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Abstract

Intimate Partner Violence (IPV) perpetration involves many risk factors related to cognitions and emotions, such as insufficient emotion regulation. Those who inadequately regulate negative emotions have been shown to be more likely to have a history of partner violence. However, during routine activities, such as dealing with an intimate partner, emotions are regulated without effortful processing or monitoring. Because this unmonitored emotion regulation process takes place, implicit, or indirect measures of emotion regulation may be better suited to assess unconscious attitudes toward regulating negative emotions. We examined if implicit attitudes toward emotion regulation are related to the frequency of aggressive reactions and if the frequency differs based on a previous history of IPV. A history of IPV predicted some aggressive responding, but the implicit measure unexpected predicted aggression negatively. Possible explanations, clinical implications of inadequate emotion regulation, and intervention suggestions are discussed.

Key words: Intimate Partner Violence, Aggression, Emotion Regulation

Introduction

Intimate Partner Violence (IPV) is an extremely prevalent issue in the United States and has negative physical and mental health outcomes for those who experience it (National Center for Injury Prevention and Control , 2011). Because a significant amount of the population has dealt with some form of IPV and subsequent negative health effects, the study of risk factors for perpetrating IPV is imperative for the prevention of further harm and for intervention in continually violent relationships. In previous research, various affective and cognitive traits have consistently emerged as risk factors for engaging in IPV (Stith, Smith, Penn, Ward, and Tritt, 2004; Norlander and Eckhardt, 2005; Eckhardt and Dye, 2000; Holtzworth-Munroe & Hutchinson , 1993; McNulty & Hullmuth, 2008). One risk factor related to both cognition and affective mechanisms is emotion regulation (ER). More specifically, an inability to properly regulate emotional responses, particularly negative emotions, is associated with an increased likelihood of acting violently toward a partner (Shorey, Cornelius, & Idema 2011; McNulty et al. 2008). Although ER can be effortful and controlled, when considered in day-to-day interactions, such as when dealing with an intimate partner, ER tends to become routine, almost automatic; it does not take many resources or much attention, but functions independently of conscious awareness (Mauss, Bunge, & Gross 2007). Automatic ER is not generally a process that is explicitly understood or considered, but works on an implicit level. Explicit or deliberate processes require attention and resources and are driven by explicit goals, but implicit or automatic processes take little if any attention and work with pre-existing knowledge to shape our responses (Mauss et al. 2007). The behaviors following automatic processing and regulating of emotions may not be fully explained by explicit, self report measures which require reporting on self-endorsed behaviors and attitudes. If ER is in fact an automatic process when interacting with a partner, then participants may not be able to accurately report what their automatic attitudes and processes are. Implicit or indirect measures

may provide a means to better understand or observe more of these automatic processes.

The current study will test the ability of an implicit measure of attitudes toward ER to predict aggressive reactions after provocation in a laboratory setting. A history of committing IPV will be assessed as a moderator for this predictive relationship such that having a history of IPV will significantly increase aggressive responding. Because ineffective ER has been identified as a potential risk factor for partner violence, the mean levels of attitudes toward ER will be compared across those with a history of IPV and those without a history of IPV.

Scores of implicit attitudes toward ER are expected to predict the number of aggressive statements during a simulated jealousy scenario, as well as self-reported aggressive intent. We predicted that: 1) those who have a history of IPV will differ from those who have no history of IPV on the average score of implicit attitudes toward ER, 2) there will be a main effect for implicit attitudes such that having negative implicit attitudes toward ER will predict more aggressive statements and more aggressive intent following provocation, 2) there will be a main effect for partner violence history such that having a history of IPV will predict more aggressive responding, 3) an interaction is expected such that individuals with a history of IPV who have negative attitudes towards ER will score highest on measures of aggression during provocation.

Method

Participants

Participants (N=73) were selected from a pool of undergraduate students enrolled in an introductory psychology course at Purdue University. A prescreen targeted students who had been in a romantic relationship in the past12 months. Those participants under 18 years of age at the completion of the study were excluded from analyses.

Measures

The Revised Conflict Tactics Scale(CTS2). The CTS2 is a questionnaire developed by Straus, Hamby, Boney-McCoy, and Sugarman (1996) that measures an individual's attitudes toward partner violence, as well as previous history of partner violence, whether verbal or physical. A subset of the CTS2 was implemented to establish the frequency of partner violent acts in the past year.

