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Latent profile analysis of healthy schizotypy within the extended psychosis phenotype

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ABSTRACT

Converging evidence suggests that psychosis exists on a continuum, and that even mentally "healthy" individuals may experience subclinical psychotic experiences. However, little research has examined the subjective and psychological well-being of individuals in the putatively healthy end of the continuum. This study explored the latent profile structure of schizotypy in a non-clinical sample and compared subjective and psychological well-being across schizotypy profiles. Latent profile analysis was conducted on participants' responses ($N=420$) to the Oxford-Liverpool Inventory of Feelings and Experiences. Six latent profiles emerged: Low Schizotypy, Average, High Schizotypy, High Unusual Experiences (UE), High Introvertive Anhedonia, and High Introvertive Anhedonia/Cognitive Disorganization. Individuals in the profile characterized by high UE without negative, disorganized or impulsive features tended to endorse similar levels of well-being as the Average and Low Schizotypy profiles. With some exceptions, all three profiles also demonstrated significantly greater subjective and psychological well-being when compared to negative/disorganized schizotypy profiles. The UE profile most closely aligns with previous conceptualizations of "healthy schizotypy." Future research should investigate how individuals in this profile make sense of unusual or ambiguous experiences that may lead to distress in clinical populations.

1. Introduction

Recent research on the extended psychosis phenotype demonstrates that psychosis can be conceptualized on a continuum with clinically-defined psychotic disorders at one extreme and subclinical psychotic experiences at the other. Psychotic experiences are relatively common in the general population and the majority of these experiences are transitory in nature (Hanssen et al., 2005; van Os et al., 2009; Dominguez et al., 2011). A large body of literature has evaluated the relationship between subclinical psychosis, help-seeking behavior (Murphy et al., 2012), and transition to psychotic disorders, (Chapman et al., 1994; Poulton et al., 2000; Hanssen et al., 2005), yet less research has focused on examining the subjective and psychological well-being of individuals who report subclinical psychotic experiences and do not develop psychotic disorders. Within this non-clinical end of the spectrum, some researchers have suggested that there is a subset of individuals with a certain profile of subclinical psychosis, labeled "healthy schizotypy," which is characterized by the experience of positive psychotic experiences in the absence of negative or disorganized schizotypy and mental health concerns (Maier et al., 2002; McCreery and Claridge, 2002).

The healthy schizotypy model draws from two main lines of research. First, positive schizotypal experiences exist in "healthy" populations without evidence of psychopathology (McCreery and Claridge, 1996; Peters et al., 1999; van Os and Linscott, 2012). Therefore, it is possible that schizotypy can be uncoupled from the disease concept of schizophrenia and the same individuals who experience subclinical psychosis may also experience subjective and psychological well-being. Second, negative and disorganized schizotypy features precede (Cornblatt et al., 2003) and predict (Dominguez et al., 2010) positive psychotic symptoms and thus may be more closely associated with developmental impairment and genetic risk for a clinical syndrome (Thaker et al., 1993; Kendler et al., 1995; Dominguez et al., 2010). In turn, negative and disorganized schizotypy features may be more discriminating between healthy and pathological presentations than positive psychotic experiences. For this reason, one would expect a "healthy schizotypy" profile to include individuals who report subclinical positive psychotic experiences without negative or disorganized schizotypy.

Studying self-reported subjective and psychological well-being of individuals in the putatively "health schizotypy" profile is important for two reasons: (1) it will guide a more complete understanding of the extended psychosis phenotype and (2) it may motivate further research on identifying protective cognitive mechanisms within this population and may inform clinical interventions for subclinical and clinical psychosis. There were two main goals of the present study.

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First, to conduct a latent profile analysis (LPA) on the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) to statistically classify discrete schizotypy profiles within the present "healthy" population, while taking the multidimensional nature of the construct into account. LPA methodology was selected based on evidence that discontinuous latent subpopulations may underlie the psychometric continuum of psychosis (Linscott and van Os, 2010). The O-LIFE assesses four domains of psychosis-proneness in healthy individuals (Mason and Claridge, 2006): Unusual Experiences (UE), Introvertive Anhedonia (IA) Cognitive Disorganization (CD), and Impulsive Nonconformity (IN). Three of the four O-LIFE domains have demonstrated reliability and validity in assessing schizotypal factors, while the Impulsive Nonconformity scale has been criticized as an unstable factor and has been excluded from some studies utilizing the O-LIFE (Cochrane et al., 2010; Lin et al., 2013).

