



HHS Public Access

Author manuscript

Psychiatry Res. Author manuscript; available in PMC 2015 November 30.

Published in final edited form as:

Psychiatry Res. 2014 November 30; 219(3): 506–512. doi:10.1016/j.psychres.2014.06.023.

The content of attenuated psychotic symptoms in those at clinical high risk for psychosis

Catherine Marshall^a, Erin Denny^a, Kristen Cadenhead^b, Tyrone Cannon^c, Barbara Cornblatt^d, Thomas McGlashan^e, Diana Perkins^f, Larry Seidman^g, Ming Tsuang^{b,g}, Scott Woods^e, Elaine Walker^h, and Jean Addington^{a,*}

^aHotchkiss Brain Institute, University of Calgary, Calgary, Alberta, Canada

^bDepartment of Psychiatry, University of California, San Diego, CA, USA

^cDepartment of Psychology, Yale University, New Haven, CT, USA

^dDepartment of Psychiatry, Zucker Hillside Hospital, Long Island, NY, USA

^eDepartment of Psychiatry, Yale University, New Haven, CT, USA

^fDepartment of Psychiatry, University of North Carolina, Chapel Hill, NC, USA

^gDepartment of Psychiatry, Harvard Medical School, Boston, MA, USA

^hDepartments of Psychology and Psychiatry, Emory University, Atlanta, GA, USA

Abstract

Recent research has started to focus on identifying individuals who are at clinical high risk of developing psychosis as a means to try and understand the predictors and mechanisms involved in the progress to a full psychotic episode. The aim of the current study was to provide an initial description and prevalence rates of specific content found within attenuated positive symptoms. The Content of Attenuated Positive Symptoms (CAPS) codebook was used by independent raters to determine the presence of content within a sample of written vignettes. Krippendorff's alpha was used to determine inter-rater reliability. Overall, the majority of items fell in or above an acceptable range of reliability. There was heterogeneity present in the types of content endorsed. However, the most commonly endorsed items included being perplexed by reality, increased hypervigilance, being gifted, hearing indistinct and distinct sounds, seeing figures or shadows, something touching the individual, and unpleasant smells. The use of the CAPS codebook is a reliable way to code the content of attenuated positive symptoms. Identifying and monitoring the presence of certain content may provide insight into the presence of other comorbid issues and the potential for future conversion.

© 2014 Elsevier Ireland Ltd. All rights reserved.

Corresponding author: Jean Addington, Mathison Centre for Mental Health Research & Education, 3280 Hospital Drive NW, Calgary, Alberta T2N 4Z6 Canada jmadding@ucalgary.ca.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Keywords

Clinical High Risk; Psychotic disorders; Positive symptoms; Content analysis

1. Introduction

One approach to an improved understanding of the development of schizophrenia and other psychotic illnesses has been the study of those who are considered to be at risk of developing psychosis. A wide range of terms are used to describe this population such as Ultra High Risk, putatively prodromal but for consistency we will use the term clinical high risk (CHR). Individuals are determined to be at CHR on the basis of well-established criteria (Yung et al., 1996; McGlashan et al., 2010). Individuals who meet these criteria typically experience attenuated psychotic symptoms that are below the threshold of full-blown psychotic symptoms. Although, there is much research examining a wide range of topics in this area (Addington and Heinssen, 2012) one area that might provide some relevant insights into the development of psychosis is an examination of the content of these attenuated psychotic symptoms in CHR individuals (Thompson et al., 2010).

Despite the interest in psychotic symptoms such as hallucinations and delusions, it is the presence and the severity of these symptoms that has been the focus of attention, whereas the content contained within them has been given little attention (Escher et al., 2004; Raune et al., 2006). Only a few studies have examined psychotic symptom content and, unfortunately, in this literature there are methodological concerns and little replication (Marshall et al., 2012). Most studies address the content in delusions or auditory hallucinations with affective content being the most common. For example, people with schizophrenia often report hearing negative voices in contrast to those who hear voices but do not have a diagnosis of a psychotic illness (Honig et al., 1998). This can be impactful in that the presence of negative voice content is associated with poorer quality of life (Honig et al., 1998), and increased suicidal ideation (Fialko et al., 2006). In addition, a more negative response has been reported with respect to voices that are in the second person (Copolov et al., 2004).

Symptom content has also been associated with the study of violence. When violence is associated with mental illness, it has been observed that the violent act is associated with specific psychotic symptoms (Junginger, 1996). It has been suggested that the violent behaviour that results from psychotic symptoms may be a rational response to protect one's self or others from upsetting beliefs or images (Junginger, 1996). In fact, it has been suggested that examining the content of psychotic symptoms may help identify those who may be at risk of committing violent acts either towards themselves or others (Junginger, 1996). Being able to conduct a thematic analysis in those who are at CHR provides an opportunity to intervene prior to symptoms reaching a level of full conviction.

