SFUψUJP

Simon Fraser University Undergraduate Journal of Psychology

Volume IV
2017

SFUψUJP

SIMON FRASER UNIVERSITY UNDERGRADUATE JOURNAL OF PSYCHOLOGY

VOLUME IV
2017

ISSN 2368-6340 (Print)
ISSN 2368-6359 (Online)

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Journal Staff

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Journal layout design by Filip Kosel, Erin Fuller, and Ryan W. Carlson.

Letter from the Editors

It is an honour to present the fourth volume of the Simon Fraser University Undergraduate Journal of Psychology. This student-driven effort has provided a platform for fellow undergraduates to engage with the academic process. We aim to give prospective authors the experience in publishing their own peer-reviewed work and the opportunity to obtain graduate student mentorship and interaction. Furthermore, this journal is an outlet for students to pursue scientific interests and critical thinking outside of the realm of traditional coursework.

These goals would not be realized without the tireless work by our undergraduate and graduate student editorial team. They have all volunteered countless hours to screen, review, and revise this year's submissions, purely on the notion of helping students and enhancing the learning environment that Simon Fraser provides. We are also grateful for the facilitation of Dr. Tim Racine and Dr. Neil Watson and the financial support from the Department of Psychology and the Psychology Student Union. Without these resources and people in place, this whole project would not have been possible.

Most of all, we want to extend our gratitude to the authors of this journal edition, as their work is the foundation of this project. We are tremendously excited to showcase their work amongst an outstanding pool of submissions. It was fascinating to journey through the human condition through perspectives on a wide range of topics. Thank you to everyone who submitted, and we urge you to continue writing.

Lastly, we would like to thank our readers. We hope that these articles penned by a group of young and talented researchers speak to you like they did to us.

- The Managing Editorial Staff
Sylvie Couture-Nowak, Jason Chung, Scott Greenwood & Rajan Hayre

The Double Jeopardy of Male Sexual Assault: Why Intergroup and Interpersonal Associations Perpetuate Victim Blaming

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This paper provides explanations for the victim blaming associated with adult male sexual assault. Research suggests that sexual assault should be viewed as an intergroup instead of an interpersonal crime (Droogendyk & Wright, 2014), but this paper provides an overview to why both intergroup and interpersonal conceptualizations might increase blame, stigma, and backlash against male victims. The main reason provided recognizes the attention intergroup and interpersonal characterizations call to societal gender norms, increasing the perceived inconsistency between stereotypical definitions of being male and being sexually assaulted (Turchik & Edwards, 2012). Thus, male victims are blamed more for the sexual assault as they are seen as acting against masculine constructs of assertion and dominance (Droogendyk & Wright, 2014). The black sheep effect and just world belief are also presented as explanations for the victim blaming against male victims and for why males blame male victims more than females. Finally, this paper suggests two main recommendations (i.e., ad campaigns and education programs), that might lower victim blaming and increase support services, based on changing public perceptions of sexual assault.

Keywords: male sexual assault, victim blaming, intergroup, black sheep effect, just

Sexual assault has notoriously been associated with victim blaming, a phenomenon where individual contributions of the victim are analyzed as a cause of the crime (Davies, Pollard, & Archer, 2006). It has been suggested (Droogendyk & Wright, 2014) that viewing sexual assault as an intergroup crime (i.e., a crime committed between groups) lowers levels of victim blaming for female victims. However, this paper argues that in the context of male sexual assault, both intergroup and interpersonal associations of sexual assault may actually increase victim blaming. Gender norms, the normative behaviour that characterizes the male gender, and the subsequent socialization of males in line with these norms, are salient at both the intergroup and interpersonal level. At the intergroup level, group normative attributions might cause ingroup members to reject male victims as an atypical threat to the group status, a concept known as the black sheep effect (Marques, Yzerbyt, & Leyens, 1988). Thus, due to the potential for rejection, male victims may be more likely to experience victim blaming (Marques et al., 1988). Yet, characterizing sexual assault as an interpersonal crime also highlights individual characteristics that might have led to the event, creating a double jeopardy dynamic for male victims of sexual assault. Further, the desire for individuals to believe in a just world may make male counterparts more likely to blame male victims, as this blame can restore

individuals' sense of security (Landstrom, Stromwall, & Alfredsson, 2016). This paper analyzes the current research on interpersonal versus intergroup associations, the black sheep effect, and the just world hypothesis to provide an explanation for the victim blaming associated with male sexual assault, and introduces recommendations to lower levels of victim blaming.

Prevalence of Male Sexual Assault

In 2008, an analysis into police-reported crimes in Canada revealed that female sexual assault occurred more than 10 times the rate of male sexual assault (68 versus 6 per 100,000 population, respectively) (Statistics Canada, 2010). Yet, this number is confounded by willingness to report, where male victims are less likely than their female counterparts to enter the criminal justice system based on "a fear of being disbelieved, blamed, exposed to other forms of negative treatment and/or concern that such disclosure might interfere with one's masculine self-identity" (Lowe & Rogers, 2017, p. 40). Unfortunately, prevalence rates of sexual assault have relied too heavily on police-reported data, making individuals, agencies, and the government drastically underestimate the number of male victims (Statistics Canada, 2010). Researchers (e.g., Bullock & Beckson, 2011; Peterson, Voller, Polusny, & Murdoch, 2011) investigating true prevalence rates of adult male sexual assault have captured this underreporting and have produced prevalence rates as high as 73% when sexual assault is defined as any form of unwanted sexual activity. This broader definition is used for the purposes of this paper, thus incorporating a range of severity and escalation of acts, such as forced touching to penetration (Hammond, Ioannou, & Fewster, 2016).

Rape Myths and Victim Blaming

The lack of acknowledgement of male victims of sexual assault perpetuates the development and maintenance of rape myths and victim blaming. Rape myths are false views and prejudicial beliefs about the perpetrators and the victims of sexual assault (Hammond et al., 2016). These beliefs are heavily influenced by societal gender norms surrounding masculinity (Lowe & Rogers, 2017). The masculine identity taught to children, which continues into adulthood (Kassing, Beesley, & Frey, 2005), stereotypically assumes males to be sexually dominant, assertive and forceful (Lowe & Rogers, 2017, p. 41). Thus, these norms create the notion that males are implausible sexual assault victims, as these traits are more characteristic of offenders (Javaid, 2016). Female gender norms, on the other hand, such as weak and submissive, are more in line with victimization, contributing to the illusion of sexual assault being a female-only crime (Javaid, 2016). The persistence of these gender norms can be found in the rape myths surrounding male sexual assault, where a literary analysis by Turchik and Edwards (2012) found the following to be the most consistently cited myths:

(a) men cannot be raped; (b) "real men" can defend themselves against rape; (c) only gay men are victims and/or perpetrators of rape; (d) men are not affected by rape (or not as much as women); (e) a woman cannot sexually assault a man; (f) male rape only happens in prisons; (g) sexual assault by someone of the same sex causes homosexuality; (h) homosexual and bisexual individuals deserve to be sexually assaulted because they are immoral and deviant; and (i) if a victim physically responds to an assault he must have wanted it (pp. 211-212).

Strict adherence to these gender norms

and rape myths create a culture of victim blaming against male victims, as males are seen as possessing the necessary qualities (such as strength) to fight off any attack (Kassing et al., 2005). Thus, if the sexual assault occurred, individual characteristics of the male are scrutinized as the cause of the sexual assault (Bullock & Beckson, 2011).

These rape myths impact public perceptions of male sexual assault on the micro-, meso-, and macro-level, constraining men's willingness to report, as well as resources allocated to and support for male victims (McLean, 2013). The micro-level deals with individual thoughts and cognitions and rape myths can lead individuals to believe that male sexual assault does not and cannot happen (Davies et al., 2006). However, these myths are not immune to the male victims themselves, triggering an internalization that male sexual assault is a myth, which may interfere with their ability to see themselves as victims or contact support networks (Davies, 2002). Rape myths at the meso-level (i.e., interpersonal contact), can shape interactions between male victims, family members, friends, or police officers, where deeply held beliefs that male sexual assault does not exist causes skepticism of the male victim's disclosure, resulting in the male victims being rejected and blamed by the individuals disclosed to (Donnelly & Kenyon, 1996). Finally, the macro-level concerns societal interactions, and these rape myths permeate into government responses, where resource allocation fails to provide adequate services and support for male victims (Donnelly & Kenyon, 1996). The existence of these rape myths solidifies the experience of sexual assault as a purely female experience, stigmatizing male victims of sexual assault who come forward with allegations, and increasing the level of blame these individuals receive (Davies, 2002). Therefore, rape myths institutionalize and normalize victim blaming.

Victim blaming is motivated by status quo maintenance, where individuals are determined to protect the current status quo (O'Brien & Crandall, 2005). O'Brien and Crandall (2005) found that individuals were more likely to reject persuasive arguments when they were in conflict with the status quo, as it threatens their conceptualization of societal norms and practices. Such divergences unsettle individuals, leading counter-arguments to be attributed to individual biases as a viable defense mechanism to the threat of changing the status quo (O'Brien & Crandall, 2005). Within the context of male sexual assault, society is more likely to blame male victims as their presence is in direct disagreement with the current status quo that genders sexual assault as a female experience (Davies et al., 2006). When male victims come forward, they challenge what society knows surrounding the dynamics of sexual assault (including rape myths), and ignoring and victim blaming these individuals becomes a way to maintain the status quo (O'Brien & Crandall, 2005).

Initial studies into victim blaming (e.g., Howard, 1984) found differences in the way male versus female victims were blamed. Howard (1984) asked participants to rate levels of blame to a scenario in which a jogger (either female or male) was sexually assaulted and did not fight back. This study discovered differences between character and behavioural blame, where females were more likely to be blamed for their assault when character dimensions (e.g., carelessness) were relevant, and males when behaviour attributions (e.g., failing to fight back) were salient. While more current research (Davies & Rogers, 2006) has shown that such a dichotomous distinction is not applicable in all cases, as the behavioural versus character divisions are not necessarily pertinent

when blame is assigned, behavioural blame still persists within discussions of male sexual assault. Male victims are further blamed for their sexual assault when the victim is believed to have failed to try to escape or fight back, with even more blame assigned when the individual is perceived to look scared or frightened (Davies & Rogers, 2006; Howard, 1984). This finding is precisely related to discussions of gender norms, as mentioned above, as these behavioural characteristics are in direct conflict with societal male norms of strength, assertiveness, and dominance (Anderson & Lyons, 2005). Given that research, (e.g., Anderson & Lyons, 2005; Perrott & Webber, 1996) has found that male victims experience high levels of victim blaming, an analysis into why such high rates of victim blaming occur become particularly important.

Intergroup Versus Interpersonal Associations of Sexual Assault

In order to reduce the victim blaming associated with sexual assault, Droogendyk and Wright (2014) have suggested a shift in focus, switching from interpreting sexual assault as an interpersonal to an intergroup crime. In their study, Droogendyk and Wright (2014) evaluated how public conceptualizations of sexual assault impacted the level of blame that female victims experienced. Traditionally, sexual assault has been viewed as an interpersonal crime, where attention is unduly on the victim and perpetrator of the sexual assault (Droogendyk & Wright, 2014). This interpersonal level makes salient individuating circumstances and characteristics of the victim and the perpetrator conducive to victim blaming (Droogendyk & Wright, 2014). In the case of female sexual assault, interpersonal dynamics allow rape myths to permeate into evaluations of the crime, concentrating on aspects such as the female's clothing or alcohol level, and therefore increases victim blaming (Droogedyk & Wright, 2014). Viewing sexual assault as an intergroup crime, where the crime is committed by and against members of a group (i.e., a man raped a woman), removes these individuating characteristics by focusing on group-based dynamics (Droogendyk & Wright, 2014). Thus, by having an intergroup lens, female victims are less likely to be victim blamed, as the character and behavioural choices are no longer relevant at the group level (Droogendyk & Wright, 2014).