Emotion Regulation Implicit Association Test (ER-IAT.: The Implicit Association Test, first designed by Greenwald, McGhee, and Schwartz (1998) is a method commonly used to measure implicit attitudes. This study implemented a pre-existing version that includes the concepts of "emotion regulation" and "emotion expression" (Mauss, Evers, Wilhelm, & Gross, 2006). It is a computerized measure that tracks the reaction time of a subject while sorting target words into conceptual categories (See Appendix 1). If a participant can sort words correctly into a "positive/emotion regulation" category faster than into a "negative/emotion regulation" category, it is presumed they associate emotion regulation as being a positive concept, which makes sorting words into that category easier, therefore faster. Scores are calculated by subtracting reaction times of the "positive/emotion regulation" test trial from the "negative/emotion regulation" test trial divided by the standard deviation of all trials. Positive scores indicate an attitude that emotion regulation is a negative concept.

Articulated Thoughts in Simulated Scenarios (ATSS) Paradigm. Participants listened to a series of clips related to a relationship scenario that is meant to evoke jealousy or anger. The ATSS was developed

by Davison, Robins, and Johnson (1983) and is comprised of five 30 second audio clips that detail a simulated scenario that the listener must imagine themselves being involved in. After each clip there is a 30 second response period in which the participant is asked to "think out loud" about their thoughts or emotions related to the clip they just heard. Their responses were recorded and later coded for verbalizations related to physical or verbal aggression and antagonizing statements by two trained coders.

Hostile Automatic Thoughts (HAT) Scale. After the ATSS paradigm, participants completed a measure of frequency of aggressive intent/thoughts experienced following the scenario (Snyder, Crowson, Houston, Kurylo, & Poirier, 1997). Items include questions such as "*During the past 12 minutes, how often did you think: 'I hate him so much, I'm going to kill him!'?*".

Procedure

Participants completed all measures over the course of an hour. Undergraduate research assistants conducted an informed consent process before the measures are administered. Upon consent, participants then completed a series of questionnaires including the CTS2 to determine frequency of past aggressive behavior toward a partner and the ER-IAT to assess attitudes toward emotion regulation. Instructions for the ATSS were given followed by the ATSS and corresponding response periods. After the last response period of the ATSS, the participants completed the HAT scale. A brief positive mood induction sound clip played upon completion of the questionnaires to decrease any negative affect caused by the ATSS scenario. Participants were then debriefed and released.

Results

IBM SPSS Statistics (version 22.0) statistical software was used to analyze the data.

Participant Demographics

Participants (N=73) were all college students and averaged an age of 19.55 years old (SD=1.72). Participants were predominantly white (79.5%) and female (71.2%).

Following an Independent-Samples T-test, there was no difference between those with a history of violence (M= -.0203) and no history of violence(M= 0.1032) on the ER-IAT [t(71)=-.960, n.s.].

In a linear regression model represented in Figure 1, Implicit attitudes toward ER (B = -4.032, 95% CIs [-6.656,-1.407], = $p < .01$) predicted aggressive intent, but in a negative fashion, which was the opposite of what was predicted. A history of IPV(B= .110, 95% CIs [-.092,.312], n.s.) did not predict aggressive intent when analyzed in the same model. The interaction between these variables was also a significant predictor (B=-.738, 95% CIs[-1.301,-.175], =p<.05).

Using a negative binomial general regression model, it was found that implicit attitudes toward ER (B = -.070, 95% CIs [-.884,.745], $X^2(1)=0.023$, n.s.) did not predict aggressive verbalizations, but a history of IPV (B= .065, 95% CIs [.013,.116], $X^2(1)=6.514$, =p<.05) did significantly predict aggressive verbalizations in the same model (See Figure 2). The interaction was not significant (B=-.110, 95% CIs [-.298,.078], $X^2(1)=1.317$, n.s.).

Discussion

This study investigated the ability of implicit attitudes toward emotion regulation to predict aggression in a laboratory setting and attempted to identify the role a history of partner violence played in this relationship. No difference was found between the mean

scores on the ER-IAT for those with a history of IPV and no history of IPV. This indicates that implicit attitudes are not skewed one way or the other across those who have perpetrated violence in the past and those who have not. Participants are equally as likely to have positive or negative attitudes toward ER, regardless of a history of IPV.

Attitudes toward emotion regulation did not predict aggressive verbalizations in the laboratory, but did predict aggressive intent following the scenario. This relationship was unexpectedly negative, however. This finding is contrary to our predictions, as well as previous research regarding the ER-IAT (Mauss et al., 2006). Because of this, the specific relationship between the ER-IAT and aggression was indeterminate.

There are multiple interpretations of these data that would be supported by previous research. Two explanations for these findings are that we 1) have participants that over-regulate, or 2) have participants that under-regulate.