The second goal of the present study was to compare subjective and psychological well-being across latent schizotypy profiles derived from the LPA. It was hypothesized that a healthy schizotypy group would emerge (characterized by high UE/positive psychotic experiences and average or below average scores on IA, CD and IN) and that individuals in this group would have similar psychological functioning when compared to individuals with low O-LIFE scores. It was further hypothesized that this profile would have greater subjective and psychological well-being than those in schizotypy profiles characterized by negative or disorganized features.

2. Methods

2.1. Participants

The sample included 420 undergraduate students (264 males; Age: $M=19.18$, S.D.$=2.73$) at University of Miami, who participated in partial fulfillment of Introduction to Psychology course requirements. This study was approved by the University's Internal Review Board and participants provided informed consent prior to participation. Self-report measures were completed in small groups, supervised by research assistants.

2.2. Measures

Means, standard errors and coefficient alphas for all measures are presented in Table 1.

2.2.1. Schizotypy

The Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) includes four scales with 104 true/false self-report questions (Mason et al., 1995). The UE scale measures subclinical positive psychotic experiences (perceptual aberrations, magical thinking and hallucinations). The CD scale assesses disordered thinking and attention, concentration and decision-making deficits. The IA scale measures negative schizotypy, including lack of social and physical enjoyment and the IN scale assesses impulsive, anti-social and eccentric behaviors. Internal consistency in the current study was good for all four subscales (UE $\alpha=0.87$, CD $\alpha=0.86$, IA $\alpha=0.80$, IN $\alpha=0.70$).

2.2.2. Psychological well-being

The Psychological Well-Being (PWB) Scale includes 84 items from six subscales: Self-Acceptance, Positive Relations with Others, Autonomy, Environmental Mastery, Purpose in Life, and Personal Growth (Ryff, 1989). Items are rated on a scale from one (*strongly disagree*) to six (*strongly agree*). Internal consistency in the current study was good for all PWB scales (Self-Acceptance $\alpha=0.91$, Positive Relations $\alpha=0.90$, Autonomy $\alpha=0.85$, Environmental Mastery $\alpha=0.88$, Purpose in Life $\alpha=0.87$, and Personal Growth $\alpha=0.84$).

2.2.3. Subjective well-being

Subjective well-being was assessed with 22 items of the Quality of Life Inventory (QOLI), which measures respondents' perceived importance and satisfaction with different life domains (Frisch et al., 1992). The scale defines each domain (e.g., health, self-esteem, love) and asks participants two related questions. Importance items (e.g., *How important is HEALTH to your happiness?*) are rated from zero (*not important*) to two (*extremely important*). Satisfaction items (e.g., *How satisfied are you with your HEALTH?*) are rated from zero (*very dissatisfied*) to five (*very satisfied*). Total scores were calculated in two steps; importance items were multiplied by satisfaction items for each domain to obtain 11 sub-scores, then total scores were derived by summing across all sub-scores to obtain total scores for participants ($\alpha=0.78$).

2.2.4. Substance use

Alcohol and cannabis use in the past year were measured and included as control variables when indicated. Total scores for the past year were rated on a scale from zero (*did not use*) to eight (*used every day*) and were normally distributed in the present sample.

2.3. Statistical analyses

2.3.1. Preliminary analyses

To test for potential covariates, preliminary analyses assessed whether age, gender or substance use were related to dependent variables. For continuous variables (age, alcohol and cannabis use), Pearson correlation coefficients were calculated. Independent sample *t*-tests were used to test gender differences. Any variable that was significantly related to dependent variables was statistically controlled for in primary analyses.

2.3.2. Latent profile analysis

Latent profile analysis (LPA) using Mplus version 6.0 (Muthén and Muthén, 1998–2010) was conducted to classify participants into discrete schizotypy profiles. LPA provides an advantage over previous methods because it groups individuals based on naturally-occurring patterns within the sample and then uses those patterns as independent variables (Muthén, 2001; Magidson and Vermunt, 2002; Vermunt and Magidson, 2002). LPA is a person-centered and model-based cluster analytic approach. Unique model parameters are estimated for each cluster based on maximum likelihood estimation, which approximates parameters with the highest likelihood of having given rise to the sample data. In this approach, participants are members of a particular profile to a certain degree (based on probabilities), which provides an advantage over traditional cluster analysis approaches that operate on an all-or-none basis (Pastor et al., 2007).

