

Aggression: An Alternative Model of Sensation Seeking and Regulatory Emotional Self-efficacy

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【Abstract】 Objective: To explore the relationship among sensation seeking, regulatory emotional self-efficacy and aggression. **Methods:** Sensation Seeking Scale for Chinese undergraduate, Regulatory Emotional Self-efficacy Scale, Buss-Perry Aggression Questionnaire and Aggressiveness-Implicit Association Test were applied to 400 college students from Central South University, Changsha, China. **Results:** ①Explicit aggression was significantly positively correlated with sensation seeking and negatively related to regulatory emotional self-efficacy. In contrast, implicit aggression had no significantly correlation with sensation seeking and regulatory emotional self-efficacy; ②After controlling for gender, both sensation seeking and regulatory emotional self-efficacy were significantly predicted explicit aggression; ③Regulatory emotional self-efficacy was found to had a partial mediating effect on the relationship between sensation seeking and explicit aggression(the mediating effect interpreted 10.65% of total effect), but no moderating effect was observed($t=-1.48, P=0.14>0.05$). **Conclusion:** Regulatory emotional self-efficacy was a mediator between sensation seeking and explicit aggression.

【Key words】 Sensation seeking; Regulatory emotional self-efficacy; Explicit aggression; Implicit aggression

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攻击性:关于感觉寻求和情绪调节自我效能感的可选模型

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【摘要】 目的:探讨感觉寻求、情绪调节自我效能感和攻击性的关系。**方法:**采用中国版大学生感觉寻求问卷、情绪调节自我效能感量表、Buss-Perry 攻击性量表和攻击性内隐联想测验对 400 名大学生进行测评。**结果:**①外显攻击性与感觉寻求呈显著正相关、与情绪调节自我效能感呈显著负相关,而内隐攻击性与这两个变量相关不显著;②控制性别变量后,感觉寻求和情绪调节自我效能感均对外显攻击性有显著预测作用;③情绪调节自我效能感在感觉寻求与外显攻击性中的中介效应显著(中介效应解释总效应的 10.65%),但调节效应不显著($t=-1.48, P=0.14>0.05$)。**结论:**情绪调节自我效能感在感觉寻求与外显攻击性的关系中起中介作用。

【关键词】 感觉寻求; 情绪调节自我效能感; 外显攻击性; 内隐攻击性

1 Introduction

Aggression is any behavior directed toward another individual that is carried out with the proximate(immediate) intent to cause harm(Anderson & Bushman, 2002). Sensation seeking is a trait defined by the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and financial risk(such as aggression) for the sake of such experience(Zuckerman, 1994). The level of sensation seeking changes with age and peaks

during the period of emerging adulthood(Steinberg, Albert, Cauffman, Banich, Graham, & Woolard, 2008). A meta-analysis aiming at exploring the relationship between sensation seeking and aggression indicates that high sensation seeking makes an individual more likely to engage in aggression(Wilson, & Scarpa, 2011).

Previous researches evidence that the stability of emotion relates to aggression, anger and other emotional dysregulation make an individual behave more aggressively(Dvorak, Pearson, & Kuvaas, 2013; Robertson, Daffern, & Bucks, 2012). Except for the capability of emotion regulation, the belief of the capability of emotion regulation is equally important. Regulatory emotional self-efficacy is a perceived capability to

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manage one's emotion, prior researches reveal that regulatory emotional self-efficacy impacts delinquent conducts including aggression directly or indirectly (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Caprara, Gerbino, Paciello, Giunta, & Pastorelli, 2010).

On the one hand, the researchers theorize sensation seeking is related to openness, people with higher level of sensation seeking are inclined to possess positive affect; On the other hand, they are too impulsive to control their emotion (Zhao, 2004; Miller, Flory, Lynam, & Leukefeld, 2003). Hence, sensation seeking is possibly closely related to regulatory emotional self-efficacy but the specific relationship is unknown. The general aggression model (GAM) proposes that various inputs including individual differences influence eventual aggressive outcomes via several routes such as cognition and affect (Anderson, & Bushman, 2002). A growing body of research has documented the intervention of the consideration of future consequences, hostile cognition, negative affect and self-control between sensation seeking and aggression (Joireman, Anderson, & Strathman, 2003; Jiang, 2012). Therefore, regulatory emotional self-efficacy is possibly playing a part between sensation seeking and aggression.