To date, five studies have focused on the content of attenuated psychotic symptoms in those at CHR of psychosis. Thomson et al. (2010) reported that 15% of participants reported experiencing symptoms containing direct sexual content. Marshall et al., (2012) described the development of The Content of Attenuated Positive Symptoms (CAPS) Codebook which

was developed to overcome methodological issues in the current literature. In the third study, which also tested the CAPS Codebook, Falukozi and Addington (2012) found significant positive correlations between increased trauma and feeling watched or followed and grandiose ideas related to status or power. Velthorst and colleagues (2013) found that individuals at CHR who experienced physical trauma reported more suspiciousness and grandiosity. In addition, those with a history of sexual trauma were found to have more perceptual distortions with abusive content (Velthorst et al., 2013). Finally, in a recent paper (Thomson et al., 2013) examining the clinical symptoms that may be predictive of transition to a full blown psychotic disorder in those at CHR, additional attention was given to the form and content of symptoms. Although the presence of unusual thought content in terms of delusions was associated with transition to psychosis in the univariate analysis, when the authors adjusted for other symptoms this association did not continue.

The aim of the current paper is to provide initial descriptions and prevalence rates of the content in attenuated psychotic symptoms experienced by a large sample of individuals at CHR for psychosis.

2. Methods

2.1. Sample

All individuals were participants in the North American Prodrome Longitudinal Study 2 (NAPLS 2). Details of ascertainment and recruitment have been described in detail elsewhere (Addington et al., 2012). Participants were between 12 and 35 years old and all met the Criteria of Prodromal Syndromes (COPS) using the Structured Interview for Prodromal Syndromes (SIPS) (McGlashan et al., 2010). The COPS includes diagnosis of three clinical high risk (CHR) syndromes including: brief intermittent positive symptoms (BIPS), genetic risk and deterioration (GRD), and attenuated positive symptom syndrome (APSS). Exclusion criteria for NAPLS 2 included participants who met criteria for any current or lifetime axis I psychotic disorder, had a prior history of treatment with an antipsychotic, had an IQ < than 70, and/or had a past or current history of a clinically significant central nervous system disorder which may confound or contribute to prodromal symptoms.

Only participants who met APSS or APSS plus another criterion were included in the current study. APSS includes the emergence or worsening of symptoms within the past year in at least one of five positive symptoms including unusual thoughts, suspicious ideas, grandiose ideas, perceptual abnormalities or disorganized communication. Disorganized communication was not included in the current study as it is based on behaviour and does not contain content. All participants received a consensus diagnosis of study suitability between February 2009 and December 2011. A total of 556 participants across the NAPLS 2 sites had been recruited by the end of December 2011 and 444 participants (79.9%) met eligibility for inclusion in the current study.

2.2. Measures

2.2.1. The Scale of Prodromal Symptoms—The symptoms being examined in this project are those endorsed by participants based on the Scale of Prodromal Symptoms

(SOPS) (McGlashan et al., 2010). These symptoms include unusual thoughts, suspicious ideas, grandiose ideas, perceptual abnormalities, and disorganized communication. Each symptom is rated on severity from 0 - absent to 6 - severe and psychotic. Raters across all eight sites demonstrated excellent reliability on the SOPS. Interclass correlations were used to compare raters' agreement with "gold standard" ratings on the SOPS and ranged from 0.92 to 0.96 for the SOPS positive symptoms (Addington et al., 2012).

2.2.2. Vignettes—Following, the initial assessment with the SIPS, conducted by two interviewers, a comprehensive vignette was written based on the SIPS semi-structured interview. Each vignette focused on relevant background information including family history of mental illness, DSM-IV diagnosis based on the SCID-I, the Global Assessment of Functioning score, and each of the five positive symptoms. In the vignette positive symptoms endorsed were described in detail including the frequency, intensity, and conviction, as well as dates of onset, increase and a rating score. Each vignette was presented and reviewed on a diagnosis consensus call attended by reliable raters from each of the eight sites and chaired by JA. The purpose of the call was to make a consensus regarding the rating of each symptom and the criteria for inclusion into the NAPLS 2 project. The descriptions of the symptoms for this project were taken from comprehensive vignettes based on the SIPS semi-structured interview.

2.2.3. The Content of Attenuated Positive Symptoms Codebook—The content of each unit of analysis was coded using the Content of Attenuated Positive Symptoms (CAPS) Codebook. The CAPS codebook consists of commonly mentioned content in unusual thoughts, suspicious ideas, grandiose ideas, and perceptual abnormalities. Each item is presented with a definition and several examples. Raters code each item under each positive symptom as being present or absent. The development of the codebook is described in detail elsewhere (Marshall et al., 2012).