LPA Class enumeration was guided by several statistical information criteria, including Akaike's Information Criterion (AIC), Bayesian Information Criterion (BIC), the Lo-Medell-Rubin test (LMRT) and the bootstrap likelihood ratio test (BLRT). The BIC has proven to be the most consistent test for identifying the correct

Table 1
Psychometric properties of major study variables.

	Sample $N=420$ M (S.D.)	α	LP1 Low S $n=140$ M (SE)	LP2 High UE $n=30$ M (SE)	LP3 High IA $n=40$ M (SE)	LP4 IA/CD $n=43$ M (SE)	LP5 Average $n=161$ M (SE)	LP6 High S $n=6$ M (SE)
UE	8.82 (5.97)	0.87	3.53 (0.35)	20.22 (0.82)	6.58 (0.67)	14.65 (0.71)	9.56 (0.46)	24.66 (1.96)
CD	9.45 (5.54)	0.86	5.27 (0.51)	13.10 (1.12)	10.04 (1.10)	16.27 (0.77)	10.07 (0.44)	17.58 (1.70)
IA	4.86 (4.08)	0.80	3.05 (0.26)	3.49 (0.40)	12.20 (0.74)	9.93 (0.67)	3.21 (0.24)	10.05 (1.68)
IN	7.94 (3.66)	0.70	6.09 (0.27)	9.19 (0.72)	7.49 (0.70)	11.47 (0.68)	8.11 (0.33)	17.07 (1.01)
QoL	66.64 (17.90)	0.78	72.67 (1.33)	69.03 (2.86)	51.53 (2.54)	51.03 (2.40)	69.81 (1.24)	41.95 (6.43)
Positive Relations with others	64.94 (12.22)	0.90	70.45 (0.81)	67.55 (1.74)	53.32 (1.53)	50.54 (1.46)	67.26 (0.75)	41.52 (3.90)
Personal growth	67.57 (9.48)	0.84	69.69 (0.69)	69.82 (1.49)	58.08 (1.31)	58.74 (1.25)	69.96 (0.65)	68.99 (3.35)
Purpose in life	65.51 (11.15)	0.87	69.62 (0.84)	65.67 (1.79)	58.18 (1.59)	54.85 (1.50)	66.97 (0.78)	55.45 (4.02)
Environmental mastery	59.90 (11.39)	0.88	65.41 (0.84)	55.81 (1.78)	55.36 (1.56)	46.73 (1.50)	61.12 (0.77)	45.00 (3.99)
Autonomy	58.79(10.86)	0.85	61.55(0.83)	59.83(1.49)	55.20(1.78)	49.98(1.82)	59.17(0.83)	65.67(3.57)
Self-acceptance	62.70 (12.99)	0.91	68.05(0.81)	61.13(2.29)	54.85(2.23)	48.91(1.90)	64.60(0.92)	46.17(4.34)

number of classes when compared to other information criteria (Pastor et al., 2007). However, the BLRT performs even more consistently in determining the correct number of classes (Nylund et al., 2007). Following recommendations of Nylund et al. (2007), the BIC and LMRT values were used to narrow profile solutions. Then, BLRT was calculated to confirm which model was the best fit for the data.

2.3.3. Latent profiles and well-being

After deriving latent profiles, a series of ANOVA and ANCOVA analyses were conducted to examine differences among profiles on dependent variables, while controlling for relevant covariates. Before conducting ANCOVAs, the homogeneity-of-slopes and homogeneity of variance assumptions were tested.

3. Results

3.1. Preliminary analyses

Age was not significantly associated with any dependent variable. Alcohol use was inversely related to Purpose in Life ($r=-0.15$, $p<0.01$) and Environmental Mastery ($r=-0.11$, $p<0.05$). Cannabis use was inversely related to QoL ($r=-0.12$, $p<0.05$), Purpose in Life ($r=-0.20$, $p<0.01$) and Environmental Mastery ($r=-0.13$, $p<0.01$). Independent samples t-tests confirmed that females scored significantly higher than males on QoL, $t(418)=2.55$, ($p<0.05$), Positive Relations with Others, $t(418)=3.89$, ($p<0.01$), Personal Growth, $t(418)=4.17$, ($p<0.01$), and Purpose in Life, $t(294.90)=2.40$, ($p<0.05$).