Building on the GAM, the current study was designed to examine the relationship among sensation seeking, regulatory emotional self-efficacy and aggression. As a cognitive variable, regulatory emotional self-efficacy may play a role in moderator or mediator. Based upon previous researches, two models were hypothesized: ① Sensation seeking and regulatory emotional self-efficacy may interact to predict aggression; ② Regulatory emotion self-efficacy may mediate the relationship between sensation seeking and aggression.

2 Methods

2.1 Participants

The total sample included 473 college students enrolled in Central South University, Changsha, China. Only 400 valid data received, male and female in each half. The mean age was 19.25 years ($SD=0.93$). As for major, 29.3% were arts students, 27.5% were science students and 43.3% were engineering students. 56.0% of students were the only child in their families and an-

other 44.0% of students had siblings.

2.2 Measures

2.2.1 Sensation Seeking Scale for Chinese undergraduate (Zhao, 2004) The 36-item scale assesses sensation seeking of college students under the Chinese culture, including thrill and adventure seeking (TAS) and disinhibition (DIS) subscales. Each item has three alternative responses: ① don't want to do; ② want to do, but not necessarily do; ③ want to do, and certainly do if possible. This scale has been shown to have excellent psychometric properties and the Cronbach's alpha was 0.90 in the current study.

2.2.2 Regulatory Emotional Self-efficacy Scale (RES scale; Caprara, 2008) The 12-item RES scale assesses beliefs about emotion-regulation ability, including three dimensions of perceived self-efficacy in expressing positive affect (POS), managing despondency/distress (DES) and managing anger/irritation (ANG). Responses are provided using a 5-point Likert scale: rated from 1 (completely false for me) to 5 (completely true for me). Adequate reliability and validity have been demonstrated in previous studies and the Cronbach's alpha was 0.81 in the current study (Caprara, Giunta, Eisenberg, Gerbino, Pastorelli, & Tramontano, 2008; Zhang, Zhang, & Lu, 2010).

2.2.3 Buss-Perry Aggression Questionnaire (BPAQ; Buss, & Perry, 1992) The 29-item BPAQ assesses explicit aggression by four subscales including physical aggression, verbal aggression, anger and hostility. Participants rate each item from 1 (completely false for me) to 5 (completely true for me). Prior investigations demonstrate that BPAQ has good internal consistency and test-retest reliability (Buss, & Perry, 1992). In the current study, the Cronbach's alpha was 0.86.

2.2.4 Aggressiveness-Implicit Association Test (Agg-IAT) The Agg-IAT is used to assess implicit aggression and similar to previous studies (Banse, & Fischer, 2002; Zhou, 2011). The Agg-IAT is consisted of stimuli (e.g., self or other, kind or offensive) and categories (two "targets" and two "attributes"), participants organize stimuli to corresponding category as fast and correctly as they can. In current study, stimuli of the target categories were adapted from previous studies (Zhou, 2011), and the stimuli of the attribute categories were chosen

from words' list which 20 psychology graduates evaluated the five most consistent to attribute categories.

The task sequence and more details of the Agg-IAT can be taken from Table 1. The index of implicit aggression, namely IAT score D, is computed according to a procedure suggested by Greenwald, Nosek and Banaji(2003).