While such findings are motivating and inspiring within the realm of female sexual assault, these results might not be generalizable to male victims (Droogendyk & Wright, 2014). In fact, whether sexual assault is defined as an interpersonal or an intergroup crime may have no effect in reducing the victim blaming experienced by male victims. This represents a double jeopardy for male victims coming forward with allegations of sexual assault, where irrespective of how sexual assault is defined, male victims are likely to be blamed. In order to explain this double jeopardy, both intergroup and interpersonal associations of male sexual assault will be explicated and contextualized with the black sheep effect and the just world belief.

Intergroup Associations

Looking at male sexual assault from an intergroup lens might increase victim blaming, as it calls focus to societal gender norms and the various rape myths surrounding this crime. As mentioned previously, gender norms and socialization define what it means to be a "man," including traits such as strength, dominance, and independence (Donnelly & Kenyon, 1996). This creates the expectation that men will be able to protect themselves against an attack, but

further, that men only have the qualities and traits necessary to commit sexual assault, not become victims (Hammond et al., 2016). Therefore, characterizing sexual assault on the intergroup level can explain how male victims of sexual assault are further blamed for their attack as they are held up to male gender norms, and this group membership makes salient that the individual should possess the necessary attributes and qualities (i.e., aggressiveness) that would prevent sexual assault (Davies, 2002). Hence, male victims of sexual assault are seen as violating gender norms and constructs of masculinity, which might increase the blame associated with the attack (Turchik & Edwards, 2012). Social identity theory proposes that emphasizing gender as an intergroup dynamic should increase identification with the given group (Droogendyk & Wright, 2014). This is more likely to occur for female victims, as the ingroup status encourages the protection of the ingroup as a whole (Droogendyk & Wright, 2014). However, the opposite effect may be exhibited for male victims, as research (e.g., Anderson & Lyons, 2005; Mitchell, Hirschman, & Nagayama Hall, 1999; Turchik & Edwards, 2012) has consistently found that males are much more likely than females to blame male victims of sexual assault. This finding can be explained by the black sheep effect.

The black sheep effect concerns evaluations of ingroup members. When an ingroup member is likeable, for example, they promote the image of the group by adhering to favourable stereotypical qualities, such as assertiveness, they are evaluated positively and are subsequently accepted by the ingroup (Pinto, Marques, Levine, & Abrams, 2010). However, the ingroup will make negative associations and downgrade the status of unfavourable ingroup members, even compared to outgroups (Zouhri & Rateau, 2015). Thus, the black sheep effect presents a unique form of ingroup favouritism, where atypical threats to the ingroup's image are exiled and removed from the group (Marques et al., 1988). This ingroup favouritism, according to social identity theory, arises out of the need for the ingroup to uphold and maintain a beneficial image (Marques et al., 1988). Hence, prescriptive norms, "the requirements that ingroup members must meet in order to promote a positive social identity," dominate the black sheep effect (Pinto et al., 2010, p. 108).

Due to the negative perceptions society holds regarding male victims of sexual assault, these individuals threaten the identity and image of the male ingroup (Zouhri & Rateau, 2015). Hence, male victims are further evaluated negatively by their ingroup and are rejected by way of the perceived identity threat (Pinto et al., 2010). Essentially, male victims threaten the stereotypical definition and prescriptive norms of the male ingroup, such as strength and dominance, and because of this threat, they become destructive to the male ingroup as a whole (Pinto et al., 2010). Therefore, because of the deemed unfavourable nature of male victims of sexual assault, the male ingroup attributes more negative evaluations towards the victims, such as "they are not real men" that lead to victim blaming (Coxell & King, 2010; Marques et al., 1988). Under the black sheep effect, rejecting male victims becomes an important protective factor for the positive male ingroup's image, explaining why males are more likely than females to blame male victims (Pinto et al. 2010; Turchik & Edwards, 2012). Interestingly, however, the black sheep effect only transpires when cues to group membership are made salient, and as mentioned, this happens through the awareness of gender norms that occurs at the intergroup level, increasing the persistence of the black sheep effect (Marques et al., 1988).

Interpersonal Associations

Unfortunately, viewing male sexual assault on the interpersonal level might increase victim blaming as well. Consistent with research on female victims, the interpersonal level makes salient individual circumstances that may have contributed to the assault (Droogendyk & Wright, 2014). Of particular relevance becomes gender dynamics, as well as the sexual orientation of the victim (Davies et al., 2006). Male gender norms are also applicable at the interpersonal level, as individuals are not exempt from those standards and stereotypes (Bullock & Beckson, 2011). This can cause more blame at the interpersonal level, as the individual actions that contributed to the inconsistency between the gender norms and the sexual assault are scrutinized (Bullock & Beckson, 2011). Yet, the interpersonal level also directs attention to the sexual orientation of the victim. Male victims are blamed more for the sexual assault if the gender of the perpetrator is the same gender the victim is sexually attracted to (Davies et al., 2006). As such, heterosexual male victims are blamed more when the perpetrator is a female, and homosexual male victims when the perpetrator is also male (Davies et al., 2006). Such blame has roots in rape myths regarding the sexual prowess and hunting of men, where it is assumed that men are always searching for sexual contact and activity (McLean, 2013). Thus, because the assailant is a member of the group the victim is sexually attracted to, they are seen as wanting the sexual assault and are subsequently attributed more blame (Bullock & Beckson, 2011).

The just world belief states that individuals tend to believe that people get what they deserve, where the good get rewarded, and the bad get punished (Hayes, Lorenz, & Bell, 2013). Thus, the just world belief represents a desire to live in and contribute to a fair society (Landstrom et al., 2016). Holding such a view "allows people to feel a sense of safety, as they have control over their own actions/behaviour. This in turn makes the world around them a predictable, manageable, and safe place" (Hayes et al., 2013). The just world belief has been applied to female victims of sexual assault (e.g., Hayes et al., 2013; Landstrom et al., 2016), but is equally applicable within the contexts of male sexual assault. Victim blaming becomes a defense mechanism to the potential threat of an individual's just world belief (Landstrom et al., 2016). Blaming sexual assault victims becomes a way to protect the view of "everyone gets what they deserve," as sexual assault is a particularly heinous crime that stands to jeopardize such a belief (Landstrom et al., 2016, p. 3). Therefore, the victim is scrutinized for their role in the sexual assault, as some action or characteristic must have caused the crime (Hayes et al., 2013). By blaming the victim, the just world belief is restored as a "cause" (for example, the victim deserved it because he did not fight back) is found for the sexual assault (Hayes et al., 2013).

The just world belief can also explain why males are more likely to blame male victims than females. By admitting that men can be raped, and forgoing such rape myths, males are opening the possibility of their own victimization (Donnelly & Kenyon, 1996). Thus, because their belief in a just world prevents them from realizing that horrible events happen to "good" people (i.e., themselves), men blame male victims more for their assault as reassurance that such a crime would never happen to them (Landstrom et al., 2016). As such, the acknowledgement that males can be victimized threatens the security that goes along with believing in a just world, mobilizing the male ingroup to blame

these victims in order to restore a sense of safety (Hayes et al., 2013).

Recommendations to Lower Victim Blaming

Due to the victim blaming found within male sexual assault, male victims are unlikely to report sexual assault, seek help, or disclose their assault to friends and family (Coxell & King, 2010; Donnelly & Kenyon, 1996; Monk-Turner & Light, 2010). Thus, the psychological consequences of the assault may worsen over time, making intervention extremely necessary (Monk-Turner & Light, 2010). Since both interpersonal and intergroup characterizations of sexual assault increase victim blaming for male victims, recommendations need to first address the way society views male sexual assault before any difference at the interpersonal or intergroup level can be made. Therefore, this paper suggests ad campaigns and educational programs to alter public perceptions of male sexual assault and reduce levels of victim blaming for males.

Ad Campaigns

Given the permeated extent of victim blaming within society, ad campaigns become an important medium to reach a large and vast population. These campaigns can work to decrease victim blaming by creating a unified social identity on two levels (Subasic, Schmitt, & Reynolds, 2011). First, ad campaigns can establish a shared social identity between the male ingroup and male victims. This is done through subverting the stereotypical identity of the male ingroup by not only dispelling rape myths but also by providing men with new defining characteristics (Zouhri & Rateau, 2015). Thus, shifting the narrow view of men to a more broad and inclusive definition becomes important. A prime example of this is the Survivor UK (2012) ad campaign that featured the slogan, "real men get raped and talking about it takes real strength." The goal is to lessen the extent that the male ingroup bases their identification on stereotypical concepts, or to change those concepts, so that male victims are not viewed as unlikeable and subsequently rejected (the black sheep effect) (Zouhri & Rateau, 2015). By changing the social identity of men, the black sheep effect could be counteracted, lowering victim blaming, as this crime no longer clashes with male gender norms and identification (Zouhri & Rateau, 2015).

Second, shared social identities have the potential to be established between male victims and females as a group. Shared social identities are more likely to form between groups or individuals who have experienced victimization, particularly the same type, such as sexual assault (Hopkins et al., 2016). Since sexual assault is perceived as a gendered crime, typically committed against females, ad campaigns can be utilized to humanize the experience of male sexual assault, such as those campaigns that share male victims' personal stories, in order to create a shared social identity between male victims and the female group (Hopkins et al., 2016; Subasic et al., 2011). Thus, ad campaigns can show the female group that male victims face similar struggles and trauma as female victims, encouraging advocates for male victims and lowering blame, as the male victims are seen as more in line with the female group's identity and cause (Hopkins et al., 2016). However, care and attention must be taken so as not to portray the male victims as purely an extension of the female group, as this could lead to the black sheep effect, where the male victims are viewed as feminine and subsequently rejected.

Education Programs

Education programs present an important way to change and alter rape myths surrounding male sexual assault, teaching individuals that men are not exempt from sexual victimization. While current systems and programs are in place to teach young children, teenagers, and adults the facts surrounding sexual assault and consent, such programs are geared only to female victims, providing men with a false sense of security, as well as encouraging societal rape myths, such as men cannot be raped (Anderson & Whiston, 2005). By using education, such as classroom seminars in varying levels of schooling, as a mechanism to create a dialogue surrounding male sexual assault, rape myths can eventually be dispelled and victim blaming lowered, as this crime will become less taboo. A study by Fox and Cook (2011) showed the effectiveness of education in reducing victim blaming, where college students enrolled in a victimology course significantly lowered the extent to which they blamed victims of a variety of crimes, compared to students who did not take such a course. Extended to male sexual assault, education does not need to be a separate entity from female sexual assault programs, but instead a broad program geared towards everyone, including specific gender dynamics, could be appropriate and effective in decreasing victim blaming (Anderson & Whiston, 2005; Fox & Cook, 2011).