3.2. Latent profile analysis

The LPA tested profile solutions of one to seven classes. Once two plausible models were identified by BIC and LMRT values (five-class vs. six-class solution), the models were reanalyzed with requests for the BLRT. Goodness-of-fit measures are shown in Table 2. All measures favored the six-class solution. Lower AIC and BIC values represent better model fit. In addition, the LMRT for the six-class model was statistically significant, indicating that addition of a sixth class improved fit compared to the five-class solution. Entropy values were closest to one in the six-class model as well, indicating that this model provided the most accurate assignment of cases to subgroups. Finally, the BLRT was significant, confirming that the six-class solution provided a better fit for the data (Loglikelihood value $=-4780.57$, $p<0.01$).

Table 1 provides model-based means and standard errors for the six profiles; Fig. 1 provides a graphic representation of the six profiles. Profiles 1 ($n=140$) and 5 ($n=161$) included the majority of participants and were characterized by mean scores that fell within $\pm$ one S.D. of the sample means on all four O-LIFE scales. Profile 1 was labeled "Low Schizotypy" because O-LIFE means within this profile were lower than overall sample means on all four scales. Profile 5 was labeled "Average" because means within this subscale were nearly identical to overall sample means on all four O-LIFE scales. Profile 2 (High UE; $n=30$) had a mean UE score greater than one S.D. above the overall sample mean and mean scores that fell within $\pm$ one S.D. of sample means on other O-LIFE scales. Profile 3 (High IA; $n=40$) was characterized by a mean IA score greater than one standard deviation (S.D.) above the overall IA sample mean and mean UE, CD and IN scores that fell within $\pm$ one S.D. of the sample means. Profile 4 (High IA/CD; $n=43$) demonstrated mean IA and CD scores greater than one S.D. above the overall sample mean on these scales and mean UE and IN scores that fell within $\pm$ one S.D. of the sample means. Profile 6 (High Schizotypy; $n=6$) was characterized by mean scores on all four O-LIFE scales that were greater than one S.D. above overall sample means for each scale.

3.3. Latent profiles and well-being

Prior to running primary analyses, the homogeneity-of-slopes and homogeneity of variance assumptions were tested and met in most cases, with two exceptions. In tests of homogeneity of variance, Levene's statistic was significant in the ANCOVA analysis with Purpose in Life as the dependent variable [Levene Statistic $(5, 413)=2.58$, $p<0.05$] and in the ANOVA analysis of Self-Acceptance [Levene Statistic $(5, 414)=3.78$, $p<0.01$]. Following guidelines outlined by the *SPSS Guide to Data Analysis* (Norusis, 2005), homogeneity is acceptable if the ratio of the largest variance to the smallest variance is less than 4:1. In the case of the Purpose in Life variable, the variance ratio analysis revealed that the highest group variance was only two times greater than the smallest group variance. Therefore, groups can be considered equal enough for ANCOVA to be acceptable. However, for Self-Acceptance, the ANOVA was run

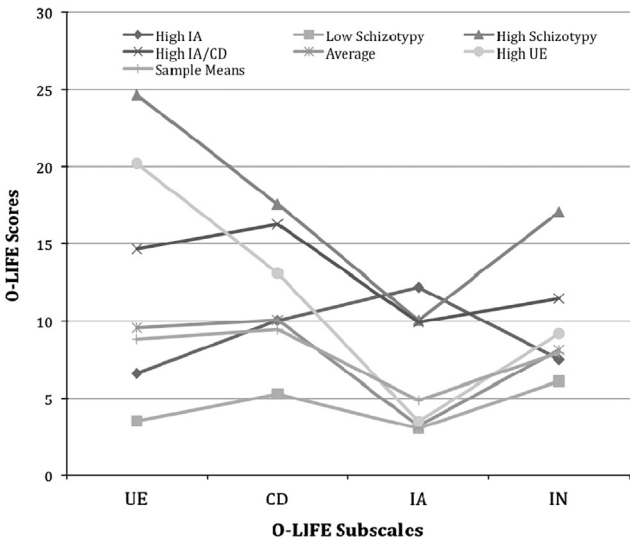

Fig. 1. Latent profile means on O-LIFE subscales.