2.3. Procedures

2.3.1. Units of Analysis—Each vignette was separated into four units of analysis based on unusual thoughts, suspicious ideas, grandiose ideas, and perceptual abnormalities. Four separate lists were created containing participant ID numbers based on symptom endorsement for the purpose of randomization. With 444 participants, a potential of 1776 units of analysis were available. However, not every participant endorsed all of the positive symptoms, therefore only participants who endorsed the specific positive symptom were included in the relevant randomization lists. In the end, 426 units of analysis were available for unusual thoughts, 389 for suspicious ideas, 195 for grandiose ideas, and 407 for perceptual abnormalities. Some units of analysis were excluded from coding based on poor written quality or a lack of content (i.e. 6 from unusual thoughts, 8 from suspicious ideas, 13 from grandiose ideas, 7 from perceptual abnormalities). In total, there were 420 units of analysis for unusual thoughts, 381 for suspicious ideas, 182 for grandiose ideas, and 400 for perceptual abnormalities.

2.3.2. Rater Training—Four raters were trained using the CAPS codebook (Marshall et al., 2012) by CM and EF who helped develop the CAPS codebook. Raters were trained on

each positive symptom separately as described below. (i) Each item and its description were openly discussed amongst the group with a focus on clarifying definitions and making distinctions between different items. (ii) A “gold standard” was established for each unit of analysis through a consensus rating established by the two trainers (CM and EF). (iii) Trainers and raters openly discussed the content ratings of five randomly selected units of analysis for each positive symptom until all raters agreed with the ratings of each unit. (iv) Raters individually rated the content of an additional five randomly selected units of analysis and again ratings were discussed amongst the group. (v) Next, raters were required to independently code an additional 30 units of unusual thought content, suspicious ideas and perceptual abnormalities and 20 units of grandiose ideas. Raters' scores were then compared to the “gold standard” for these units of analysis. Raters were exposed to units of analysis from each NAPLS 2 site and each item under each positive symptom. (vi) Units of analysis used during training were recoded 8 months later and included in the final analysis for frequencies but were not included in the sample randomly selected to establish inter-rater reliability.

2.3.3. Inter-rater reliability—Four subsets of 30 units of analysis were randomly selected as suggested by Lombard et al., (2002) to establish a pilot test for inter-rater reliability post training. Each unit was coded by each of the four raters to assess a preliminary level of inter-rater reliability for each positive symptom. Krippendorff's alpha was chosen as the measure of reliability as it is able to handle any number of raters, data types, and small sample sizes (Lombard et al., 2002; Krippendorff, 2004). The flexibility of Krippendorff's alpha allowed for a consistent measure to be used at different points in the study regardless of the number of raters involved in the coding. For Krippendorff's alpha, reliability coefficients of 0.80 or higher are considered acceptable and tentative conclusions can be drawn using coefficients ranging from 0.66 to 0.79 (Krippendorff, 2004). Items not meeting a level of 0.80 were assessed for rater errors and each rater received individual training focusing on the errors being made. The preliminary levels of inter-rater reliability were then reassessed. Krippendorff's alpha for each item reached a minimal level of 0.70 (Lombard et al., 2002; Krippendorff, 2004). A separate 91 units of analysis were randomly selected for grandiose ideas and 111 units for each remaining attenuated positive symptom to assess an overall level of inter-rater reliability for each item (Lacy and Riffe, 1996). These sample sizes were selected based on the equation for standard error of proportions developed by Lacy and Riffe (1996), which allows for a sampling error of equal to or less than 5%, assuming an 85% level of agreement within the total number of units of analysis (i.e. population) Each unit of analysis was rated by two raters.

2.3.4. Coding Units of Analysis—All units of analysis, 420 for unusual thought content, 381 for suspicious ideas, 182 for grandiose ideas and 400 for perceptual abnormalities were randomized and two raters were assigned to code each unit. Each rater was equally paired with all other raters to avoid coding effects. All ratings were entered into a spreadsheet and discrepancies between the two raters were determined. A third rater (CM or EF) provided a final rating for all discrepancies.

3. Results

3.1. Sample

The participants (255 males, 189 females) had a mean age of 18.7 years ($SD = 4.2$). The majority were white, single and were students. Demographic details are presented in Table 1. The majority of participants met only APSS criteria (90%), APSS and Genetic Risk and Deterioration (6%), APSS and Brief Intermittent Psychotic Symptoms (2%) and 2% met for APSS plus two other COPS criteria. Baseline mean scores on the SOPS positive symptoms and the GAF are presented in Table 1.