If we have over-regulators, the type of emotion regulation the participants naturally used could influence the effectiveness of desired levels of emotional control. If participants regulate so much that they refuse to speak or think about, or suppress, the emotions they are experiencing, this could be implementing too much emotional control. In other words, if the participants engage in suppression, which is considered a less effective strategy of emotion regulation (Gross & John, 2003) that can increase certain emotion-related perceptions, such as pain sensitivity (Quartana & Burns, 2007), participants could have felt impulses for aggression that were not well controlled or possibly augmented. Because their efforts to regulate their emotions did not work, even though they view regulating emotions as a positive or useful process, this could explain the negative relationship between aggressive intent and the ER-IAT scores.

If we have under-regulators, the scores on the ER-IAT could represent what participant's "ideal" strategy for handling relationship conflict. Particularly if the participant has had problems in the past because of an inability to regulate emotions, they could view emotion regulation as positive or useful, and have an association between those two concepts, but when given an instigating scenario, they cannot actually regulate emotions fully or effectively.

Another issue may be that the ER-IAT assessed general attitudes toward regulating emotions, so in the specific context of an intimate relationship these general attitudes may not apply. One could view emotion regulation as positive or useful in terms of family life, friendship, or in business, but maybe not in a romantic relationship context.

A history of IPV was predictive of aggressive verbalizations in the laboratory, but did not predict self-reported aggressive intent following the scenario. As indicated by the logarithmic relationship between a history of IPV and aggressive statements, those who had a more extensive history of IPV not only responded more aggressively, but had aggressive statements increasing in number at an exponential rate. This relationship may be explained by the presence of cognitive-behavioral scripts the schemata of those who engage in IPV regularly. Scripts are essentially prototypical mental lists of what are acceptable behaviors and thoughts in a given situation (Muran, 1991). Those who have used and continue using partner violent actions in order to control or manipulate an upsetting situation in a relationship context may have developed strong automatic cognitive-behavioral scripts that they unconsciously rely on to guide behavior and overpower any implicit attitudes toward regulating emotions (Muran 1991; Berkowitz 2012). The more an individual uses

violence in these contexts to control the situation, the more reinforced the aggressive script becomes.

Limitations

There were multiple limitations to the study that can be discussed. Firstly, the use of undergraduate students in this study could somewhat compromise the generalizability of the findings. Secondly, because the participants completed a large number of questionnaires, some unrelated to this study, it is possible that responses were affected by participant fatigue. Another limitation is that the ER-IAT was not counter-balanced, so it is possible that responses to the ER-IAT were influenced by the order in which the trials came. Finally, There was no explicit measure used to assess the comparable predictive ability of our implicit measure.

Implications and Future Directions

Risk factors for partner violence indentified in a laboratory setting can inform not only future research directions, but also treatment options.

Those who view emotion regulation as a useful process may still have problems when it comes to emotion regulation. These findings can inform clinical practice because those who have trouble with controlling aggressive statements or actions against a partner may believe they are regulating their emotions, but could be using suppression instead of a more effective strategy. Also, knowing if clients view emotion regulation as an ideal strategy for approaching relationship conflict, but cannot follow through with regulating emotions, then therapists can focus on training clients how to regulate emotions in situ, whether in private practice or court mandated programs.

The findings regarding the predictive ability of a history of partner violence has clinical applications because those who deal with relationship problems, particularly IPV, may be following automatic cognitive-behavioral scripts, which have the potential to be reinforced with each use, and could be resistant to treatment or therapy.

Future research will have to focus on how a history of IPV may interact with other variables to predict aggression, the degree to which cognitive-behavioral scripts influence behavior under provocation, and identifying other risk factors that may lead to initial and recurrent perpetration of violence.

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Appendix

Fig.1: Coefficients of Linear Regression Model for Aggressive Intent following ATSS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
CTS2	.110	.101	.118	1.087	.281	-.092	.312
ER-IAT Score	-4.032	1.315	-.332	-3.065	.003**	-6.656	-1.407
ER-IATxCTS2 Interaction	-.738	.282	-.281	-2.616	.011*	-1.301	-.175

Dependent Variable: HAT *p<.05 **p<.01

Fig.2: Parameters of Negative Binomial Non-linear Regression for Aggressive Statements during ATSS

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
CTS2	.066	.0258	.015	.116	6.514	1	.011*
ER-IAT	-.066	.4281	-.905	.774	.023	1	.878
ER-IATxCTS2 Interaction	-.110	.0958	-.298	.078	1.317	1	.251

Dependent Variable: Total Aggressive Statements * p<0.05

Figure of ER-IAT Trials: Test trial 3 (left) and 5 (right) shown below.