Table 2
Goodness-of-fit statistics for the one class to seven class latent profile solutions.

Number of classes							
Goodness-of-fit statistic	1	2	3	4	5	6	7
Log-likelihood	−4987.11	−4868.12	−4832.12	−4804.61	**−4780.57**	**−4763.14**	−4750.66
AIC	9990.22	9762.24	9700.24	9655.21	**9617.14**	**9592.27**	9576.66
BIC	10022.54	9814.76	9772.96	9748.14	**9730.26**	**9725.60**	9730.19
Sample size Adjusted BIC	9997.16	9773.51	9715.84	9675.15	**9641.41**	**9620.88**	9609.61
Entropy	N/A	0.72	0.84	0.740	**0.78**	**0.822**	0.83
Adjusted LMRT	N/A	230.35, $p<0.001$	69.70 $p=0.05$	53.26 $p=0.23$	**46.54** ***p*=0.03**	**50.32** ***p*=0.02**	24.79 $p=0.44$

Note: Model fit improves as AIC and BIC values decrease and entropy values approach one. Statistically-significant LMRT indicate that the inclusion of an additional class improves model fit. Bolded values represent indicators of best model fit.

Table 3
Results from ANCOVA and ANOVA analyses comparing latent profiles on dependent variables.

Dependent Variable	*F*-test	Effect size	Covariates	Group comparisons
Quality of Life	$F(5, 412)=24.21$ $p<0.001$	$\eta^2=0.23$	Gender, cannabis use	Low S, High UE, Average > High IA, High S, High IA/CD
Positive Relations with Others	$F(5, 413)=49.76$ $p<0.001$	$\eta^2=0.38$	Gender	Low S, High UE, Average > High IA, High S, High IA/CD
Personal Growth	$F(5, 413)=25.28$ $p<0.001$	$\eta^2=0.23$	Gender	Low S, High UE, Average > High IA, High IA/CD High S > High IA
Purpose in Life	$F(5, 410)=21.00$ $p<0.001$	$\eta^2=0.20$	Gender, alcohol, cannabis use	Low S > High IA, High IA/CD, High S High UE, Average > High IA, High IA/CD
Environmental Mastery	$F(5, 411)=30.09$ $p<0.001$	$\eta^2=0.27$	N/A	Low S > all other profiles Average > High IA, High S, High IA/CD High IA, High UE > High IA/CD
Autonomy	$F(5, 414)=9.86$ $p<0.001$	$\eta^2=0.09$	N/A	Low S > High IA, High IA/CD High S, Average, High UE > High IA/CD
Self-Acceptance	$F(5, 414)=26.10$ $p<0.001$	$\eta^2=0.25$	N/A	Low S > High IA, High IA/CD, High S Average > High IA, High S High UE > High IA/CD

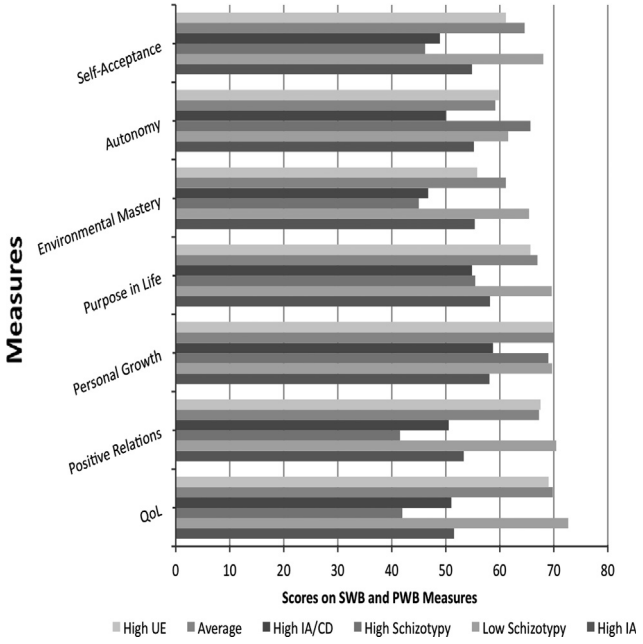

Fig. 2. Subjective and psychological well-being differences among latent profiles, controlling for relevant covariates.

with a request for the Games-Howell post-hoc test for equal variances not assumed; these statistics are reported in the results section.

