Published in final edited form as:

Psychosis. 2012 ; 4(3): 203–212. doi:10.1080/17522439.2011.62686712.

Impact of Trauma on Attenuated Psychotic Symptoms

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Abstract

Evidence that trauma may play a role in the development of a psychotic illness has lead researchers to investigate the relationship between trauma and the content of attenuated psychotic symptoms. Participants in this study were considered to be at clinical high risk for developing psychosis by meeting criteria for attenuated positive symptom syndrome based on the Structured Interview for Prodromal Syndromes. Trained raters used a specifically designed codebook to identify content in the vignettes of 45 participants. Various types of trauma that had occurred before age 16 were assessed, where participants who endorsed more types of trauma were considered to have experienced a greater amount of trauma. Spearman rank correlations revealed significant positive relationships between increased trauma and feeling watched or followed ($\rho=0.38$, $p<0.05$) and false beliefs of status or power ($\rho=0.31$, $p<0.04$). Significant negative relationships were observed between increased trauma and hearing nonnegative voices ($\rho=-0.39$, $p<0.01$) as well as having unusual negative thoughts surrounding the self ($\rho=-0.31$, $p<0.05$). Although this was a small sample, these findings support the possibility of a meaningful relationship between experiences of trauma and the content of attenuated positive symptoms.

Keywords

Symptom content; childhood trauma; attenuated psychotic symptoms; clinical high risk; psychosis

Introduction

Despite the interest in the positive symptoms of psychosis, the biomedical paradigm generally considered the content of delusions and hallucinations to be irrelevant. In contrast, the form of symptoms has been regarded as more worthy of study because it was seen as more amenable to systematic research that may lead to an improved understanding of the illness (Aschbrock, Gavey, McCreanor, & Tippett, 2003). Recent research has focused more on environmental factors, such as past experiences, playing a role in the onset of the psychotic illness (A. Thompson et al., 2010). Thus, it is possible that the content of hallucinations and delusions may be understandable within the particular context of an individual's life and may in fact be related to past experiences, especially those focusing on trauma (A. Thompson et al., 2010).

Examining the content of symptoms is timely. First, there is a current research interest in the impact of past experiences. The presence of certain psychosocial risk factors at certain points in the lifespan such as urban upbringing (Krabbendam & van Os, 2005), adverse childhood development and trauma (Janssen et al., 2004) and migration (Fearon & Morgan, 2006) have been linked to the later development of psychosis. Several lines of evidence

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suggest a possible association between trauma in childhood and the presence of psychotic symptoms as well as sub-threshold psychotic symptoms (Shevlin, Dorahy, & Adamson, 2006; Kelleher et al., 2008; Read, van Os, Morison, & Ross, 2005; Spauwen, Krabbendam, Lieb, Wittchen, & van Os, 2006). However a recent review suggests that much of the evidence is controversial (Bendall, Jackson, Hulbert, & McGorry, 2007; Morgan & Fisher, 2006).

In a recent study it was reported that approximately 70% of a sample who were at clinical high risk of developing psychosis had experienced at least one type of trauma, and that the rates of conversion to psychosis significantly increased when the type of trauma was sexual abuse (Bechdolf et al., 2010). In an Irish study it was observed that among a sample of adolescents, those who reported psychotic symptoms were six times more likely to have experienced physical abuse, and ten times more likely to have witnessed domestic violence (Kelleher et al., 2008). There has also been evidence to suggest that reported childhood abuse predicts psychotic symptoms in a dose-response fashion (Janssen et al., 2004). Although much of the trauma literature focuses on more severe overt forms of trauma, there is some evidence that subtle, ongoing childhood difficulties seem to be just as related to psychosis as an overt act of abuse (Read et al., 2008). However, in the area of trauma and psychosis several methodological issues need to be addressed before definite conclusions can be drawn (Bendall, Jackson, Hulbert, & McGorry, 2007).