3.2. Reliability

Krippendorff's alpha's between 1.00 - 0.90 were considered to be in the superior range, 0.89 - 0.80 in the excellent range, 0.79 - 0.70 in the moderate range and 0.69 - 0.66 in the acceptable range.

3.2.1. Unusual Thought Content—Three items, Unusual Violent Thoughts, Unusual Religious Thoughts, and Unusual Sexual Thoughts had sub-items. Only somatic concerns and non-specific religious thoughts fell below the acceptable range.

3.2.2. Suspicious Ideas—One item, “ideas of being harmed emotionally”, fell below an acceptable level of reliability. In addition, under the subcategory, Characters and Objects Involved in the Content of Suspicious Ideas, two items, “friends or acquaintances” and “strangers” failed to reach an acceptable level of reliability.

3.2.3. Grandiose Ideas—Only one item, “status”, fell below an acceptable level of reliability.

3.2.4. Perceptual Abnormalities—Six items fell below an acceptable level of reliability, including auditory distortions, other people being mentioned by the voice, neutral and positive content of the voice, seeing faces or people and unusual physical alterations.

Overall, 40 items and 4 sub-items were in the superior/excellent range, 26 items and 5 sub-items were in the moderate/acceptable range, and 11 items and 1 sub-item failed to reach an acceptable level of reliability.

3.3. Frequencies

3.3.1. Unusual Thought Content—The most frequently endorsed items included being perplexed by reality and overvalued beliefs. Participants frequently endorsed loss of control of content of thoughts, supernatural content, thought interference and reading of thoughts. Unusual violent thoughts most often contained physical violence and other people were most often the victims in these violent thoughts. Unusual religious thoughts frequently contained content involving a god rather than the devil. Unusual thoughts regarding guilt, electronic communication and unusual sexual thoughts were infrequently endorsed. Two items under the subcategory Unusual Sexual Thoughts, the false belief of being watched undressing and the false belief of being watched in a sexual act, were not endorsed.

3.3.2. Suspicious Ideas—The most frequently endorsed items included ideas of being thought of in a negative way, guardedness towards people, ideas of being harmed physically, and ideas of being watched. Ideas related to the misuse of information, having an unfaithful partner, or being followed were infrequently endorsed. Participants most often endorsed being suspicious of friends or acquaintances, followed by nonspecific people. They were also most often suspicious of school, work, or public places.

3.3.3. Grandiose Ideas—Participants frequently endorsed ideas of being gifted in the area of specific skills, abilities or talents, followed by thoughts regarding status. Other frequently endorsed items included participants having unrealistic goals or plans and thoughts of superior intelligence. Participants infrequently endorsed grandiose religious thoughts or thoughts about the ability to influence or control others or the world.

3.3.4. Perceptual Abnormalities—The most frequently endorsed perceptual abnormality was Unusual Auditory Experiences. Participants frequently endorsed hearing indistinct and distinct noises, followed by voices and hearing one's name being called. Less frequently endorsed items included hearing one's thoughts being said out loud and auditory distortions. The most frequently referenced character by voices was the individual and the content was most often negative. Participants also frequently endorsed Unusual Visual Experiences including, vague figures or shadows, distortions, and faces or people. Less frequently endorsed items included spots or floaters, geometric shapes, and flames or fire. Participants infrequently endorsed violent content, but when it was it was frequently present in the form of voices and the individual was most often the subject of the violence. The most frequently endorsed tactile experience was something touching the individual or numbness or tingling. The majority of unusual olfactory experiences were unpleasant smells.

4. Discussion

The findings of the current study suggest there is utility in implementing a standardized codebook to code the content of attenuated positive symptoms. The use of the CAPS codebook resulted in the majority of items falling within the superior range of reliability. Raters were students with limited exposure to the clinical assessment of attenuated psychotic symptoms supporting that those with minimal experience can be trained to be effective raters. Although the majority of the items were found to be within an acceptable range, a few were not. It is possible that the definitions of those items were too vague and did not provide enough clarity to allow for more accurate coding between raters. The items that were particularly low tended to be in the perceptual abnormality section, e.g. neutral and positive content in voices and tactile physical alterations. It is possible that participants were more vague in describing some of these perceptual abnormalities which made it difficult first for clinical raters to describe them and then for the content raters to rate them reliably. It may be that auditory or tactile distortions are more difficult and indicates that additional clarification is required in the next version of the codebook. In general, lower levels of reliability may have also been the result of ambiguous statements within the written vignettes, which were written for the purpose of a diagnosis and not specifically for coding content.