Conclusion

Rape myths and victim blaming prevent most male victims from reporting their assaults and accessing support services (Donnelly & Kenyon, 1996). This can lead to increased psychological consequences, such as PTSD, and given the overwhelming unreported prevalence rates, male sexual assault is a serious societal issue (McLean, 2013). Thus, as a first step, this paper analyzed various explanations for why victim blaming occurs against male victims, touching on interpersonal versus intergroup explanations, the black sheep effect, and the just world belief. While viewing sexual assault as an intergroup crime works to lower victim blaming for female victims, the same results are not generalizable to male victims (Droogendyk & Wright, 2014). This is because both interpersonal and intergroup associations of sexual assault call attention to various gender norms and socialization processes that require men to be strong and capable of defending themselves against any form of unwanted sexual activity (Turchik & Edwards, 2012). Thus, whether male sexual assault is viewed as an interpersonal or an intergroup crime makes no difference in lowering levels of victim blaming against male victims, as both may actually work to increase levels instead, creating a double jeopardy for male victims. The black sheep effect and the just world belief can explain why males are more likely than females to blame male victims of sexual assault. In the case of the black sheep effect, the male ingroup views male victims as contradicting the positive image of the male ingroup, and as such, male victims are evaluated negatively and blamed more for their assault (Pinto et al., 2010). The just world belief concerns individuals' evaluations of male victims, as men are more likely to victim blame male victims because they represent a threat to individuals' personal safety (Landstrom et al., 2016).

Systemic intervention is needed within the micro- to macro-levels, focusing on changes in cognitions and practices. As a starting point, two main suggestions were made in order to induce the necessary change and lower rates of victim blaming. First, ad cam-

paigns can become a powerful tool to create shared social identities between the male ingroup and females, in order to decrease victim blaming. Education programs are also important, used to dispel rape myths and teach society that male sexual assault is a prevalent issue, and that sexual victimization is not a gendered phenomenon.

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Rethinking parents as therapists for children with ASD: Adding stress to the family system

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Current recommendations for interventions involving children with Autism Spectrum Disorder (ASD) include parent involvement in implementing therapy. The reasons for this include increased generalization and cost-effectiveness. However, research has not sufficiently addressed the possibility that placing an additional role of therapist on parents of children with ASD contributes to increased stress. This paper examines some of the main arguments for parents acting as therapists. Specifically, research demonstrates that the role of parent as therapist is not the only option for increasing generalization, and that this form of therapy implementation may not be cost effective for the family when considering loss of income. Possible implications are discussed, including loss of income, increased time demands, negative effects on relationships between family members, and emotional strain. Future research areas that focus on understanding and addressing the possible negative impacts of parents taking on the role of therapist are suggested, including increased focus on interventions in inclusive childcare settings.

Keywords: Austism Spectrum Disorder, parent-mediated intervention, stress

One of the most effective forms of therapy for children with Autism Spectrum Disorder (ASD) is intensive early behaviour intervention (EIBI) occurring during the toddler and preschool years (Reichow, 2012). These approaches are not without challenges, including difficulty with generalizing skills learned during therapy and the high cost of treatment. Recent literature has emphasized the importance for caregivers to become involved in implementing interventions to address both of these concerns (Pickles et al., 2016; Schreibman et al., 2015). However, there are other effective ways to overcome these challenges that do not place the role of therapist on the parents. Researchers have often neglected to address the increased stress or potential negative outcomes that may result from parents acting as therapists (Karst & Vaughan Van Heck, 2012). Of the studies that do address parental stress in parent-mediated interventions, stress is often examined as a function of the success of treatment and not directly in relationship to the additional therapist role demand of the intervention (Reichow, 2012; Smith, Flanagan, Garon, & Bryson, 2015).

The family system is often strained when raising a child with autism spectrum disorder (Karste & Vaughan Van Heck, 2012; Kuhn & Carter, 2006). Placing additional demands on the parents may exacerbate existing struggles, including loss of income, martial discord, and negative sibling relationships (Fletcher, Markoulakis, Bryden, 2012; Rivers & Stoneman, 2003; Roper, Alfred, Mandleco, Freeborn, & Dyches, 2014). As such, research needs to include a

focus on programs that address both the needs of the child and the family system, such as those that imbed intervention in daycare settings (Magiati, Charman, & Howlin, 2007).

This paper will discuss several factors related to parent-implemented therapy. This will include the reported benefit of increased generalization but that is not specific to parents acting as therapists, and a cost-analysis demonstrating the financial strain placed on families raising children with ASD. Finally, multiple stress effects on the family are examined, which may arguably be exacerbated when parents take on the role of therapist. The paper concludes with a recommended alternative and call for further research that does not require therapy be implemented by a child's caregivers.

Generalization of Skills

Applied behavioural analysis (ABA) based therapies termed as naturalistic developmental behaviour interventions (NDBIs) are currently recommended to improve generalization skills in young children with ASD (Schreibman et al., 2015). Children with ASD have difficulty with generalization (Barton, Lawrence, & Deurloo, 2011), and forms of early intervention such as discrete trial teaching do not show as much promise as NDBIs in addressing this specific problem. NDBIs allow for intervention using ABA principles to occur in the context of the child's daily routine (Stiener, Koegel, Koegel, & Ence, 2011), and are more flexible in their design and implementation (Chang, Shire, Shih, Gelfand, & Kasari, 2016) compared to most early intensive behaviour interventions (EIBIs). Unlike interventions that explicitly teach skills outside of their natural context, these programs imbed instruction in the child's daily routine using ABA principles, allowing for increased generalization. EIBI programs, including NDBIs such as such as Pivotal Response Training (Smith, Flanagan, Garon, & Bryson, 2015) and JASPER (Kasari, Gulsrud, Paparlla, Hellemann, & Berry, 2015), often recruit parents to become involved as therapists in the implementation of the interventions. Research cites the reduced cost (Stiener et al., 2011), and ease at which parents can imbed interventions within the daily routine (Pickles et al., 2016) as reasons for parents to take on the role as therapist. Additionally, parents are able learn effective teaching and interaction methods that help to improve their autism symptoms (Kasari et al., 2015). This approach has also been shown to be effective in improved generalization of skills in young children with ASD (Kasari et al, 2015; Smith et al, 2015; Stiener at al, 2011).

Improved generalization can also occur without the involvement of parents acting as therapists. Research has demonstrated that interventions can be effectively carried out in daycare and classroom settings by multiple individuals, including teachers and support workers (Barton et al., 2012; Kaale, Smith, & Sponheim, 2012; Sainato, Morrison, Jung, Axe, & Nixon, 2015). In fact, interventions taking place in the same environment as typical developing peers is suggested to increase social skill generalizability compared to one-to-one therapy environments (Chang et al, 2016). Therapies implemented in inclusive settings, such as a daycare or classroom, allow for greater opportunity to develop social skills and peer relationships. Peer-mediated interventions, which has demonstrated promise in the generalization of social skills (Chang & Locke, 2016), is only possible within an inclusive environment with typically developing peers. Research conducted by Sainato et al. (2015) has demonstrated that specific therapies within an inclusive kindergarten setting can be con-

ducted with high fidelity to the program and with improvements in core deficits and academic development. Given the feasibility of implementing therapy in an inclusive childcare or academic setting and the increased generalizability of social skills, this potential intervention environment deserves more consideration in research.

NDBIs often involve targeting multiple skills (e.g. play skills, language, daily routines), data collection, and procedures that require their own instruction on implementation (Chang, et al., 2016; Schreibman et al., 2015). That makes acting as a therapist much more complicated than simply using certain teaching or communication techniques. Research shows that parent training is helpful in improving autism symptoms (Steiner et al., 2011), demonstrating that it is possible for parents to learn to provide the care their child needs to support their learning without acting as therapists. Parenting training may increase parents understanding of how best to teach their child, such as how to move through a daily routine using prompting procedures learned during parent training, for example. Parents acting as therapists, on the other hand, may have to collect data on the success rate and level of prompts used in each step for the same routine. Even though NDBIs are more flexible than ABA interventions using discrete trial teaching (Reichow, 2011), parents still cite the structure required in the interventions as a barrier to implementing them in the home (Pickard, Kilgore, & Ingersoll, 2016). Parents can, and should, be given the tools necessary to make them more effective parents; however, they can be given this information so that they can support their child's development without taking on the role as therapist. JASPER, a form of NDBI, has been shown to be effective when implemented by parents as well as in daycare settings (Chang et al., 2016), demonstrating that there are options outside of using parents as therapists when conducting interventions. Therefore, it may be unnecessary to recruit parents as therapists for NDBIs to be considered effective.

Cost Analysis

The high cost of evidence-based interventions for young children with ASD is another reason given for parents to take on the role as therapist for their child (Schreibman et al., 2015, Steiner et al., 2011). The recommended amount of early intervention that a child should receive per week ranges from 20 to 40 hours minimum of a form of ABA therapy (Reichow, 2011). Children with ASD receive individualized programs designed by a certified behaviour consultant (BC), and then implemented by behaviour interventionists (BIs). Additional professionals, such speech language pathologists (SLPs), occupational therapists (OTs), and physiotherapists (PTs) are also sometimes involved (Kaale et al., 2012). The fees of these professionals, according to British Columbia's Ministry of Children and Family Development (2017), are as follows: BCs, $70-$110 per hour; BIs, $10-$20 per hour; SLPs, $105-$130 per hour; OTs, $90-$120 per hour; and PTs, $75-$85 per hour (p. 22).

To approximate the average monthly expenses for therapy, the mean average of all professional fees, the mean average of recommended therapy hour per week (30 hours), and included four hours of BC services, while excluding SLP, OT, or PT. The average monthly expenses for therapy can be approximated at $2,160, or $25,920 annually not including travel expenses. A parent acting as therapist for 10 of those hours per week, rather than a BI, would provide a family with savings of $600 per month, or $7200 per year. Families raising a child with autism often report stress about

their financial situation (Fletcher, Markoulakis, & Bryden, 2012; Karst & Vaughan Van Heck, 2012), possibly leading them to decide to take on the additional role as therapist to alleviate financial strain.

The surface appearance of cost-effectiveness in parents taking on a therapist role for their child with ASD ignores many hidden costs such as travel time and costs, and lost wages. One study found that children with ASD receive an average of 14.85 hours per week of 5.43 different types of services in early childhood (McIntyre & Barton, 2010). If one considers the additional time it takes for parents to drive their child to various appointments, as well as the time spent coordinating care and maintaining contact with various professionals, parents likely spend, on average, over twenty hours a week devoted to their child's therapy. Many parents cannot balance these demands with full-time employment, resulting in one parent, often the mother, electing to leave their job to act as primary caregiver (Fletcher et al., 2012; Jellet, Wood, Giallo, & Seymour, 2015). Caregivers of children with ASD report many employment-related sacrifices that they have made due to the needs of their children, including lost promotions, reduced hours, and accepting lower paying jobs that provide better hours to suit the needs of their child (Fletcher et al., 2012), in addition to leaving the workforce entirely.

A study conducted in Australia found that nearly 90% of the median annual cost of ASD to a family was directly related to lost productivity at $29,200 (Horlin, Falkmer, Parsons, Albrecht, & Falkner, 2014). The remaining costs ($5,700) attributed to therapy, medical, and travel expenses. In the study, this lost productivity was calculated based on the country's median full-time income ($48,864) and the reported full-time employment units lost by each participating family. Proportionally, the median annual cost of ASD was 59.76% of the total average median family income. If one were to calculate the lost productivity experienced by families in Canada raising a child with ASD using the same proportions with the country's 2015 median full-time income of $55,600 (Statistics Canada, 2016), the total would be $33,226.56. This calculation is a rough estimate, but is reasonable considering the similar economic and political structures of the two countries (Hunkar, 2009), as well as similar funding and forms of available ASD interventions (Horlin et al., 2014). When one adds the approximated annual cost of therapy outlined earlier ($25,920 + $33,226.56= $59,146.56) and then factors in the $22,000 per year funding provided by the government of British Columbia for children with ASD under age 6 (Ministry of Children and Family Development, 2017), the total cost to families of therapy and lost production is approximately $37,146.56. This approximate cost does not include any SLP, OT, or PT services, and does not factor in travel expenses, medical treatments, or alternative therapies.