A second, important research focus is the identification of those who may be at risk for developing psychosis. These individuals are not yet sick in terms of full blown psychosis but are already seeking help for what can be described as psychotic-like experiences or sub-threshold psychotic symptoms (McGlashan, Walsh, & Woods, 2010). These young people are considered to be putatively prodromal and are at clinical high risk (CHR) for psychosis. For the first time it may be possible to study the content of attenuated or sub-threshold symptoms in the context of past experiences, shedding light on the development of symptoms in the early stages of psychosis.

Very few studies have focused on the content of psychotic symptoms. For example, a few studies have examined the content of hallucinations, finding that individuals considered psychiatric voice hearers (Andrew, Gray, & Snowden, 2008) or those with a diagnosis of psychosis (Close & Garety, 1998) report predominately negative content in their voices (Honig et al., 1998). It must be noted that in such studies the experience of negative versus positive content may also be related to the belief about the voice (Beavan, 2011). One study found that the most frequently heard voice was that of a middle-aged male supporting other research that noted that both men and women were more frequently delusional about men (Nayani & David, 1996; Rudden, Sweeney, Frances, & Gilmore, 1983). Unfortunately, there has been limited effort to substantiate such results.

Some studies focused on identifying themes in order to organize or categorize content. Broad themes such as positive versus negative (Andrew et al., 2008; Close et al., 1998; Honig et al., 1998) or bizarre versus non-bizarre (Kendler, Glanzer, & Morgenstern, 1983) have been used. In contrast, other researchers used very specific themes such as sexual content (A. Thompson et al., 2010) or details about what a voice is commenting on (Honig et al., 1998). A range of categories have been created for individual studies without much consistency in the literature. Likewise, a wide variety of definitions have been used to categorize content and themes with no obvious consistency as to how the different categorizations were developed or used. A wide range of methods have been used to assess content, including interviews, standard questions and chart reviews. These limitations in methodology and definitions of content have made it difficult to extensively study content in positive symptoms.

A few studies have focused on analyzing the content of psychotic symptoms in relation to past traumatic events. Participants who experienced an intrusive trauma were significantly more likely to report persecutory delusions, depressive auditory hallucinations (Raune, Bebbington, Dunn, & Kuipers, 2005) or hallucinations with an intrusive theme (Hardy et al., 2005). Grandiose delusions, on the other hand, were associated primarily with an absence or having experienced a loss (Raune et al., 2005). Additionally, patients with schizophrenia who had been abused were more likely to experience voices commenting, ideas of reference and paranoid ideation (Read & Argyle, 1999). In a recent study, CHR participants who reported a history of sexual trauma had significantly greater odds of having attenuated psychotic symptoms with sexual content than those without a history of sexual trauma (A. Thompson et al., 2010).

The purpose of this study was to examine the content present in the attenuated psychotic symptoms of a CHR sample and determine its relationship to a history of childhood trauma.

Methods

Participants

The participants were 25 males and 20 females ages 14–35 (mean=19 years, SD= 2.83), who were identified as being at CHR for developing psychosis. All are currently participating in the North American Prodrome Longitudinal Study 2 (NAPLS-2). NAPLS-2 is an 8 site collaborative study funded by the National Institute of Mental Health (NIMH). The participants for this particular project are all participants recruited at the University of Calgary site with JA as the principal investigator (PI). Sample size was based on the number of subjects who had been recruited with a diagnosis of attenuated psychotic symptom syndrome (see below) at the time of this study.

Recruitment of participants between 12 and 30 years old was sought from a variety of sources including family physicians, student counselors, community mental health teams and other health care practitioners. Informed consent was obtained from those who met criteria and were judged to be competent to give consent. Parental consent was obtained from parents or guardians of participants who were under age 18. Participants for NAPLS-2 must meet the Criteria of Prodromal States (COPS) using the Structured Interview for Prodromal Syndromes (SIPS) (McGlashan et al., 2010). The COPS includes three different syndromes: brief intermittent positive symptoms, genetic risk and deterioration, and attenuated positive symptom syndrome (APSS). Exclusion criteria for NAPLS-2 were (i) met criteria for any current or lifetime axis I psychotic disorder, (ii) prior history of treatment with an antipsychotic, (iii) IQ <70 or (iv) past or current history of a clinically significant central nervous system disorder which may confound or contribute to prodromal symptoms. Since the focus of this current project is on attenuated positive symptoms, participants that were included here all met the criteria for APSS, which emphasizes the onset or worsening of attenuated positive symptoms in the past 12 months, in at least one of the five symptom domains; unusual thought content, suspicion/paranoia, grandiosity, perceptual abnormalities, and disorganized communication.