A diversity of content was found within the current sample, however, there were specific items that were more frequently endorsed which may contribute to a characteristic symptom profile. Under, “Unusual Thought Content”, participants most frequently endorsed being perplexed by reality and having overvalued beliefs which is consistent with previous findings (Falukozi and Addington, 2012; Marshall et al., 2012). These experiences may be important elements in being able to identify someone as being at clinical high risk for psychosis. Unusual violent thoughts were not frequently endorsed, though when reported they were most often physical in nature and other people were most often the victims. Though only a small percentage of individuals reported thoughts containing physical violence, previous research suggests it is important to monitor these individuals and the possible progression of their thoughts in order to reduce the potential for future violence (Junginer, 1996). It is important to note that the SIPS does not specifically query unusual thoughts containing violent content, which may account for the relatively low rates found in the current study. Therefore, it is up to the clinical interviewer to ask about violent content and follow-up accordingly. It may be that non-clinician raters will need more help with asking those type of questions.

The item least frequently endorsed under unusual thought content was unusual sexual thoughts. This is in contrast to previous findings where Thompson et al., (2010) reported higher rates. This difference may be due to the variation in coding methods. Thompson et al., (2010) had participants' treating psychologists indicate the presence of sexual content, whereas in the current study, it was rated from baseline vignettes. Participants may have been more comfortable disclosing sexual content to a treating psychologist compared to a newly acquainted individual.

Consistent with previous work (Falukozi and Addington, 2012; Marshall et al., 2012) participants frequently endorsed being suspicious of others talking negatively about them and feeling guarded towards other people. They also reported being suspicious of their friends and acquaintances within the context of work or school. Again, these results may be reflective of the early cognitive changes that are thought to take place in the clinical high risk stage (Garety et al., 2001). It is important to understand the nature of the suspicious thoughts as it could have implications on individual functioning. For example, a decrease in social and role functioning has been observed in those at clinical high risk (Cornblatt et al., 2007) and if one is suspicious of the people found within these contexts, these thoughts may contribute to a decrease in functioning.

Grandiose content was most often coded under the items of skills/abilities/talents or status (e.g. being famous or a particularly important person). This finding is similar to that of Falukozi and Addington (2012) where they found these same items to be reported at higher frequencies and associated with increased amounts of trauma.

Many individuals reported hearing indistinct sounds, like hissing and buzzing, as well as more distinct sounds, like footsteps and knocking. Though the individuals in the current study were at clinical high risk, many of them reported hearing voices which was most often coded as being negative. Some individuals did report hearing neutral or positive content, though less frequently. Part of the APS criteria is a worsening in the severity of symptoms,

which may result in the interviewer eliciting and including negative content more often. However, the presence of negative content is consistent with findings in the schizophrenia literature (Honig et al., 1998). In addition, most individuals reported feeling as though they were the focus of what the voice was saying, which can result in a more negative response to hearing voices (Copolov et al., 2004). Previous research (Falukozi and Addington, 2012; Marshall et al., 2012) has reported high frequencies of individuals seeing vague figures or shadows, which were also commonly reported in the current study.

Violent content was coded as being present in both auditory and visual perceptual abnormalities. The victim of violence was most often the person experiencing the attenuated positive symptoms. Experiencing content of this nature may put someone at risk for self-harm (Junginger, 1996), yet violence is not specifically queried on the SIPS under Perceptual Abnormalities/Hallucinations. Participants may be reluctant to reveal they are having perceptual experiences of this nature due to a fear of stigma and the possible outcomes if they reveal this type of content. It is possible that these items could be endorsed in higher frequencies if questions pertaining to violent content are asked as a part of routine assessment.

There are some methodological concerns with the current study. The CAPS codebook was used for the first time by independent raters. For a few items, the operational definitions may not have been clear and allowed for more interpretation. Since the vignettes used for analysis were not written for the purpose of coding symptom content, it may be that certain types of content were not reported, resulting in an underestimation of the frequency of some items. However, those who wrote the vignettes were independent of those who coded the content, reducing potential bias. Finally, comparisons with other studies are difficult at this early stage due to the limited research in this area. It is likely that this sample and the samples reported in Thomson et al., (2010 in Thomson et al., (2013) are similar but they used different scales to rate symptoms, and different methods to examine content.

The findings of the current study raise the importance of practitioners ensuring they ask questions beyond those provided by the standard interview. Participants may not be willing to disclose sensitive content, (i.e. violent or sexual content), unless directly asked. The presence of this type of content is important in understanding an individual's complete symptom profile. Certain content may also act as indicators of other issues or concerns, such as past trauma or the further development of poor social functioning. It is important for future research to address such questions. Thus, it is not only important to assess the increasing severity of symptoms in those at CHR, but it is also important to monitor the change and progression of the content within the symptoms and within the context of one's overall functioning.