Given the large annual cost of treatment incurred by families raising a child with ASD, it is reasonable to assume that some parents take on the additional role of therapist to alleviate some of the financial strain put on the family. Simply having the parent not take on the roll of therapist does not always decrease the loss of productivity, as at-home interventionists often require the parent to remain in the home while the BI or other professional conducts the therapy session. One option that addresses reducing loss of productivity expenses is the conduction of therapy in childcare settings. Interventions conducted in inclusive childcare settings may potentially allow caregivers to work while their child receives the recommended amount of therapy per week. Therapies offered in this type of setting may also alleviate

some of the travel time and associated costs incurred when attending multiple therapy sessions outside the home.

Family Stress

Little research has been conducted to directly assess the impact that having a parent take on the role as therapist has on individual levels of stress, mental well-being, or the larger family system. However, the underlying stress of families of children with ASD has been well studied. In one survey, parents indicated stress levels above and beyond the ceiling of the stress measurement used (Kasari et al., 2015). Families report numerous unmet needs which include: a break from responsibilities (54.5% of respondents), time alone with their partner (64.4%), help remaining hopeful for their child's future (61.4%), and help dealing with fears about their child's future (63.4%) (Brown et al., 2012). This indicates that parents of children with ASD feel overwhelmed and under-supported in dealing with their child's disability. In addition, the time of diagnosis has been identified by parents as being one of the most stressful periods of their life (Kuhn & Carter, 2006). This is likely because parents are coming to terms with their child's diagnosis, while simultaneously taking on the role as care coordinator for their child's therapy (Hastings et al., 2005). Taking on the role of therapist in their child's intervention at this time would serve to add to the already overwhelming level of stress that parents experience. Parents should only be asked to take on the additional role of therapist if absolutely necessary, and then only with due consideration of the family system and the needs of all individuals.

Parental Relationship

Although mothers often act as primary givers and report high levels of stress, fathers are not exempt from similar negative impacts of raising a child with ASD (Jellet et al., 2015). The stress and depression experienced by mothers of children with ASD has been shown to increase the level of stress and depression in fathers (Jellet et al.,2015). Two parents who are highly stressed are at greater risk for turmoil within their marriage. Parents of children with ASD are at greater risk for divorce than are parents of neurotypical children from the child's birth into early adulthood (Hartley et al., 2010). It is suggested that the burden of caring for a child that is unable to care for themselves as they mature contributes to the divorce rate amongst parents of children with ASD. A rate that is double that of the typical population (Hartley et al., 2010). Adding an additional burden of acting as therapist may serve to increase stress not just for the primary caregiver, but for their partner as well, which may increase the likelihood of marital discord and possibly divorce.

Siblings

Parents of children with ASD are not the only ones impacted by the increased demands associated with caring for a child with a disability; sibling relationships have also been shown to be negatively affected (Hasting et al., 2005; Roper et al., 2014). This may be because of the direct interactions between siblings, or because of the resentment felt by the neurotypical sibling due to the parents attending to the child with ASD at the perceived expense of the sibling's own needs (Jellet et al., 2015). One study indicates that over 50% of mothers and 70% of fathers believe that early interventions conducted in the home environment negatively impacted the child's sibling, with over one third of siblings not getting as much attention

as the child with ASD (Grindle, Kovshoff, Hastings, & Remington, 2009). If parents are then required to actively participate as therapists for interventions in the home, this would decrease their availability to the child's sibling(s) and potentially further negatively impact both the child-sibling relationship and the parent-sibling relationship. Research has demonstrated that perception of sibling preferential treatment and jealousy of the sibling is linked to maladaptive behaviours in adolescents (Loeser, Whiteman, & McHale, 2016). Even if the parents acted as therapists for only a few hours a week, those few hours could have a lasting effect on a sibling who is already feeling ignored if it results in perceptions of sibling preferential treatment or increased jealousy.

Therapy Challenges

It has been shown that parental stress is influenced by the challenging behaviours of their child with ASD, and not the severity of autism symptoms or lack of adaptive behaviours (e.g., activities of daily living) (Hastings et al., 2005; Jellet et al.,2015; Roper et al., 2014). Additionally, the exposure to challenging behaviours without opportunities for breaks provided by therapy sessions being conducted by others does have the potential to increase parental stress. A bidirectional influence of parental stress and challenging behaviours has proposed that parent fatigue, possibly in part due to a child's challenging behaviours, resulting in difficulty managing the behaviour, which in turn escalates the behaviour (Seymour et al., 2012). Parents acting as therapists, who would otherwise be given a break from directly managing the challenging behaviours, may experience increased stress and fatigue that could act to increase the severity of the behaviour. The benefits of even 1 hour per week of respite for parents with ASD includes reduced stress and increased marital quality (Harper, Dyches, Harper, Roper, & South, 2013). It is possible that these benefits may also occur when parents are provided with breaks from directly teaching and managing challenging behaviours. Interventions conducted by professionals rather than the parents allow for these small breaks from directly managing challenging behaviour, while requiring that the parents act as therapists removes a potential opportunity for reducing stress.

Interestingly, when a parent is highly stressed, the positive impact of therapeutic interventions is negated (Osborne, McHugh, Saunders, & Reed, 2008). This indicates that even the best therapy, if implemented within an already stressed system, has the potential to have little to no impact. It does not make sense to increase the stress on the family system with the justification of improving autism symptoms when that increase in stress may serve to negate any improvements. The goal of therapeutic interventions in children with ASD is improvement in symptoms and adaptive functioning, and the negating effect of parent stress on these improvements is one that deserves due consideration when designing and implementing these therapies. A study conducted by Smith et al. (2015) demonstrated no effect on parental stress despite improvements in core autism symptoms. Therefore, the potential improvements in autism symptoms and reduction of challenging behaviours that may be experienced when the parents act as therapists may not mitigate the potential negative impacts.

In some families raising a child with ASD, stressors such as chaotic family environments, unstable housing, and unmet basic needs serve as additional barriers to parents implementing therapy in the home (Pickard et al., 2016). A better approach, providing more

equitable opportunities for success for children from any background, would be one that provides interventions outside of the family home. An inclusive daycare setting, for example, provides a learning environment removed from experiences of parental stress and barriers to therapy, as well as allowing for generalizability of skills amongst their peers. Generalizability to the home environment may require parent training to extend techniques into the home environment to support teaching that is occurring elsewhere. However, as discussed earlier, parent training differs from parents acting as therapists, and helps to improve parents' confidence and efficacy (Steiner et al., 2011) without burdening them with the role as therapist.

Individual Caregiver Stress

Recruiting parents as therapists in their child's intervention has potential negative impacts on parent's sense of efficacy. Parents have reported feeling lost and defeated when unable to effectively parent their child (Robinson, York, Rothenberg, & Bissel, 2015) prior to their ASD diagnosis. It is possible that this sense of defeat may also occur if a parent feels ineffective as a therapist for their child after diagnosis. A parent's feeling of guilt has been negatively associated with a sense of self-efficacy in mothers of children with ASD, which is in turn associated with maternal well-being, levels of depression, and parenting stress (Kuhn & Carter, 2006). Therefore, if a parent acts as therapist for their child, they may experience a loss of sense of self-efficacy if there is a lack of improvement. This in turn has the potential to increase stress and depression for the mother. When compared to peers of non-depressed mothers, typically developing young children with depressed mothers more frequently displayed insecure attachment, lower cognitive abilities and social skills, and increased behaviour problems at 24 months of age, and less developed language at 36 months (Wang & Dix, 2013). Maternal depression has also been noted as a general risk factor for both internalizing and externalizing behaviours in later childhood (Fanti & Henrich, 2010). Therefore, maternal depression, possibly be exacerbated by the additional role of therapist, has the potential to negatively influence the developmental trajectory of both the child with ASD and their siblings.

Several articles addressing the stress that parents experience when they have a child with ASD recommend that parents are provided with a form of support: psychoeducation (Kasari et al., 2015), counseling, or utilization of social supports (Osborne et al., 2008; Jellet et al., 2015; Hastings et al., 2005). Surprisingly, none offer the possibility of reducing the load placed on these families to reduce overall stress. Parents are already overwhelmed by the amount of time and energy one must devote to a child with ASD, and are potentially neglecting the needs of their partner, their other children, and themselves to provide the best care for their child. They likely do not have the ability to put additional time and energy forward to provide therapy to their child as well. If the role of therapist can be removed from parents, allowing them more freedom to focus on their many other roles, then their stress could be greatly reduced. Eliminating a role is much easier than designing and implementing new therapies to address the stress that a parent is going through; new therapies, ironically, could actually increase stress by adding yet another appointment to an already overstretched family calendar.

Conclusions

One solution that addresses the

demand for cost-effective treatments that are easily generalizable, but do not require caregivers to take on the additional role as therapist, is to conduct evidence-based early intervention therapies in daycare. Despite the challenges that one may associate with inclusive care settings, several social benefits for the child and their peers, as well as increased quality in instruction, have been demonstrated (Carrington et al., 2016). Studies of interventions conducted in both preschools (Baron et al., 2012; Chang et al., 2016) and kindergarten (Sainato et al., 2015) have demonstrated that effective therapy conducted with high fidelity is possible; however, more research is needed.

A focus on intervention in inclusive childcare settings opens many possible research areas. These include intervention designs that are best suited to different childcare settings, specific family factors that may indicate the need for a childcare-based intervention, cost-effectiveness of service delivery, and family and parental quality of life measure comparisons between intervention settings. If successful, research may act to influence policy makers in government, leading to changes in the funding and accepted forms of service delivery that may add benefit to both children with ASD and their families. With the many possible sources of stress for families raising a child with ASD, it is important that the focus of autism research be on creating a system of support and treatment that equally serves parent and child, rather than one at the potential expense of the other.

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Illustrations and other possible contributors to clarity in jury instructions

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Jurors often fail to understand legal concepts due to the complex language and method of delivery of these instructions (Charrow & Charrow, 1979; Sontag, 1990, cited in Patry & Penrod, 2013; Tiersma, 1995, cited in Tiersma, 1999). There have been multiple attempts to simplify judges' instructions to juries, some of which include employing readability formulas and simplifying the language of the text by removing ambiguous terms and complicated syntax. However, readability formulas seem to provide only a general indication of a text's difficulty, and the plain language approach has similarly been unsuccessful in significantly improving comprehension on its own. Therefore in order to truly improve understanding of legal concepts, one must go beyond focusing purely on linguistic factors. This overview of the literature examines how supplementing text with illustrations can increase jurors' understanding of legal concepts to a greater extent than what can be achieved when only the language of the text is simplified. This examination of illustrations in jury instructions considers the influence of ordering effects, metaphorical relatedness, and subjective perception, as well as the derived benefits from using illustrations such as a reduced cognitive load and enhanced mental models for jurors. This overview concluded that illustrated jury instructions, in addition to the use of readability formulas and plain language, can improve understanding of legal concepts in jurors and are therefore promising contributors to the construction of clearer jury instructions.

