustration. It seems that stressful conditions increased the role of individual differences in response to frustration for TA. It is worth to recall here that TA contrasts the states of tension and nervousness with relaxation and calmness and is highly associated with anxiety (Matthews et al., 1990).

This result may shed some light on one of the important issues in understanding aggressive behavior, namely the question about emotional reactions accompanying aggression. The feelings of anger are believed to be the most significant affective triggers of aggression (e.g., Berkowitz, 1990), however, the specific mechanism underlying this relationship remains unclear. Anger has been identified as a complex feeling comprising some aspects of negative and positive affects (Harmon-Jones et al., 2009). It is possible that positive affect generated by an aggression-provoking situation may reinforce the associated behaviors (Lawrence, 2006). Furthermore, there is some evidence that other emotions may also be involved in aggression-related phenomena, including anxiety (Marsee, Weems, & Taylor, 2008). For instance, Nederlof, Muris, and Hovens (2014) in a recent study found that induced anxious mood may result in increased tendency towards aggressive attitude. In particular, Nederlof et al. (2014) reported that induced anxious mood resulted in an increased tendency to complete word-stems in an aggressive way (e.g., 'ANG' completed as 'ANGER'). The authors explained this result with reference to an old notion from Cannon (1915), arguing that anxiety is most often linked with flight behavior, but sometimes also appears to be associated with fight behavior. However, this explanation does not seem to be the case in our study, and there are few reasons to think that way. First, Thayer (1996) claimed that Cannon's concept of the fight or flight action is best expressed by a tense-energy state. Thayer (1996) discussed this state from an evolutionary perspective, suggesting that it may be a form of preparation for fight or flight behavior. In our investigation, sensitivity to frustration was positively associated with TA, but negatively with EA, which suggests that individuals high on frustration were in rather a tense–tiredness state. The latter is described by Thayer (1996) as a mix of fatigue, nervousness and anxiety. This mood is often accompanied by depressiveness and negative thoughts about oneself (e.g., low self-esteem). Moreover, as shown previously, sensitivity to frustration is not associated with externalized aggression. For instance, Lawrence (2006) found, that among the two sensitivities, only provocation correlates positively with physical and verbal aggression. The aforementioned observations might be relevant to more deeply understand the nature of proneness to aggressive feelings. Cambell (2006) concluded that anxiety is one of the most important factors diminishing external aggressive behavior. Our results and previous findings suggest that sensitivity to frustration is related more to avoidant rather than approach behavior. The increased tension may simply inhibit the direct expression of aggressive emotions.

Interestingly, neuroticism was associated with mood in a different way than frustration. The correlations between neuroticism and HT, TA and EA were quite consistent across the two measurements. Generally, neurotics experienced negative mood. However, when the mood before the exam was controlled for through partial correlations computation, neuroticism was not significantly associated with the second measurement of TA, and was only weakly related to EA and HT. This is in agreement with previous observations made by Zajenkowski et al. (2012). The authors suggested that neuroticism might be chronically related to negative mood, and the situational factors have rather little influence on this relationship. It is possible that this personality trait has an indirect effect on TA and EA after the exam through TA and EA before the exam (see Zajenkowski et al., 2012). In contrast, the significance of frustration for TA was not revealed until the second measurement. It seems that proneness to feeling aggressively in frustrating conditions is more context sensitive in comparison to neuroticism.

Finally, it needs to be acknowledged that the current study has limitations. Most importantly the analyzed sample consisted of a majority of females which might influence the obtained associations. Cambell (2006) stresses that avoidant behavior (fear/anxiety) is more typical for women in the aggression-related studies. Therefore, it would be interesting to examine the relationship between mood and sensitivity to frustration in a more balanced sample. Additionally, it is possible that the first assessment of mood might have influenced the results of the second measurement, and therefore one may wonder whether a different pattern of relationships would be revealed without the pre-exam test. Moreover, the research revealed that individuals sensitive to frustration tend to experience higher TA during an exam. Many data suggest that the increased level of tension/anxiety has a negative impact on cognitive functions, for example, attentional (e.g., Matthews et al., 2009). It would be interesting to control for exam results in future studies to examine whether the high level of sensitivity to frustration increases TA, and in turn influences performance.

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