Acknowledgments

This study was supported by the National Institute of Mental Health (grant U01MH081984 to Dr Addington; grants U01 MH081928; P50 MH080272; Commonwealth of Massachusetts SCDMH82101008006 to Dr Seidman; grants R01 MH60720, U01 MH082022 and K24 MH76191 to Dr Cadenhead; grant to Dr Cannon; grant U01MH082004-01A1 to Dr Perkins; grant U01MH081988 to Dr Walker; grant U01MH082022 to Dr Woods; and U01 MH081857-05 grant to Dr Cornblatt.

References

- Addington J, Cadenhead KS, Cornblatt BA, Mathalon DH, McGlashan TH, Perkins DO, Seidman LJ, Tsuang MT, Walker EF, Woods SW, Addington JA, Cannon TD. North American Prodrome Longitudinal Study (NAPLS 2): Overview and recruitment. *Schizophrenia Research*. 2012; 142:77–82. [PubMed: 23043872]
- Addington J, Heinssen R. Prediction and prevention of psychosis in youth at clinical high risk. *Clinical Psychology*. 2012; 8:269–289.
- Copolov DL, Mackinnon A, Trauer T. Correlates of the affective impact of auditory hallucinations in psychotic disorders. *Schizophrenia Bulletin*. 2004; 30:163–171. [PubMed: 15176770]
- Cornblatt B, Auther A, Niendam T, Smith CW, Zinberg J, Bearden CE, Cannon TD. Preliminary findings for two new measures of social and role functioning in the prodromal phase of schizophrenia. *Schizophrenia Bulletin*. 2007; 33:688–702. [PubMed: 17440198]
- Escher S, Morris M, Buiks A, Delespaul P, Van Os J, Romme M. Determinants of outcome in the pathways through care for children hearing voices. *International journal of Social Welfare*. 2004; 13:208–222.
- Falukozi E, Addington J. Impact of trauma on attenuated psychotic symptoms. *Psychosis*. 2012; 4:203–212. [PubMed: 23155365]
- Fialko L, Freeman D, Bebbington PE, Kuipers E, Garety PA, Dunn G, Fowler D. Understanding suicidal ideation in psychosis: findings from the Psychological Prevention of Relapse in Psychosis (PRP) trial. *Acta Psychiatrica Scandinavica*. 2006; 114:177–186. [PubMed: 16889588]
- Garety PA, Kuipers E, Fowler D, Freeman D, Bebbington PE. A cognitive model of the positive symptoms of psychosis. *Psychological Medicine*. 2001; 31:189–195. [PubMed: 11232907]
- Honig D, Romme MA, Ensink BJ, Escher S, Pennings MH, Devries MW. Auditory hallucinations: a comparison between patients and nonpatients. *The Journal of Nervous and Mental Disease*. 1998; 186:646–651. [PubMed: 9788642]
- Krippendorff, K. *Content analysis: An introduction to its methodology*. 2nd. Thousand Oaks, California: Sage; 2004.
- Junginger J. The case for a content analysis of psychotic experiences. *Schizophrenia Bulletin*. 1996; 22:91–103. [PubMed: 8685667]
- Lacy S, Riffe D. Sampling error and selecting intercoder reliability samples for nominal content categories. *Journalism and Mass Communication*. 1996; 73:963–973.
- Lombard M, Snyder-Duch J, Campanella Bracken C. Content analysis in mass communication: assessment and reporting of intercoder reliability. *Human Communication Research*. 2002; 28:587–604.
- Marshall C, Falukozi E, Albertin M, Zhu H, Addington J. The developing of the content of attenuated positive symptoms codebook for those at clinical high risk of psychosis. *Psychosis*. 2012; 4:191–202.
- McGlashan, T.; Walsh, B.; Woods, SW. *The Psychosis-Risk Syndrome*. New York: Oxford University Press; 2010.
- Raune D, Bebbington P, Dunn G, Kuipers E. Event attributes and the content of psychotic experiences in first-episode psychosis. *Psychological Medicine*. 2006; 36:221–230. [PubMed: 16336724]
- Thompson JL, Kelly M, Kimhy D, Harkavy-Friedman JM, Khan S, Messinger JW, Schobel S, Goetz R, Malaspina D, Corcoran C. Childhood trauma and prodromal symptoms among individuals at clinical high risk for psychosis. *Schizophrenia Research*. 2009; 108:176–181. [PubMed: 19174322]
- Thompson A, Nelson B, McNab C, Simmons M, Leicester S, McGorry PD, Bechdolf A, Yung AR. Psychotic symptoms with sexual content in the “ultra high risk” for psychosis population: frequency and association with sexual trauma. *Psychiatry Research*. 2010; 177:84–91. [PubMed: 20304504]
- Thompson A, Nelson B, Bruxner A, O'Connor K, Mossaheb N, Simmons MB, Yung A. Does specific psychopathology predict development of psychosis in ultra high-risk (UHR) patients? *Australian and New Zealand Journal of Psychiatry*. 2013; 47:380–390. [PubMed: 23399857]