Keywords: jury instructions, illustrations, cognitive load, mental models, readability

Legal language is the source of many headaches among the general public. Warranties, waivers, and contracts inspire confusion due to the difficult language and complex style they employ (Tiersma, 1999). Judges' instructions to juries often consist of this very type of language and along with an environment ill-suited for learning, they can have detrimental consequences on the outcome of a trial (Severance, Greene, & Loftus, 1984). Indeed, a survey of jurors who had served on capital cases revealed that less than half of them understood the meaning of aggravating or mitigating (Sontag, 1990, cited in Patry & Penrod, 2013), and yet another survey found that many jurors were guilty of looking up words such as malice and negligent (Tiersma, 1995, cited in Tiersma, 1999).

There have been many proposed solutions to improve jury instructions. One solution is to employ readability formulas when drafting instructions. These formulas take into account factors such as how many syllables there are per word and how many words per sentence, but they are not always reliable indicators of a text's readability (Begeny & Greene, 2014). Another solution is to simplify the language of instructions to mirror language in everyday use (Diamond & Levi, 1996). However, this approach has been shown to yield only minimal improvements (Wiener, Pritchard, & Weston, 1995). A less known approach is the learner-centred approach proposed by Miles and Cottle (2011) which uses non-traditional means

to place the jurors at the centre of the learning process. The use of visual aids such as graphs, illustrations, and flowcharts in jury instructions are examples of this approach. By presenting information through various senses, cognitive load can be overcome and visuals can help build mental representations of the text in question which leads to better retention and understanding of concepts (Brewer, Harvey & Semmler, 2004; Glenberg & Langston, 1992). Jury instructions may benefit therefore from considering all three suggestions: incorporating illustrations, making use of readability formulas and employing plain language strategies.

Pattern Instructions

The current format of jury instructions leads to poor comprehension and should be improved (Cho, 1994). These instructions are called pattern instructions because the same format is used across states in the United States (Cho, 1994). These instructions are usually delivered orally and in written form, and are supposedly unbiased because they are designed by law professionals removed from any particular case. They are also considered highly legally accurate since they are based on significant research and discussion (Cho, 1994). Furthermore, having the same instructions presented to juries on every case suggests objectivity, fairness, and consistency. However, lay people's understanding of jury instructions is disturbingly poor. The term 'reasonable doubt', for example, has been found to be seriously misunderstood by jurors (Severance et al., 1984). In one of the first empirical studies on the comprehensibility of pattern jury instructions, subjects were given California standard civil jury instructions and were asked to paraphrase them (Charrow & Charrow, 1979). Unfortunately, the subjects were only able to correctly paraphrase half of the content. This confusion is partly due to legal homonymy, complex sentences with embeddings, overuse of passives and nominalizations, and multiple negation which are common linguistic features in legal documents (Tiersma, 1999). Furthermore, judges are often, understandably, reluctant to provide guidance out of fear of distorting the content, and when asked to clarify aspects of the instructions, they often simply repeat what they have already said (Tiersma, 1999).

Although the instructions evaluated in research are often the ones used in the United States, there is significant evidence that Canadian jury instructions are also problematic. Rose and Ogloff (2001) examined the comprehensibility of Canadian Criminal Jury Instructions (CRIMJI) in participants from various educational and occupational backgrounds. The participants were given a set of facts on a case and a package of CRIMJI instructions. They were then given a set of Yes/No questions that tested how well they could apply the legal instructions to the facts of the case. Rose and Ogloff (2001) found that the participants performed only slightly better than chance. Consequently, Canadian jury instructions can also benefit from this discussion.

Readability Formulas

One proposed solution to the complicated language in pattern jury instructions is to begin producing instructions that use readability formulas to assess the difficulty of the reading materials. These mathematical formulas calculate frequency of factors such as difficult terms, words per sentence, and syllables per word (Begeny & Greene, 2014). The reasoning behind these formulas is that referring to them while creating written material can help identify problem-

atic items and make the text easier to understand. However, shorter words and shorter sentences alone do not necessarily lead to better understanding (Begeny & Greene, 2014).

This finding was observed in a study gauging the difficulty of reading materials for grade school. Begeny and Greene (2014) found that only a small number of formulas were accurate indicators of a text's readability. Readability formulas are similarly inaccurate when gauging the comprehensibility of legal documents. While materials used by state governments score below 9th grade in difficulty, many of those materials remain incomprehensible to parents (Roit & Pfohl, 1984). However, this is not to say that readability formulas should not be used to improve jury instructions. They can, and should, be incorporated into the solution because, while they are not sufficient on their own, they can provide a general indication of a text's difficulty.

Plain Language

Another solution to pattern instructions is to modify certain linguistic features of jury instructions to mirror language in everyday use. Revised instructions written with clear syntax (sentence structure) and without misleading terms were found to improve understanding of instructions (Diamond & Levi, 1996). However, modifying jury instructions based on these linguistics properties alone does not always result in greater comprehension. Wiener et al. (1995) compared four sets of jury instructions including one set of revised instructions written in clear language. Participants were presented with one of the four sets of instructions and were given a survey to assess their comprehension of the text. However, the number of correct answers did not improve significantly with the revised instructions. Likewise, another study comparing pattern instructions to instructions drafted without complex sentences, legal jargon, and abstract concepts led to only minimal improvements in jury comprehension as assessed in a multiple choice questionnaire (Severance et al., 1984). Therefore, although modifying linguistic features can lead to clearer jury instructions, it is not sufficient on its own.

Illustrations in Jury Instructions

In order to significantly improve jurors' understanding of the instructions given to them, one must go beyond focusing purely on the linguistic characteristics of the text (Miles & Cottle, 2011). In the learner-centred approach, the setting of jury instruction and deliberation should be considered an instructional setting and jurors should be placed at the centre of the learning process since they are usually untrained in matters of the law (Miles & Cottle, 2011). Jurors should be thought of as being in a learning process since they are learning the meaning of technical or abstract legal language for the first time (Miles & Cottle, 2011). Research has shown that visual aids and multimedia facilitate learning, therefore the use of visual aids can be considered a learner-centred approach (Rusanganwa, 2015; Chanier & Selva, 1998). Figure 1 provides an example suggested by Dattu (1998) of what an illustration accompanying the term "proof beyond a reasonable doubt of a defendant's guilt" might resemble.

Figure 1. Suggested diagram accompanying the concept of reasonable doubt. Reproduced from Dattu, F. (1998).

Illustrated jury instructions: A proposal. Law and Psychology Review, 22, 67-103.

Presenting instructions to the jury through illustrations and other visual material is beneficial according to two important frameworks. Firstly, the cognitive load theory suggests that images may facilitate learning because combined oral and visual instructions can overcome the cognitive load (effort expended on working memory) imposed on jurors (Brewer et al., 2004). The presentation of the information through various senses helps retain information more effectively and this is particularly relevant in court where juries are at times prohibited from taking notes. The second framework suggests that illustrations may be beneficial for learning because they help build mental representations or frameworks of abstract legal concepts (Glenberg & Langston, 1992).

Illustrations and Cognitive Load

Cognitive load refers to the amount of mental effort expended in working memory during a task (Sweller & Chandler, 1994). While the difficult nature of the jury's task cannot be altered, extraneous cognitive load can be avoided in addressing the design of jury instructions. Extraneous cognitive load refers to mental effort that is the result of the design of a task and not the result of the nature of the task itself (Sweller & Chandler, 1994). Since cognitive load is the product of limited working memory, by incorporating visuals into the design of the instructions, the amount of information transmitted through the visual and auditory systems exceeds what can be transmitted along one system alone thereby increasing the capacity of working memory and decreasing extraneous cognitive load (Tindall-Ford, Chandler, & Sweller, 1997). Consequently, the amount of mental effort expended in understanding jury instructions is no longer as taxing.

Although instructions are usually presented to jurors in written and auditory format anyways, there is evidence to suggest that language is processed by memory subsystems such as the phonological loop and the central executive, while visual imagery is processed by another system - the visuo-spatial sketchpad (Baddeley, 1996; Papagno et al., 2017). Consequently, illustrations might decrease cognitive load by exploiting a different memory subsystem than written or oral instructions.

When written jury instructions are accompanied with illustrations, information is processed simultaneously by different memory subsystems thus decreasing cognitive load (Brewer et al., 2004). When presented with a computer animated flowchart in addition to written and oral instructions detailing the concept of self-defense, novice jurors matched expert jurors in their comprehension of self-defense as demonstrated through a multiple-choice measure (Brewer et al., 2004). However, illustrations should not replace written text. In a study testing how supplementing jury instructions with a flowchart affects comprehension, the results suggest that using only a flowchart does not improve comprehension since there was no difference between this condition and the text only condition (Semmler & Brewer, 2002). Rather, improvement in comprehension was found when flowcharts were used in addition to written text.

The ordering of the written material and the illustration is another aspect to consider. It has been suggested that less complex materials should be presented first so that the individual can then add on to what they already learned (Eitel & Scheiter, 2015). However, separating the image from the text may actually be detrimental to comprehension. When technical illustrations and their descriptors are presented separately,

cognitive resources are divided between two stimuli and a heavy cognitive load is consequently imposed (Purnell, Solman, & Sweller, 1992). However, when the illustration and the descriptor are incorporated, cognitive resources are not split and heavy cognitive load is not experienced (Purnell et al., 1992). Therefore illustrations and written text should be incorporated and presented simultaneously to avoid splitting of cognitive resources.

Illustrations and Mental Models

Including illustrations in written text promotes the use of mental models which are cognitive representations of the content of the text constructed along various spatial dimensions (Glenburg & Langston, 1992). When a text is read, a mental model of the content of the text is formed. The mental model helps organize relationships between elements in the text and, as the individual peruses the text, elements are modified or updated focusing attention on them and subsequently leading to increased retention (Glenberg & Langston, 1992). Illustrations can assist in the construction of mental models because they are both visual representations of concepts (Glenberg & Langston, 1992). Participants who have been presented with a diagram in addition to written text are better able to understand the relationship between steps explained in the text than those who are only presented with the text (Glenberg & Langston, 1992). Illustrations can therefore help build accurate mental models of concepts that allow encoding of relationships in a way that is difficult for written text to convey.

Metaphorical pictures of the concepts in written text can also help retention. A metaphorical picture is a visual representation that combines two concepts with overlapping features within the same semantic space (Danielson, Schwartz, and Lippmann, 2015). Danielson et al. (2015) elaborated on the idea of illustrations leading to better mental models and tested how metaphorical pictures of the concepts in the written text help retention after one week. Participants in the text-only condition were presented with sentences on the war in Darfur, and participants in the experimental conditions were presented with the text and either a picture of two lions fighting each other - which displayed high metaphorical relatedness - or a picture of a barren landscape - which displayed low metaphorical relatedness. The participants were then instructed to write an essay including as much information from the text as they could remember. They found that the level of metaphorical relatedness between the illustration and the text predicted recall one week later. Therefore, it is not merely the presence of a picture or the fact that target material was presented twice - once in the text and once in the picture- that influences retention, but the relationship between the illustration and the concept in the text.

Limitations

The implementation of illustrations in jury instructions has a number of significant drawbacks which have led to the courts' understandable reluctance to include them. One of the reasons why legal language seems particularly archaic and difficult for lay people to understand is that it encodes very particular legal meanings that are difficult to express in alternate ways. The language and conventions used in legal settings today have been approved and established as a result of years of tradition and precedent (Tiersma, 1999). Courts often resist deviation from past procedures for fear of upsetting prior judgments and having to revisit them (Tiersma, 1999). Making illustrations available in jury

instructions might open the door to an interminable stream of appeals from those who have been convicted without illustrations in jury instructions and from those who claim that the illustrations instilled bias in the jury or distorted legal concepts (Tiersma, 1999). An unfortunate example of how an attempt to clarify instructions to the jury resulted in more confusion than clarity is cited in Severance et al. (1984) where an attempt was made to clarify the term "reasonable doubt" which led to several instances of misinstruction to the jury and a successful appeal. This example showcases the fact that changes in wording can lead to the distortion of legal concepts and a sense of unreliability in the legal system. Implementing illustrations would therefore not be simple and they would need to be generated in such a way as to encode very precise legal meanings.