When ANCOVAs were significant, follow-up tests with Bonferroni corrections were conducted to assess differences in adjusted means, controlling for Type I error. Since there were six groups being compared, there were 15 between-group comparisons calculated for each analysis. Therefore, the Bonferroni-corrected threshold was 0.003 ($\alpha^1=0.05/15=0.003$). When there were no relevant covariates, one-way ANOVAs were conducted. Results from the ANCOVA and ANOVA analyses are summarized in Table 3 and Fig. 2. Analyses revealed that latent profiles differed on all dependent variables.

4. Discussion

This study utilized latent profile analysis to identify patterns of schizotypy, or subclinical psychotic experiences, in a non-clinical sample. It was the first study to apply this approach to the O-LIFE and the first to expand the "healthy" schizotypy model by directly examining associations among latent schizotypy profiles and subjective and psychological well-being. There were two main aims of the present investigation; findings from each study goal will be addressed separately in this section.

The first goal was to conduct a latent profile analysis to identify distinct statistical profiles of schizotypy in a non-clinical sample. A six-profile solution was the best fit for our data. The six profiles that emerged were named Low Schizotypy, High UE, High IA, High IA/CD, Average, and High Schizotypy. Several prior studies have employed the similar statistical approach of cluster analysis on the O-LIFE and have revealed three or four latent clusters (Loughland and Williams, 1997; Goulding, 2004, 2005; Goulding and Odehn, 2009). The four-cluster solutions have included a high CD group, high IA group, high UE group and a Low Schizotypy group (Loughland and Williams, 1997; Goulding and Odehn, 2009). A recent latent class analysis of the brief O-LIFE in an adolescent sample reported three latent classes, which they tentatively referred to as the low schizotypy, unusual subjective experiences, and true schizotypy classes (Cella et al., 2013).

One consistent finding across cluster analyses and the current LPA is the existence of the High UE group, characterized by above average scores on UE and average (or below average) scores on CD, IA and IN. As this profile was central to the hypotheses proposed in the present study, this stability is encouraging and suggests that the High UE profile exists across samples and merits further research to help us understand cognitive and affective processes in this group.

Most previous O-LIFE cluster analyses have excluded the IN scale, as some claim that it is not a true schizotypy dimension (Cochrane et al., 2010) because it overlaps too considerably with features of affective disorders (Loughland and Williams, 1997) and has proven to be an unstable factor (Lin et al., 2013). Authors of the O-LIFE, however, acknowledge the considerable overlap of biological susceptibility and core features of affective and psychotic disorders and argue that inclusion of the IN scale represents a broader and more accurate conceptualization of psychosis-proneness (Mason and Claridge, 2006). In this study, no latent profile was characterized by below or above average scores on IN, with the exception of the High Schizotypy group, which scored highly on all four O-LIFE scales. This indicates that IN may be a viable schizotypy indicator, as those who scored highly on all other O-LIFE scales also scored highly on IN. However, as the High Schizotypy group only included six individuals, results concerning this profile should be interpreted with considerable caution, especially in light of evidence against the IN factor.

The second major goal of this study was to expand the healthy schizotypy model by examining subjective and psychological well-being across schizotypy profiles. The healthy schizotypy model arises from the dimensional view of schizotypy, which views schizotypy as a fully dimensional construct, in which schizotypal features do not in and of themselves indicate psychopathology and, in fact, may be associated with adaptive traits (Eysenck and Eysenck, 1976; Claridge, 1997; McCreery and Claridge, 2002). In this model, healthy schizotypy is characterized by unusual and odd experiences that are uncoupled from the disease process itself, which is in contrast to the pathological presentations encountered in schizotypal personality disorder. Another interpretation of healthy schizotypy is that it represents one form of pseudoschizotypy, which may be unrelated to schizophrenia. Psuedoschizotypy is more commonly related to psychosocial adversity and is relatively less stable than its counterpart, neurodevelopmental schizotypy (Raine, 2006).