Measures

The Scale of Prodromal Symptoms (SOPS) was used to assess the five positive symptoms: P1 unusual thought content, P2 suspicion/paranoia, P3 grandiosity, P4 perceptual abnormalities, and P5 disorganized communication. The kappa statistic was used to compare raters' agreement with the "gold standard" ratings on the SOPS. Kappa for the Calgary site for the total SOPS scale was 0.96 and for the 5 positive symptoms was 0.98 both of which are in the excellent range (Addington et al., 2007).

The Abuse/Trauma Questionnaire (Janssen et al., 2004) that was used in the Dutch NEMESIS study was used to determine if participants had been exposed to different forms of trauma or abuse before the age of 16 years. Using a semi-structured interview subjects were asked if they had experienced any kind of emotional, physical, psychological or sexual abuse before age 16. Questions were also asked about both psychological and physical bullying (Kelleher et al., 2008). Each item received a rating between 0–2 where 0=unknown, or no information, 1=acknowledges that this has not occurred and 2=acknowledges, or there is information from reliable sources, that this has occurred.

Vignettes are developed for each NAPLS-2 participant for the purpose of obtaining a consensus diagnosis. The symptoms are described at length including both recent and longstanding symptoms. The vignette is written so that another rater can review the information provided under each symptom category and provide a reliable rating. The Calgary collaborative vignettes are then reviewed by the site PI; JA. Once approved by the site, the vignette is presented on a conference call for a consensus decision on the ratings as well as the diagnosis. The NAPLS-2 consensus call, chaired by JA, is held once a week and is attended by members of each of the eight study sites including the authors of the SIPS, Drs McGlashan and Walsh. Submitted vignettes are individually reviewed and a consensus must be reached on each symptom rating, diagnosis and ultimately admittance into the study.

The *Content of Attenuated Positive Symptoms (CAPS) Codebook* was specifically developed to assess the content of attenuated positive symptoms. The CAPS codebook was first developed from a systematic literature review of studies examining the content of positive symptoms from samples with a range of psychotic disorders. Secondly, using repeated processes of assessing content, determining frequency of items and testing rater reliability with a series of vignettes, similar to those in this study, from three separate study samples of individuals at CHR, the final version of the codebook was developed. The development of the codebook is described in detail elsewhere (Marshall, Falukozi, Albertin, Zhu, & Addington, Submitted).

Procedures

All participants were first screened for appropriateness through a phone interview by recruitment personnel. If the person appeared to be appropriate for the NAPLS-2 project, a formal assessment with two clinical raters was conducted to determine if the individual met COPS criteria. Following the assessment, the clinical raters 2 reviewed the case, determined ratings and wrote a vignette. The vignettes of the first 45 NAPLS-2 participants who met APSS criteria were then used in this study.

The vignettes were separated into four units, based on P1–P4, with a focus on unusual thought content, suspiciousness and persecutory ideas, grandiose ideas, and perceptual abnormalities, respectively. Disorganized communication (P5) was not used as this symptom describes a style of speech and/or communication and is not relevant for content analysis. The participants in each symptom category were randomized by the STATA statistical package (Version 11.0; STATA Corporation) so that each of the four symptoms would be randomly rated. If a participant did not endorse any symptoms in a particular category, that single symptom category was not rated for that particular participant. Therefore, of the 180 potential units available for analysis, 44 P1 units, 41 P2 units, 19 P3 units and 44 P4 units were analyzed totaling 148 separate units of data. Three raters who were involved in the CAPS codebook development and who had all met inter-rater reliability (Marshall et al., submitted) for rating content as per the codebook, rated and identified symptom content in the vignettes. Each symptom was rated independently by two raters. If discrepancies were noted between the two raters, the third rater was used to achieve

consensus. The themes were individually reported for descriptive purposes and then based on the numbers of participants endorsing different themes and the content of themes, items were combined for analysis.