The idea of bias in illustrations is not unfounded since many studies claim that illustrations are perceived subjectively. Differences in visual processing have been found in people who suffer from anorexia, bulimia and substance abuse and there is also significant research to suggest that men and women process visual stimuli differently (Madsen, Bohon, & Feusner, 2013; de Vries & Forger, 2015). However, while emotional visual stimuli is often used in these studies, illustrations in jury instructions would be drawn "without sensationalism" (Dattu, 1998), generated by computers to avoid bias, and not intended to replace written text but instead accompany it (Dattu, 1998). Since the illustrations that would be used in jury instructions are not emotional in nature, subjectivity would not be an obstacle. The courts are, however, not yet convinced and illustrations have not been implemented on a large scale because of their perceived subjectivity and the reasonable fear of subsequent appeals claiming that the illustrations embellish legal concepts (Tiersma, 1999).

Conclusion

On January 11th, 2003, three days before his end of term as governor of Illinois, George Ryan commuted the death sentences of all inmates who were on death row (Moore, 2006). One significant reason behind these actions was the governor's belief that jurors had not been provided with adequate means to understand the law (Moore, 2006). Therefore he believed that the death sentences handed to the inmates were most likely unwarranted. Jurors have the power to alter the course of someone's life and in some jurisdictions, can even sentence a person to death. In order to make such serious decisions, instructions to the jury should be exceptionally clear and inspire unquestionable understanding of the law on which jurors are required to base their decision. The process of jury instruction is of critical importance and should be treated as an instructional setting that integrates strategies to promote learning. In addition to readability formulas and focusing on linguistic elements, incorporating illustrations in jury instructions avoids cognitive overload and helps build mental representations of the text, both of which lead to a better understanding of the law by jurors. As a result, when taken together, the solutions suggested in this overview constitute a promising direction to generating clearer jury instructions.

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Dispositional Influences on Priming for Emotional Words

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Isolating a vulnerability towards depression is important for understanding the origins of the disorder and to produce more effective treatment options. The negative affective priming (NAP) paradigm has been used to measure cognitive attentional biases characteristic of depression. Two accounts of NAP are deficient inhibition and facilitation of negative material. Both ignored repetition (IgnRep) and attended repetition (AttRep) trials were included to test facilitation and inhibition of negative words, respectively. To dissociate the effects of word valence, 93 female undergraduate students at SFU completed a modified NAP task that included neutral words. NEO-PI-R depression (N3) and positive emotions (E6) subscales were used to better isolate depressed trait from state influences. Results showed that all emotional words had a facilitation effect, regardless of valence. Importantly, an inability to ignore negative words did not characterize depressed trait, as previously reported. A differential effect of valence was found in the AttRep condition but was the reverse of previous findings, with facilitation for positive words. This may represent a subconscious compensatory effort to counteract the effects of a depressed trait, as well as a dominant threat detection system in the positive trait. These results are more consistent with an emotion regulation account of negative priming than the inhibitory account typically used in the NAP literature.

Keywords: negative affective priming, inhibition, positive priming, attention facilitation, emotional regulation

Depression is highly recurrent, suggesting there may be stable, dispositional differences that contribute to the maintenance of this disorder in certain individuals (Gotlib & Krasnoperova, 1998). Identifying potential vulnerability markers for depression is important for improving the understanding of etiology and treatment. Since the symptoms of depression include alterations in cognition such as impaired attentional control, difficulties concentrating, and ruminatory thought patterns, many theorists posit that the vulnerability for depression is cognitive in nature (Mathews & MacLeod, 1994; American Psychological Association, 2013).

A particularly influential theory is Beck's (1967, 1976) content-specificity theory, which proposes that depression is characterized by negative schemas; cognitive structures that bias attention and information processing in favour of negative information. These negative schemas may underlie the negative ruminatory cycle; the constant "recycling" of negative thoughts that prevents the bad mood from receding (Gotlib & Joormann, 2010). Essentially, negative schemas increase the salience of negative items in the environment and lead to an overrepresentation of negative material in working memory (WM), ultimately causing depressed individuals to continually dwell on negative information (Gotlib & Joormann, 2010). Such

rumination leads to deficits in concentration, memory, and attention, as well as the more general cognitive profile of depression (Joormann, 2006).

An inability to inhibit negative material may underlie the development of the negative schemas and thus, may represent a significant factor in the onset and maintenance of depression (Mathews & MacLeod, 2005). Recently, researchers have used the Negative Affective Priming (NAP) paradigm to examine inhibitory patterns in depression. During the task, two consecutive slides are presented, a prime followed by probe, each containing two words in the centre of the screen. Subjects are required to indicate the valence of the target word (e.g., "please indicate if the blue word is positive or negative"), while ignoring a distractor word of the opposite valence. The relationship between the prime and the probe slide is important at analysis. Ignored repetition (IgnRep) trials occur when the prime distractor and probe target are valence congruent. On the other hand, control trials occur when the prime distractor and probe target are valence incongruent. The priming effect (PE) is defined as the difference in reaction times (RT) between experimental and control trials. In this case, the PE is more accurately labeled a NAP effect and can be calculated by subtracting RTs on control trials, RTs on IgnRep trials, and is thought to measure the cost associated with previously ignoring a word of the same valence as the probe target. Because participants are typically slower to respond on IgnRep trials (Wentura, 1999; Joormann, 2004), this NAP effect is thought to indicate the strength of inhibition associated with each word valence (Joormann, 2004). Importantly, depressed individuals show a severely reduced NAP effect for negative material (Frings, Wentura & Holtz, 2007; Joormann & Gotlib, 2010; Joormann, 2004; Joormann, 2006; Zetsche & Joormann, 2011; Dai, Feng & Koster, 2011; Leung, Lee, Yip, Li, & Wong, 2009) or even a facilitation effect, similar to that expected from a positive priming condition (Joormann, 2004). This has been interpreted as an inability to inhibit negative material (Joormann, 2004), which is consistent with other explanations of rumination (see Bradley, 1997). However, this explanation is subject to several criticisms.

Facilitation versus Inhibition

The results from the NAP task can be explained by both facilitatory and inhibitory mechanisms of selective attention. While the deficient inhibition hypothesis claims that depressed individuals are unable to disengage from negative material, it is also possible that the processing of negative material is enhanced to the exclusion of positive material (Dai, Feng, & Koster, 2011). To tease these explanations apart, attended repetition (AttRep) trials should be used in addition to IgnRep trials, in order to measure facilitation and inhibition, respectively (see Figure 1). On AttRep trials, the prime target and probe target are valence congruent, and therefore subjects should be quicker to respond to the probe target. Very few studies add both types of PEs to the NAP task. In those that do, depressed individuals show a facilitation effect to negative stimuli on AttRep trials, which supports the facilitation account of NAP (Goeleven et al., 2006; Dai, Feng, & Koster, 2011; Leung et al., 2009). However, an inhibition effect on IgnRep trials to negative targets is only demonstrated in some studies (Goeleven et al., 2006; Dai, Feng, & Koster, 2011). In others, both dysphoric (mildly depressed) and non-dysphoric participants showed a reduced NAP effect to negative stimuli (Leung et. al., 2009), which supports the deficient inhibition account of the NAP effect.

Isolating Depressed Trait

While the Beck Depression Inventory (BDI) has been used to isolate a vulnerability towards depression (e.g., Fring, Wentura, & Holtz, 2007), the questionnaire likely measures a combination of current mood state and depressed trait. In accordance with DSM-IV criteria (American Psychological Association, 2013), the questionnaire measures severity of depressive symptoms over a two-week period. This includes a number of items (e.g., feelings of sadness and worthlessness) that reflect mood state rather than depressed trait. Consequently, BDI scores may vary along with mood state, making it impossible to confidently isolate the effects of depressive trait by grouping subjects according to BDI score.

Although no studies were found directly testing this logical inference, BDI scores have been shown to decrease with subsequent administration (Sharpe & Gilbert, 1998). Two possible explanations exist. First, it may be due to increased familiarity with the testing environment. Anxiety from the unfamiliar setting causes a more negative mood state during the first administration. This makes negative emotions more salient, leading to more negative responding (Choquette & Hesselbrock, 1987). However, in a subsequent session, subjects are less anxious due to increased familiarity with the testing environment. The result is less salient negative emotions and consequently, less negative responding. Second, it is possible that subjects deliberately used coping mechanisms between sessions to reduce the negative mood state. Because negative emotions are more salient during the first testing session, subjects are motivated to reduce the negative emotions by employ coping mechanisms, leading to a more positive mood in subsequent sessions and thus, less negative responding (Sharpe & Gilbert, 1998). Either explanation reflects a sensitivity of the BDI to mood state. Although this is by no means conclusive evidence against the BDI as a measure of depressed trait, it does offer a cautionary note.

Dissociating Priming Effects for Negative and Positive Words

Additionally, it remains uncertain whether only processing of negative stimuli is altered in depression. A substantial number of studies have emphasized the independence of valence, proposing that only processing of negative material is altered in depression (Gotlib & Meyer, 1986; Watson, Clark, & Carey, 1988). For example, negative stimuli become significantly less salient, while positive stimuli become only slightly more salient in previously depressed individuals (McCabe & Gotlib, 1993). However, numerous studies also demonstrate that emotional words have a processing (Kanske & Kotz, 2007; Kousta, Vinson, Vigliocco, 2009) and encoding (Zeelenberg, Wagenmakers, & Rotteveel, 2006) advantage, regardless of the polarity of the emotional valence. Given this processing advantage of emotional material more generally, it seems unlikely that only processing of negative material is altered. More importantly, the diagnostic criteria of depression equate absence of positive affect and the presence of negative affect (American Psychological Association, 2013). Thus, the effects of positive and negative material may not be as easily differentiated as previously thought.

This is particularly problematic in the NAP task. Previous versions of the NAP task directly contrast positive and negative material (Joormann & Gotlib, 2010; Joormann, 2004; Joormann, 2006). Thus, on control trials, participants ignored an item of the opposite valence.

For example, on control trials for negative words, the previous distractor was a positive word. As a result, it is impossible to determine if alterations in the NAP effect are driven by altered processing of positive or negative words. To dissociate these effects, it is necessary to include neutral words.

The Current Study: Dissociating Depressed Trait from Positive Trait

The present study addressed the above concerns by comparing both AttRep and IgnRep priming scores for positive, negative, and neutral words in participants with a propensity towards depression versus those with a propensity towards positive emotions. Additionally, instead of the BDI, the NEO Personality Inventory Revised (NEO-PI-R) depression (N3) and positive emotions (E6) subscales were used to isolate depressed and positive trait in a non-clinical population of female undergraduate students. The NEO-PI-R is a personality test that requires participants to indicate how they typically think and act. This encourages the participant to focus on more stable aspects of themselves, and is therefore a more reliable measure of dispositional factors. This lead to three a priori hypotheses: First, we expected a facilitation effect (positive PE) for AttRep trials and an impeding effect (negative PE) for IgnRep trials. Second, the difference between the PE for AttRep trials and IgnRep trials would be greater for emotional words in both groups. Third, relative to the positive trait group, the depressed trait group would show a reduced PE for negative words on IgnRep trials and an increased PE for negative words on AttRep trials, while there would be no group differences on either priming trial for positive words. Thus, the depressed trait group would demonstrate both a facilitation and inhibition bias for negative words.