Prior research on schizotypy as it relates to mental health has demonstrated mixed findings, depending on whether schizotypy is examined as a general construct or broken into its component parts. Global schizotypy has been linked to poor subjective and objective quality of life, but these relationships may be explained by greater associations between negative schizotypy and quality of life (Cohen and Davis, 2009). Positive schizotypal traits have been shown to exist in functioning members of society and are not only associated with psychopathology (Day and Peters, 1999). In fact, the UE factor has been positively linked to concepts related to mental health, such as sense of coherence: a global life orientation characterized by confidence that the demands and challenges of life are comprehensible, manageable and meaningful (Antonovsky, 1993; Goulding, 2004, 2005). While both the UE and IA factors of the O-LIFE have been associated with positive psychotic symptoms among individuals at ultra high-risk for psychosis, the IA factor is also associated with lower functioning and quality of life (Lin et al., 2013).

Therefore, in line with prior research (Goulding and Odehn, 2009), the High UE profile most closely aligns with the theoretical "healthy schizotypy" profile. In general, this study confirmed that individuals in this profile demonstrated subjective and psychological well-being scores that were commensurate to profiles with no significant elevations on the O-LIFE (the Average and Low Schizotypy profiles). All three profiles tended to score significantly higher than the High IA, High IA/CD groups and, in some cases, the High Schizotypy group on measures of subjective and psychological well-being. There were some exceptions to this general pattern of results, which will be addressed below.

On all subjective and psychological well-being scales, the Low Schizotypy group demonstrated the highest scores, while the High IA/CD most consistently demonstrated the lowest scores. The association between the interpersonal dimension of schizotypy and well-being is consistent with previous evidence, which indicates that this domain is most closely associated with poor quality of life (Kwapil et al., 2008; Cohen and Davis, 2009). Previous research indicates that negative and disorganized features of schizotypy may better discriminate between adaptive and pathological presentations than positive symptoms (Thaker et al., 1993; Kendler et al., 1995; Cornblatt et al., 2003; Dominguez et al., 2010; Lin et al., 2013).

There was only one analysis in which the High UE group scored lower than any other group; the High UE profile (along with all other profiles) had lower Environmental Mastery scores than the Low Schizotypy group. In this case, the High UE group simultaneously scored higher than the High IA/CD group. Environmental Mastery is characterized by competence in managing one's environment and surroundings, which includes a sense of control over the external world. Due to the atypical and odd nature of positive psychotic experiences, it is possible that those participants who report these experiences do not believe they have control over them, and thus have lower Environmental Mastery scores.

In line with the cognitive model of psychosis, the High UE group demonstrates that it may not be the anomalous experiences in and of themselves that are pathological, but one's cognitive interpretation of these aberrant experiences that differentiates between adaptive and pathological progression (Garety et al., 2001). In particular, one's level of certainty in the appraisal of unusual experiences may be more salient in determining the psychopathological relevance of these experiences than their frequency (Preti et al., 2012). Hanssen et al. (2005) have noted that one's emotional appraisal of such experiences and their relative severity may also predict whether an individual develops further psychosis. Future research might examine the metacognitive beliefs (e.g. beliefs about origins and controllability of unusual perceptual experiences) of individuals with healthy schizotypy compared to other profiles (Brett et al., 2009).

Despite promising results, the current study had several limitations that restrain generalizability. First, this study was cross-sectional in nature, which precluded the examination of longitudinal or causal relationships. It remains unknown whether these profiles are relatively stable over time or whether individuals may switch profiles based on substance use, stressful life experiences or other factors that increase risk for psychosis. In addition, while the sample size was relatively large, some latent profiles were made up of a small number of individuals. Nonetheless, it was not surprising that there were far more participants in the Low Schizotypy and Average profiles than in any profile dominated by high scores on the O-LIFE, as the sample was drawn from an undergraduate population. Future research should recruit larger community samples, which would allow for the use of more rigorous statistical models.

This study also relied on self-report data. While prior research has shown that social desirability is not a major confound in the literature on well-being and that self-reports of well-being tend to be stable and reliable (Ryff, 1989), self-report measures of subclinical psychotic experiences may have contributed to false positives (Hanssen et al., 2006; van Nierop et al., 2012). However, other research has shown that even brief self-report screening questionnaires are highly accurate in detecting psychotic-like experiences in the general population (Kelleher et al., 2011). Insight was not assessed in the current study and it is possible that poor insight among individuals in the High UE profile may account for higher perceptions of well-being. Future research would benefit from behavioral or experimental examinations of how individuals in the Healthy Schizotypy group make sense of unusual or ambiguous experiences. This research may help broaden our understanding of adaptive cognitive interpretations of unusual experiences, which may be applied to the treatment of individuals in the early phases of psychosis.

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