Velthorst E, Nelson B, O'Connor K, Mossaheb N, de Haan L, Bruxner A, Simmons MB, Yung AR, Thompson A. History of trauma and the association with baseline symptoms in an ultra-high risk for psychosis cohort. *Psychiatry Research*. 2013; 210:75–81. [PubMed: 23871168]

Yung AR, McGorry PD, McFarlane CA, Jackson HJ, Patton GC, Rakkar A. Monitoring and Care of Young People at Incipient Risk of Psychosis: *Schizophrenia Bulletin*. 1996; 22:283–303.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Highlights

- We have developed a code book to rate the content of attenuated psychotic symptoms.
- The majority of items fell in or above an acceptable range of reliability.
- The content of attenuated psychotic symptoms of 444 CHR youth was rated.
- There were 7 items that were most commonly endorsed.

Table 1
Demographic and baseline characteristics

Variable	N = 444
	<i>N (%)</i>
Gender	
<i>Male</i>	255 (57.4%)
<i>Female</i>	189 (42.6%)
Racial background	
<i>White</i>	257 (57.9%)
<i>Black</i>	68 (15.3%)
<i>Asian</i>	31 (7.0%)
<i>Other</i>	88 (19.8%)
Marital status	
<i>Single, never married</i>	423 (95.3%)
<i>Cohabiting with significant other</i>	10 (2.3%)
Currently working	35 (7.9%)
Currently a student	366 (82.4%)
	N (SD)
Mean age in years	18.70 (4.20)
Years of education	11.50 (2.70)
GAF	48.53 (10.93)
Positive symptoms	
<i>Unusual thought content</i>	3.40 (1.24)
<i>Suspicious ideas</i>	2.87 (1.45)
<i>Grandiose ideas</i>	1.04 (1.35)
<i>Perceptual abnormalities</i>	3.20 (1.37)
<i>Disorganized communication</i>	1.75 (1.44)
<i>Total positive score</i>	12.25 (3.55)

Table 2
Content of unusual thoughts for N = 420 participants

Category Names and Items	Frequencies n (%)	Krippendorff's alpha
Unusual Thought Content		
Perplexed by reality (e.g. confusing dreams with reality)	240 (57.14)	0.71
Overvalued beliefs (e.g. objects having special meaning)	232 (55.24)	0.66
Loss of control of content of thoughts	109 (25.95)	0.73
Supernatural (e.g. fairies, ghosts, forces)	100 (23.81)	0.79
Thought Interference	99 (23.57)	0.75
Reading of thoughts	96 (22.86)	0.89
Unusual violent thoughts	85 (20.24)	-
<i>Physical</i>	78 (91.76) ¹	0.94
<i>Sexual</i>	10 (11.76) ¹	1.00
<i>Unspecified</i>	10 (11.76) ¹	0.66
Altered familiar people or surroundings	82 (19.52)	0.83
Special attention from others	71 (16.90)	0.85
Negative thoughts regarding self	70 (16.67)	0.71
Somatic concerns	61 (14.52)	0.39
Unusual Religious Thoughts	54 (12.86)	-
<i>Involvement by a god</i>	25 (46.30) ²	0.71
<i>Nonspecific religious thoughts</i>	24 (44.44) ²	0.36
<i>Involvement by the devil</i>	8 (14.81) ²	0.71
Nihilistic ideas	52 (12.38)	0.79
Sense of time	45 (10.71)	0.86
Electronic communication	44 (10.48)	0.78
Guilt	40 (9.52)	0.70
Unusual Sexual Thoughts	19 (4.52)	-
<i>Nonspecific sexual thoughts</i>	10 (52.63) ³	0.66
<i>Thoughts regarding sexual identity ,</i>	5 (26.32) ³	0.74
<i>False belief being watched in the shower or bathroom</i>	3 (15.79) ³	1.00
<i>Thoughts regarding the size and/or shape of genitals</i>	2 (10.53) ³	1.00
Character(s) in Unusual Violent Thoughts		
Other	52 (63.41) ⁴	0.88
Self	46 (56.10) ⁴	0.91

Note: All percentages are of n = 420 except where stated,

¹ = % of 85,

² = % of 54,

³ = % of 19,

⁴₌ % of 82.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Content of suspicious ideas for n = 381 participants.