Method

Data for the present manuscript is taken from a larger study on the interaction between mood and dispositional factors in a non-clinical population of female undergraduate students and their influence on priming for emotional material. This study collected scores on the BDI-II, NEO-PI-R N3 and E6 subscales, NEO-Five Factor Inventory (NEO-FFI), and State Trait Anxiety Inventory (STAI). Participants also completed a medical history questionnaire and a modified NAP task under positive, negative, and neutral mood states.

Participants

Ninety-three female Simon Fraser University undergraduate students (M_{Age} = 19.74, SD = 2.55, Min = 17, Max = 37) with normal or corrected to normal vision were included in this study and received course credit for their participation. Students reporting any history of depression or anxiety on the medical history questionnaire were excluded from the study, since dispositional and mood state factors are inevitably conflated in such participants. To avoid logical and methodological concerns around median split grouping methods (see McClelland, Lynch, Irwin, Spiller & Fitzsimons, 2015; Rucker, McShane & Preacher, 2015), a quartile split method was used, based on the NEO-PI-R subscale scores. Those scoring above the third quartile on the NEO-PI-R N3 (> 17) and below the first quartile on the NEO-PI-R E6 (< 21) were included in the depressed trait (DT) group (N = 15, M_{Age} = 19.47, SD = 1.19, Min = 18, Max = 21). Conversely, those scoring above the third quartile on the NEO-PI-R E6 (> 27) and below the first quartile on the NEO-PI-R N3 (< 10) were included in the positive trait (PT) group (N = 16, M_{Age} = 20.31, SD = 1.78, Min = 18, Max = 24).

Materials

Words were selected from the Affective Norms for English Words (ANEW) database (Bradley & Lang, 1999). 64 positive, 64 negative, and 50 neutral words were selected based on valence rating and controlling for length and arousal rating. Words with a valence rating above 6 were considered for the positive list, between 4 and 6 for the neutral list, and below 4 for the negative list. Any words that may be associated with fear (e.g., snake, spider, etc.) were excluded from consideration. The final lists had an average valence of 7.54 (*SD* = .48) for positive words, 5.19 (*SD* = .51) for neutral words, and 2.55 (*SD* = .66) for negative words. Average length was 6.55 characters (positive = 6.8, neutral = 6.44, negative = 6.3). Average arousal rating was 5.4 (positive = 5.6, neutral = 4.88 negative = 5.2). The word lists did not differ significantly with regards to word length (pos-neg: $p = .68$, neu-pos: $p = .12$, neu-neg: $p = .14$). However, neutral words were significantly less arousing than both positive and negative words ($p < .001$).

NEO-PI-R. The N3 and E6 subscales from the NEO-PI-R were used to measure a subject's propensity towards depression and positive emotions. Although the two 8-item subscales were mixed into a single 16-item questionnaire to reduce reactivity, a separate score was calculated for each scale to provide both a measure of the subject's trait depression, as well as their trait positive emotions. Subjects indicated how well a statement describes them on a 5-point scale from 0 (strongly disagree) to 4 (strongly agree), with some items reverse coded to avoid malingering. Thus, scores on each scale can range from 0 to 32, with higher scores indicating a greater propensity to respond to situations in the corresponding manner. In a sample of 635 adults, these measures have good internal consistency (N3 coefficient $\alpha = .83$, E6 coefficient $\alpha = .79$) and inter-rater reliability (N3 cross-observer $r = .51$, E6 cross observer $r = .43$; McCrae, Martin & Costa, 2005). No individual validity measures are available for these scales. However, the larger personality index (NEO-PI-R) is partially based on Jungian theory, and thus important measures correspond to the Meyers-Briggs Trait Inventory (MBTI).

BDI-II. The BDI-II is a 21-item questionnaire designed to measure the severity of depressive symptoms during the preceding two weeks. Each item contains four statements and subjects indicate which best describes their experiences over the past two weeks. Responses corresponding to no symptoms are assigned a score of 0, while severe symptoms are scored 3. Thus, scores can range from 0 to 63, with higher scores indicating more severe depressed symptoms. The BDI-II is well established as a reliable and valid measure of depressed symptoms (outpatient coefficient $\alpha = .92$, $n = 500$; correlation with Hamilton Psychiatric Rating Scale for Depression $r = .71$, $n = 87$; Beck, Brown & Steer, 1989).

STAI. The STAI is a self-report scale that contains two independent anxiety measures, each consisting of 20 statements. The STAI A-Trait scale instructs subjects to describe how they generally feel, while the STAI A-State scale instructs participants to describe how they feel at a particular time. Each statement is rated on a 4-point scale and thus, scores can range from 20 to 80. On some statements, a high rating is assigned a score of 0, while on others, a high rating is assigned a score of 4. The STAI is well established as a reliable and valid measure of anxiety with high internal consistency (reliability scores range from .93 and .96; Chronbach's α reliability scores range between .87 and .92; Goeleven et al., 2006).

Design

During the modified NAP task (see Figure 1), participants saw a fixation cross appearing for 500 ms, alternating with response slides containing two words. Response slides remained on the screen until subjects responded. Subjects were seated approximately 60 cm from the screen. Letter dimensions were approximately 1 cm x 1 cm and words were presented 1 cm apart in the centre of the screen. Each slide contained both a red and a blue word, indicating which word was to be ignored (i.e., distractor) and which was to be attended (i.e., target). The attended colour was counterbalanced, such that half of the participants attended to the blue word and half attended to the red word. A slide could contain a positive and a negative word, a neutral and a positive word, or a negative and a neutral word, with target or distractor randomly assigned. Each trial was analyzed relative to the valence of the previous target, since each slide primed the subsequent slide. Thus, for positive and negative targets, four trial types were possible; AttRep (the previous target shared a valence with current target), IgnRep (the previous distractor shared a valence with current target), AttRepCont (the previous target was neutral and previous distractor did not share a valence with the current target), and IgnRepCont (the previous distractor was neutral and previous target did not share a valence with the current target). For neutral targets, only three trial types were possible; AttRep, IgnRep, and Control. Control trials occurred when the previous slide contained both a positive and a negative word, regardless of target/distractor designation. Within each block, participants responded to each word type (positive, neutral, and negative) 50 times and the order of the four conditions was randomized. Thus, each block contained 150 trials, for a total of 450 experimental trials and 15 practice trials. RT and accuracy of responses to the target word were recorded and analyzed.

Procedure

After obtaining informed consent, subjects completed a medical history questionnaire, NEO-FFI, and the NEO-PI-R subscales, before moving on to the NAP task. Following the task, subjects completed the BDI-II and the STAI before being debriefed. Only the NEO-PI-R subscales were used for identifying the DT and PT groups. The BDI and STAI were used to compare the groups on other potentially influential factors.

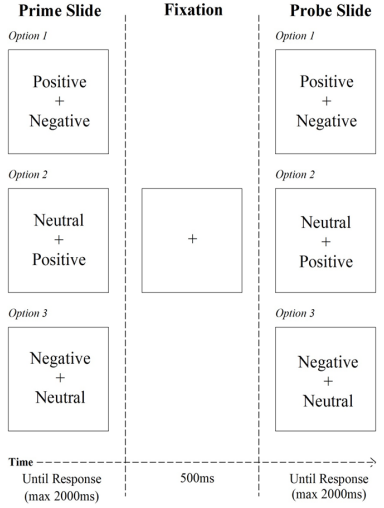

Figure 1: Modified NAP task used in the present study. Two priming conditions with corresponding control were used for each word type. The PEs (AttRep and IgnRep) were calculated by subtracting RTs to the control trials from RTs to priming trials.

Statistical Analysis

Independent samples t-tests were conducted to compare the groups on

the depression and positive emotion measures, as well as other relevant demographics. Six independent samples t-tests were conducted comparing the groups on age, BDI-II, depression, positive emotions, state anxiety, and trait anxiety scores. Family-wise error was capped at $\alpha = .30$, setting the per test probability level for significant effects at $\alpha' = .05$.

The PE was calculated by subtracting RTs on control trials from the corresponding priming trials (e.g., AttRep-AttRepCont) and was calculated for each word valence. This provides a measure of the cost/benefit associated with previously attending to or ignoring a word of the same valence as the current target. The PE was entered as the dependent variable in the RT analyses.

A 2 (Priming Type: AttRep, IgnRep) x 3 (Word Valence: positive, neutral, negative) within-subjects Analysis of Variance (ANOVA) was conducted on the NAP scores. This was followed by six paired sample t-tests comparing specific conditions. Family-wise error was capped at $\alpha = .30$. Thus, the probability level for significant effects was set at $\alpha' = .043$ for all seven tests. To better isolate the effect of group membership on processing of emotional words, this analysis was performed separately in the DT and PT groups.

To compare the groups directly, six independent samples t-tests were conducted on the priming effects for each trial type on all three word valences. Family-wise error was capped at $\alpha = .30$, setting the per test probability level for significant effects at $\alpha' = .05$.

Although a family-wise error rate of $\alpha = .30$ is quite high, this was not deemed to be problematic for the present study. The study was designed to maximize the distinction between various levels of the independent variables. As a result, only medium to large effect sizes were of interest. Type 1 errors are less likely to occur under these conditions and therefore, a higher family-wise error rate can be accommodated.

Results

Independent samples t-tests (see Figure 2) confirmed that the groups were significantly different on both the NEO-PI-R N3 ($t_{27.47} = 14.33$, $p < .001$) and E6 scores ($t_{16.74} = -8.82$, $p < .001$). This indicates that the quartile split grouping

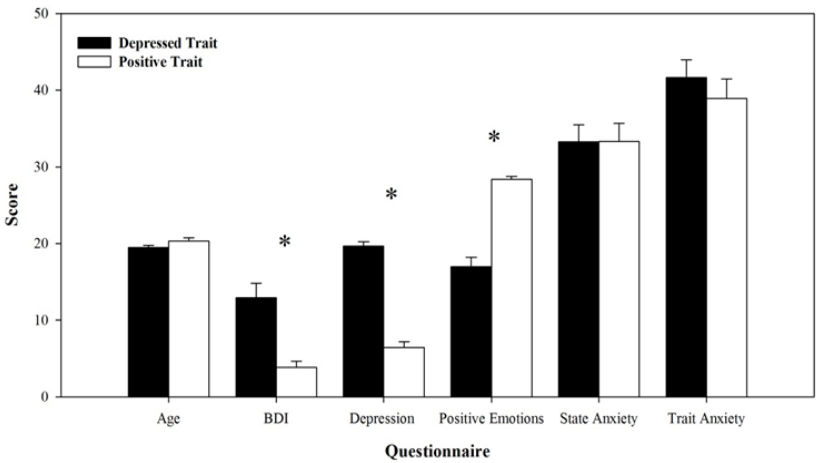

Figure 2: DIfferences between the DT and PT groups on several relevant demographics. Error bars reflect standard error. Significant effects are indicated by asterisk, $*p < .001$.