Data Analysis—Spearman rank correlations were conducted to examine the relationship between increased trauma and the presence of content themes in attenuated positive symptoms. An overall score of trauma experienced was calculated by summing the total number of different trauma categories that were endorsed. This score ranged from 0 to 6.

Results

The majority of the participants were white (69%) male (56%), single (100%) and currently living with their family (87%). Although slightly less than half of the participants were currently working (47%) the majority were enrolled as students (80%). Psychological bullying was the most commonly reported trauma with sexual abuse being the least reported. Details are presented in Table 1.

Almost all participants endorsed at least one type of trauma (91%). Furthermore, 49% of participants acknowledged they had experienced more than half of the types of trauma indicated and 13% reportedly experienced all types of trauma indicated.

Since some content variables rarely occurred, only select content variables were chosen for analysis based on frequency. Feeling perplexed by reality (69%) and hearing sounds (89%) were the most common content items coded in the participants' symptoms while others were rare. Details are presented in Table 2.

Spearman rank correlations revealed that increased trauma was significantly correlated with the presence of grandiose thoughts of status and power ($\rho = 0.31, p < 0.04$), and feeling watched or followed ($\rho = 0.38, p < 0.05$). Increased trauma was also related to unusual negative thoughts regarding the self ($\rho = -0.31, p < 0.05$), and hearing non-negative voices ($\rho = -0.39, p < 0.01$). These have been indicated in Table 2.

Discussion

The results of this study demonstrated that for young people who are at risk of developing psychosis, a history of previous trauma is related to unusual thoughts that focus on feeling watched, grandiose ideas of status and power, a lack of unusual negative thoughts regarding the self and non-negative voices. There are some possible explanations for these results. However, with such a preliminary data set we proceed with caution in our interpretation of the results. First, we do not know who will go on to develop a psychotic illness and based on current conversion rates we would expect that only 4–9 in the current sample will develop a psychotic illness. Thus, we cannot really compare our results with those reported in studies of samples with a more chronic course of illness.

Never the less, our results seem to have some face validity. First, our findings suggest that those with a history of increased trauma may feel the need to be more aware of their surroundings. Another potential means of coping with the negative effects of trauma may be to portray an elevated sense of self. Although one might expect an individual who has experienced trauma to have negative feelings and/or thoughts about themselves such as low self-esteem, this study is examining the content of psychotic-like beliefs and not actual beliefs about oneself. It is possible that the content in the symptoms, which is by its very nature unusual, may in some way be compensatory. For example, in their unusual beliefs,

those who have experienced trauma may express fewer unusual negative thoughts about themselves and in fact mask possible negativity by expressing the opposite sentiments.

Less obvious is the reported finding of a negative relationship between hearing nonnegative voices and increased experiences of trauma. This may be explained by the fact that hearing non-negative voices may be atypical of someone who has experienced trauma. We cannot draw any conclusions about negative voices as content since the number of individuals with negative voices was low. It must be noted that in the CHR sample the symptom is perceptual abnormalities. Full blown hallucinations are rare and almost always meet criteria for a psychotic level rather than a prodromal level. In fact having non-negative voices as content was less than 9% of all content reported in perceptual abnormalities. Trauma was not significantly correlated with any other content observed in the vignettes.

It is difficult to compare the results of the current study to other research efforts because of the differences in the population and the lack of consistency in the measures. However, the finding that a relationship exists between experiences of trauma and certain kinds of symptom content is supported by previous studies (Raune et al., 2005; Read & Argyle, 1999; A. Thompson et al., 2010; J. Thompson et al., 2010). Additionally, although 31% of participants reported experiencing sexual trauma before the age of 16 there was virtually no sexual content observed in the attenuated psychotic symptoms. The one previous study involving a CHR population also reported high rates of sexual trauma (A. Thompson et al., 2010) and observed a relationship between this trauma and sexual content of symptoms. The current study did not substantiate these findings. We reported less sexual trauma and our focus was on trauma in general.