Table 1 Task Sequence of the Agg-IAT

Block	Number of trials	Task	Category label	
			Left	Right
1	20	Target discrimination	Self	Other
2	20	Attribute discrimination	Aggression	Peace
3	20+40*	Initial combined task	Self, aggression	Other, peace
4	20	Reversed target discrimination	Other	Self
5	20+40*	Reversed combined task	Other, aggression	Self, peace

Notes: *20 practice trials followed by 40 experimental trials in the combined tasks. The detail of the adopted Chinese stimuli: self (我, 俺, 本人, 自己, 我们), other (他, 外人, 他们, 他人, 别人), aggression (攻击, 袭击, 殴打, 进攻, 冒犯), peace (和睦, 包容, 友好, 亲切, 仁爱).

2.3 Procedures

The whole study was completed by computers in the same computer room. About 30 participants matched 6 experimenters and data collection lasted ten days. The current study had two part: Participants started with Agg-IAT and followed by a series of self-report questionnaires. A meta-analysis maintains that the sequence of implicit and explicit tests would influence the ending of study(Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). Therefore, completed Agg-IAT firstly is a better choice(Greenwald, Poehlman, Uhlmann, & Banaji, 2009). The whole test would take nearly 30 minutes to complete and the computer can record data automatically.

3 Results

3.1 Preliminary analyses

Table 2 reported means, standard deviations, skewness and kurtosis for all study variables for males and females, respectively. Most variables' skewness and kurtosis approached 0, hence, the assumption of approximately normal distribution was received. Independent t-test revealed that males reported significantly higher levels of sensation seeking compared to females($t=4.75$, $P<0.01$).

Table 3 showed the correlations among all study variables. Zero-order correlations showed that explicit

aggression was significantly positively correlated with sensation seeking and negatively related to regulatory emotional self-efficacy. In contrast, implicit aggression was non-significantly associated with other variables.

Therefore, based on preliminary analyses, only explicit aggression was accessed to analyses of moderating and mediating effects. Since males and females performed differently on sensation seeking and there was not hypothesized that the relationship between sensation seeking and regulatory emotional self-efficacy in predicting aggression would differ based on gender, gender was entered as a covariate in the moderation and mediation analyses.

Table 2 Descriptive Statistics and Difference Test for All Study Variables

Variable	Male(n=200)			Female(n=200)			<i>t</i>
	Mean(SD)	Skewness	Kurtosis	Mean(SD)	Skewness	Kurtosis	
Ss	44.82(11.34)	0.24	-0.25	40.00(8.79)	0.57	0.89	4.75**
Res	46.52(5.68)	0.15	0.21	46.38(5.58)	0.07	0.25	0.24
Bpaq	69.51(13.70)	0.16	-0.35	67.53(13.04)	0.26	0.26	1.48
D	0.51(0.37)	-0.27	0.26	0.52(0.31)	0.07	0.08	-0.45

Notes: ** $P<0.01$. Ss: Sensation seeking; Res: Regulatory Emotional Self-efficacy; Bpaq: Explicit aggression; D: Implicit aggression.

Table 3 Zero-Order Correlations for All Study Variables

	1.	2.	3.	4.
1. Ss	1			
2. Res	0.05	1		
3. Bpaq	0.23**	-0.48**	1	
4. D	-0.01	-0.01	-0.02	1

3.2 Moderation analysis

A series of hierarchical regression analyses were conducted to examine the moderating effect of regulatory emotional self-efficacy on relationship between sensation seeking and explicit aggression. In order to minimize multicollinearity, predictor variables were centralized. Variables were entered in three steps. Gender as a covariate was entered in step 1. Sensation seeking and regulatory emotional self-efficacy were entered in step 2. Sensation seeking \times regulatory emotional self-efficacy interaction was entered in step 3.

As shown in Table 4, after controlling gender, the main effect of sensation seeking($B=0.24$, $t=5.54$, $P<0.001$) and regulatory emotional self-efficacy($B=-0.49$, $t=-11.59$, $P<0.001$)were significantly associated with explicit aggression, respectively. However, the interaction of sensation seeking and regulatory emotional self-

efficacy was not significant when predicting explicit aggression($t=-1.48$, $P=0.14>0.05$). That is, regulatory emotional self-efficacy was not the moderator of sensation seeking and explicit aggression.