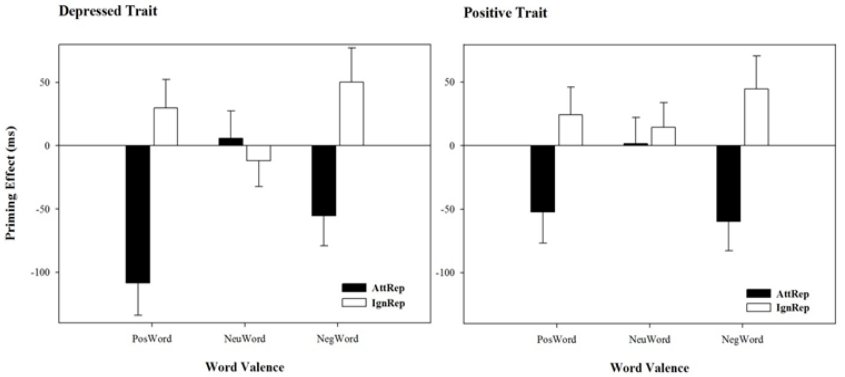

Figure 3: PEs for each word valence for both groups. Error bars reflect standard error.

method was effective. Not surprisingly, BDI scores were also significantly different between the two groups (t_{29} = 4.52, p < .001). Importantly, the groups did not differ in terms of age (t_{29} = -1.55, p = .13), state anxiety (t_{29} = -.01, p = .99), or trait anxiety (t_{29} = .80, p = .43).

Depressed Trait Group

A 2 (Priming Type: AttRep, IgnRep) x 3 (Word Valence: positive, neutral, negative) within-subjects ANOVA was conducted on the DT group (see Figure 3). The main effect for Word Valence was not significant ($F_{1.97,27.60}$ = 1.26, p = .30, η_p^2 = .08). Additionally, the main effect for Priming Type ($F_{1,14}$ = 20.61, p < .001, η_p^2 = .60) and the two-way interaction ($F_{1.83,25.67}$ = 7.54, p = .003, η_p^2 = .35) was significant. Follow-up t-tests indicated that the PE on AttRep trials to positive words differed significantly from neutral words (t_{14} = -2.59, p = .02). No other significant differences were found.

Positive Trait Group

A second 2 (Priming Type: AttRep, IgnRep) x 3 (Word Valence: positive, neutral, negative) within-subjects ANOVA was conducted on the PT group (see Figure 3). Again, the main effect for Word Valence was not significant ($F_{1.57,23.51}$ = .65, p = .50, η_p^2 = .04), while the main effect for Priming Type was significant ($F_{1,15}$ = 24.47, p < .001, η_p^2 = .62). However, the two-way interaction was not significant ($F_{1.67,25.07}$ = 3.33, p = .06, η_p^2 = .18). Follow-up t-tests indicated that the PE on AttRep trials to negative words differed significantly from neutral words (t_{15} = 2.28, p = .04). No other significant differences were found.

Importantly, as expected, only large effects sizes (η_p^2 > .35) were observed for significant effects, supporting previous speculations that type 1 errors would be unlikely under this design.

Direct Group Comparison

Although a different pattern of results was observed within each group, t-test comparisons showed that the groups did not differ significantly in any of the six conditions.

Discussion

The main aim of this study was to distinguish priming effects for positive and negative words in participants with a propensity towards depression (DT group), relative to those with a propensity towards positive emotions (PT group). Our study broadened the scope of existing NAP literature by using the NEO-PI-R to isolate the depressed trait more

effectively and by including AttRep trials, in addition to IgnRep trials. As expected, a facilitation effect on AttRep trials and an impeding effect on IgnRep trials was observed, suggesting that the modified NAP task measured both AttRep and IgnRep effects accurately.

As predicted, the facilitation effect was most evident for emotional words. This is consistent with a series of studies reporting a processing advantage of emotional material, regardless of valence (Kanske & Kotz, 2007; Kousta, Vinson, Vigliocco, 2009; Zeelenberg, Wagenmakers, & Rotteveel, 2006; Murray, 2007; Anderson, 2001). According to Lang and Bradley (2013), attention can be involuntarily drawn towards a stimulus by two different motivational systems; an approach/appetitive system and a withdrawal/aversive system, neither of which is dominant. Our results are consistent with this motivational hypothesis, suggesting that individuals are equipped with an evolutionary mechanism that facilitates the processing of emotional stimuli due to their motivational value. This may be explained by recent findings that show a greater degree of similarity in the representation of positive and negative affect in neural circuits (Murray, 2007).

However, despite the general processing advantage that emotional words have over neutral words, an asymmetry of valence still exists between the groups. In particular, while a significant processing advantage for positive words was observed in the DT group, a similar significant facilitation effect for negative words was observed in the PT group. These results suggest that valences are independent, as previously suggested (Gotlib & Meyer, 1986; Watson, Clark, & Carey, 1988; McCabe & Gotlib, 1993) and that neither motivational system is universally dominant, since more immediate environmental factors determine motivation.

Contrary to expectations, no significant group differences were observed in the priming effects for negative words. This is not in line with previous studies using the NAP paradigm that show a greater inhibition of negative material in DT groups (Frings, Wentura & Holtz, 2007; Joormann & Gotlib, 2010; Joormann, 2004; Joormann, 2006; Zetsche & Joormann, 2011; Dai, Feng, & Koster, 2011; Leung et al., 2009). The current results suggest that deficient inhibition of negative material does not constitute a vulnerability towards depression, as previously reported. The complete lack of group differences potentially supports previous research that indicates that there is no automatic attention bias in depressed individuals (Gotlib et al., 1988; Williams, 1988; Mogg et al., 1993). Thus, previous results showing altered processing of negative words likely depended on the severity of depressed symptoms, which includes more transient mood state effects.

Interestingly, relative to neutral words on AttRep trials, the DT group showed greater facilitation for positive words, while the PT group showed greater facilitation for negative words. This is inconsistent with previous studies, which reported that in the positive condition, depressed individuals show facilitation, or a processing bias for negative stimuli (Leung et al., 2009; Dai, Feng, & Koster, 2011), and no significant differences for positive words (Dai, Feng, & Koster, 2011). This counterintuitive finding is also incongruent with the results of previous literature on mood-congruent attentional biases, which generally demonstrate that depressed individuals allocate their attention towards negative stimuli (Mineka, Watson, & Clark, 1998). However, this result is consistent with two studies that failed to find negative interference in depressed individuals on supraliminal (unmasked) conditions (Mogg et al., 1993; Bradley, 1994). To ex-

plain their findings, it was proposed that interference of negative words in AttRep conditions is not a consistent feature of depression, and that this uncertainty stems from the influence of strategic and controlled processes that may operate in this condition. Thus, perhaps in an attempt to compensate for a pervasive negative mood, the DT group subconsciously emphasized positive material as an emotion-regulation strategy (Gotlib & Joormann, 2010).

Therefore, the facilitation for positive words in the DT group can be explained as a compensatory mechanism. This group reported significantly greater BDI scores than the PT group, suggesting they were experiencing more negative emotions. Biasing responses towards positive material may be a subconscious attempt to counteract the effects of this negative mood state. The reduced inhibition for positive words sometimes observed in remitted patients (Joormann & Gotlib, 2010; Joormann 2004) has been interpreted as a subconscious effort to counteract a negative mood by over attending to positive words. Because the current study used a subclinical sample, the effects may not be as severe as in remitted patients, and therefore not be observable in IgnRep trials. Instead, it may be that the initial predisposition towards negative words may be observed in AttRep trials. As this cognitive pattern is strengthened, the compensatory effects would then also be seen in IgnRep trials. It is possible that a similar process is at work in subclinical populations, and that these individuals may be subconsciously overcompensating in an attempt to avoid a negative mood state. Thus, it is only as the negative bias is strengthened that compensation becomes observable in IgnRep trials.

Such subconscious compensatory mechanisms in remitted and sub-clinical populations are more indicative of an emotion regulation account of depression. Given the general avoidance of negative emotions shown by most individuals, people must naturally employ compensatory mechanisms to prevent descending into a negative, or sad mood state (Koster, Lissnyden, Derashan, & De Readt, 2011). Likely, the sad mood and corresponding negative thoughts conflict with a person's tendency towards positive emotions (Drace, Desrichard, Shepperd & Hoorens, 2009; Deldin, Kim, Casas & Best, 2001). The resulting conflict signal initiates some compensatory mechanism that breaks the negative ruminatory cycle. The fact that this does not happen in depressed individuals could be due to poor emotion regulation, where frequent and excessive negative emotions become part of a person's self-concept and thus, no conflict occurs. Consequently, the reduced inhibition for negative words so frequently reported in high DT groups might represent an already broken system, rather than the origins of the problem. If the emotion regulation hypothesis is correct, then these subjects are already past appropriate compensatory behaviours. They will have incorporated negative emotions into their self-concept, so no conflict signal was engaged and rumination on negative material is possible. Thus, it is likely that the traditional NAP design examines the consequences rather than the causes of depression.

The facilitation to negative words in the PT group suggests that this group may be more greatly influenced by their innate threat detection system, and thus place greater emphasis on environmental factors (Kousta, 2009). According to the automatic vigilance model, this system is an evolutionary mechanism that equips humans with the ability to allocate attentional resources to negative stimuli at an early stage, rather than positive stimuli, since this is more critical for survival (Pratto, 1991). In the presence of negative stimuli, the processing

of other stimuli may also be impeded as a mechanism of defence, while processing of negative words is facilitated (Algolm, Chajut, & Lev, 2004).

Four issues need to be addressed in order to clarify the results. Firstly, care should always be taken when generalizing from subclinical to clinical populations. This study used non-clinically depressed students to avoid various confounds, and to fully differentiate mood state and depressed trait. However, the populations are by no means comparable, and similar studies should be conducted using clinical samples. Secondly, the data is drawn from a study that included positive, negative, and neutral mood inductions, and is thus an aggregate across these mood states. However, the effects of a positive and negative induced mood are likely to cancel each other out, so confounding effects are not likely to be observable. Thirdly, comorbid anxiety may affect some of the results. In the present study, anxiety scores (as measured by the STAI) were only used to rule out possible influences of anxiety. According to Mathews & MacLeod (1994), many of the studies that found an automatic negative bias did not control for anxiety levels. The effects may be explained by the frequent comorbidity of these disorders, as well as their high correlation on self-report scales (Gotlib, 1984; Watson, Clark, & Carey, 1988; Mineka, Watson, & Clark, 1998; Lonigan, Phillips, Hooe, 2003). Thus, anxiety, which studies have found to be associated with an automatic negative disinhibition deficit (Mathews & MacLeod, 2005), may be driving these effects. Future studies should examine the effect of anxiety on NAP scores to further illuminate the differences between anxiety and depression, and to allow for more targeted interventions in the case of comorbidity. Fourthly, the use of both positive and negative priming trials (AttRep and IgnRep, respectively) resulted in fewer trials per condition. It is possible that differences were observed in AttRep trials simply because positive priming is a stronger effect. With reduced trials in the IgnRep conditions and a smaller effect size, it is possible that power was not sufficient to detect the differences. This may account for the lower levels of arousal that caused a positive bias in the DT group. Future studies should separate these trial types to increase power for both.

Conclusion

The results from this study suggests that the mechanisms underlying mood-congruent biases depend largely on dispositional factors but that depressed individuals may not be characterized by a negative bias as previously thought. More importantly, biases are first obvious in stronger priming conditions, such as on AttRep trials. On these trials, individuals vulnerable to depression may initially engage in compensatory mechanisms to improve their mood, while individuals with positive affect may be more affected by their innate threat detection system.

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ISSN 2368-6340 (Print)
ISSN 2368-6359 (Online)