Limitations

There are several limitations in this study. First, the sample was small. A larger sample would have increased the range and frequency of the reported symptom content within the sample and possibly created the opportunity to evaluate individual content items in more detail, instead of grouping them together into broader themes. We had neither psychotic nor non-psychiatric control groups with which to compare the levels of early trauma. The CAPS Codebook was a preliminary effort to create a reliable means through which raters could consistently identify content in attenuated positive symptoms. It is likely that further work may be needed with this codebook. Because of the small sample we had to make our focus on trauma in general and not on specific traumas although it has been suggested that subtle, ongoing childhood difficulties seem to be just as related to psychosis as an overt act of abuse (Read, Fink, Rudegeair, Felitti, & Whitfield, 2008). Finally, our content was based on baseline symptoms. What will be of greater interest in further studies is the baseline content of those who go on to develop psychosis and even change in content through the course of the prodrome.

In addition, there are notable strengths. The current study attempted to overcome previous difficulties by using a standard codebook developed specifically for identifying content in the symptoms of individuals at CHR for developing psychosis. The use of a codebook ensured that vignettes and content contained in them were rated objectively, using a tested and reliable measure. Vignettes used were written by reliable and trained raters and had been scrutinized for diagnostic consistency. The information contained in the vignettes was collected and analyzed independently of the current study interests, further decreasing potential bias. Raters of the symptoms and of the trauma were independent of those rating the content.

Clinical Implications

Clearly these young CHR individuals present with high levels of past trauma and clinicians should be routinely asking about such a history (Read, Hammersley & Rudegeair, 2007). However, specific clinical implications of the results of this study are that for the clinician the content of symptoms is important and may add to their understanding of the client and may even offer the clinician an increased understanding of an individual's responses to past trauma.

Conclusions

We have demonstrated some preliminary findings suggesting that there may be a relationship between experiencing trauma and the content of unusual thoughts and suggested an improved methodology. At the least our results certainly support the need for more comprehensive research in this area not only to improve our understanding of the development of psychosis but to gain insight into the actual development and progression of these early psychotic like experiences. Thus, the impact of trauma will undoubtedly play an important role.

Acknowledgments

This work was supported by NIMH grant 1UO1MH081984 to J Addington and the Alberta Centennial Mental Health Research Chair to JA. We would like to thank Catherine Marshall and Monica Albertin for their help in coding the vignettes.

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Table 1

Types of Trauma Endorsed

Type of Trauma	Frequency N=45	Percent (%)
Psychological Bullying	37	82.2
Emotional Neglect	31	68.9
Psychological Abuse	31	68.9
Physical Bullying	19	42.2
Physical Abuse	18	40.0
Sexual Abuse	14	31.1

Table 2

Symptom Content Frequency

Codebook Variable	Frequency N=45	Percent (%)
P1: Unusual Thought Content		
Perplexed By Reality	31	68.9
Number of Unusual Thoughts:		
0	1	2.2
1	2	4.4
2–3	18	40.0
4–5	14	31.1
>5	10	22.2
* Unusual Negative Thoughts Regarding Self	10	22.2
P2: Suspiciousness/Persecutory Thoughts		
Emotionally Harmed	23	51.1
Harmed Physically	20	44.4
** Watched/Followed	13	28.9
Characters in P2 are:		
Strangers	24	53.3
Family/Friends	17	37.8
Defined Group	9	20.0
P3: Grandiosity		
Intelligence/Skill	15	33.3
** Status/Power	4	8.9
P4: Perceptual Abnormalities		
Hears Sounds	40	88.9
* Hears Voices	13	28.9
Hears Negative Voices	4	8.9
Feels Numbness/Vibrations	6	13.3
Feels Pain/Burning	7	15.6
Feels Someone Touching Him/Her	6	13.3
Visual Sensitivity/Distortions	15	33.3
Sees Light/Fire	8	17.8
Sees Vague Figures/Shadows	24	53.3
Sees People/Animals	17	37.8
Olfactory Sensations	13	28.9

** significantly ($p < 0.05$) related to increased amount of trauma

* significantly ($p < 0.05$) related to decreased amount of trauma