Category Names and Items	Frequencies n (%)	Krippendorff's alpha
Content of Suspicious Ideas		
Ideas of being thought about in a negative way	211 (55.38)	0.80
Guardedness towards people	189 (49.61)	0.69
Ideas of being harmed physically	144 (37.80)	0.89
Ideas of being watched	128 (33.60)	0.81
Hyper-vigilance of surroundings	110 (28.87)	0.85
Ideas of being harmed emotionally	101 (26.51)	0.65
Ideas of being followed	29 (7.61)	0.84
Ideas regarding an unfaithful partner	19 (4.99)	0.79
Ideas related to the misuse of personal information	11 (2.89)	0.74
Characters & Objects Involved in the Content of Suspicious Ideas		
Friends or acquaintances	166 (43.57)	0.60
Nonspecific people or objects	138 (36.22)	0.85
Family members or significant other (e.g. spouse, girlfriend)	70 (18.37)	0.89
Defined groups (e.g. FBI, government, teachers)	61 (16.01)	0.68
Strangers	47 (12.34)	0.54
Cameras	10 (2.62)	0.85
Evil Spirits or demons	5 (1.31)	0.74
Animals	4 (1.05)	0.80
Locations Involved in the Content of Suspicious Ideas		
School or work	124 (53.45) ^I	0.92
Public places	108 (46.55) ^I	0.69
Home	87 (37.50) ^I	0.84

Note: All percentages are of n = 381 except where stated,^I = % of 232.

Table 4

Content of grandiose ideas for n = 182 participants.

Category Names and Items	Frequencies n (%)	Krippendorff's alpha
Content of Grandiose Ideas		
Skills or abilities or talents (e.g. artistic, athletic)	104 (57.14)	0.76
Status (e.g. being famous or particularly important)	71 (39.01)	0.48
Unrealistic goals or plans	48 (26.37)	0.74
Intelligence	46 (25.27)	0.73
Religious content	23 (12.64)	0.94
Ability to influence or control others or the world	12 (6.59)	0.75

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 5

Content of perceptual abnormalities for n = 400 participants.

Category Names and Items	Frequencies n (%)	Krippendorff's alpha
Content of Unusual Auditory Experiences	350 (87.50)	
Indistinct noises (e.g. ringing, hissing, buzzing)	156 (44.57) ¹	0.86
Distinct noises (e.g. footsteps, knocking, doors opening)	123 (35.14) ¹	0.73
Voices	114 (32.57) ¹	0.84
Name being called	101 (28.86) ¹	0.89
Increased sensitivity to sound (e.g. sounds seeming louder)	95 (27.14) ¹	0.97
Mumbling	83 (23.71) ¹	0.81
Thoughts being said out loud	29 (8.29) ¹	0.78
Distortions (e.g. hearing spoken words as music)	24 (6.86) ¹	0.27
Character(s) Mentioned in the Content of Voices	114 (32.57)	
The individual	69 (60.53) ²	0.75
Others	48 (42.11) ²	0.09
Type of Affect in the Content of Voices	114 (32.57)	
Negative content	65 (57.02) ²	0.83
Neutral content	53 (46.49) ²	0.22
Positive content	13 (11.40) ²	0.54
Content of Unusual Visual Experiences	308 (77.00)	
Vague figures or shadows	208 (67.53) ³	0.81
Distortions (e.g. walls moving in waves) 4	75 (24.35) ³	0.66
Faces or people	72 (23.38) ³	0.63
Sensitivity (e.g. light or colors seeming brighter)	61 (19.81) ³	0.91
Flashes of light	50 (16.23) ³	0.78
Animals	46 (14.94) ³	0.86
Spots or floaters	22 (7.14) ³	0.84
Geometric shapes	13 (4.22) ³	0.85
Flames or fire	4 (1.30) ³	0.85
Unusual Violent Visual & Auditory Experiences	33 (8.25)	
Voices	23 (69.70) ⁴	1.00
Images	10 (30.30) ⁴	1.00
Victims in Unusual Violent Visual & Auditory Experiences	33 (8.25)	
Self	21 (63.64) ⁴	1.00

Category Names and Items	Frequencies n (%)	Krippendorff's alpha
Other	14 (42.42) ⁴	1.00
Content of Unusual Tactile Experiences	131 (32.75)	
Something touching the individual	44 (33.59) ⁵	0.69
Numbness or tingling	40 (30.53) ⁵	1.00
Electricity or vibrations	21 (16.03) ⁵	0.82
Burning or coldness	17 (12.98) ⁵	0.80
Bugs crawling	16 (12.21) ⁵	0.92
Physical alterations	16 (12.21) ⁵	0.33
Aches or pain	16 (12.21) ⁵	1.00
Content of Unusual Olfactory Experiences	40 (10.00)	
Unpleasant smells	28 (70.00) ⁶	1.00
Pleasant smells	18 (45.00) ⁶	0.66

Note: All percentages are of n = 400 except where stated,

¹ = % of 350,

² = % of 114,

³ = % of 308,

⁴ = % of 33,

⁵ = % of 131,

⁶ = % of 40.