Table 4 Moderation Analysis: Testing the interaction between Ss and Res in Predicting Explicit Aggression

Variable	SE	Beta	t
Outcome: Bpaq			
Step1: $F(1, 398)=2.18$, $P=0.14>0.05$, $R^2=0.01$			
Gender(-0.5=male, 0.5=female)	1.34	-0.07	-1.48
Step2: $F(3, 396)=54.24$, $P<0.001$, $\Delta R^2=0.29$, $\Delta F=79.83$, $P<0.001$			
Gender(-0.5=male, 0.5=female)	1.16	-0.02	-0.55
Ss	0.06	0.24	5.54***
Res	0.10	-0.49	-11.59***
Step3: $F(4, 395)=41.34$, $P<0.001$, $\Delta R^2=0.00$, $\Delta F=2.18$, $P=0.14>0.05$			
Gender(-0.5=male, 0.5=female)	1.16	-0.03	-0.61
Ss	0.06	0.23	5.22***
Res	0.10	-0.49	-11.57***
Ss×Res	0.01	-0.06	-1.48 ⁺

Notes: *** $P<0.001$, ⁺ $P=0.14$.

Table 5 Mediation Analysis: Testing the Ss via Resto Predicting Explicit Aggression

Step	Dependent variable	Independent variable	SE	Beta	t
1. path c	Bpaq	Ss	0.06	0.23	4.60**
2. path a	Res	Ss	0.03	0.05	0.89
3. path c'	Bpaq	Ss	0.05	0.25	5.83**
pathb		Res	0.10	-0.49	-11.60**

3.3 Mediation analysis

Because of sensation seeking and explicit aggression significant correction, mediation analysis can be conducted. Wen, Chang, Hau and Liu(2004) proposed a procedure to examine the mediation effect, three steps regression analyses and relative parameters of variables were shown in Table 5. After centralizing all the variables, path c, b, c' were significant. According to procedure of mediation effect testing, the result of Sobel test was significant($|z|=1.58>0.97$). Therefore, regulatory emotional self-efficacy partly mediated the relationship between sensation seeking and explicit aggression. The ratio of mediating effect and total effect was $0.05 \times 0.49 / 0.23 = 10.65\%$.

4 Discussion

The current study explored the relation among

sensation seeking, regulatory emotional self-efficacy and aggression. The hypotheses were partially supported by the results: Regulatory emotion self-efficacy partly mediated the relationship between sensation seeking and explicit aggression.

Different measuring methods divided aggression into implicit aggression and explicit aggression according to whether can be realized and controlled. Findings of current study showed that implicit aggression was not significantly associated with sensation seeking and regulatory emotional self-efficacy, measures completed on different conscious levels may be a possible reason. In addition, conducting Agg-IAT through group test may influence participants' reaction. Therefore, the explanation of implicit aggression should be cautious.

The finding of moderation analysis revealed regulatory emotional self-efficacy didn't have moderating effect on sensation seeking and explicit aggression. Although sensation seeking positive influence on explicit aggression with the increasing regulatory emotional self-efficacy became weaker, the degree of change was non-significant. A possible reason may explain: Sensation seeking is closely linked to impulsivity so that the relation between sensation seeking and aggression is relatively fixed(Wilson, & Scarpa, 2011; Derefinko, DeWall, Metze, Walsh, & Lynam, 2011). Whereas, regulatory emotional self-efficacy fails to shake the relationship.

The result of mediation analysis indicated that regulatory emotional self-efficacy partly mediated the relationship between sensation seeking and explicit aggression. More specially, the mediating effect interpreted 10.65% of total effect. The mediator model, which is theoretically based on the GAM, provides a framework that sensation seeking impact aggression via regulatory emotional self-efficacy(Anderson, & Bushman, 2002). In accord with previous research, when individuals with high level of sensation seeking believe they have poor performance on managing emotion, they are hard to control themselves and easy to behave impulsively (Joireman, Anderson, & Strathman, 2003).

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(上接第230页)

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