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Gender Differences in the Experience of Psychotic-Like Experiences and their Associated Factors: A Study of Adolescents from the General Population

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Running Head: Gender Differences in Experience of PLEs and Associated Factors

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Abstract

"Psychotic-Like Experiences" (PLEs) are common in the general population. While they are usually transient and resolve spontaneously, they can be distressing and signify increased risk for later psychosis or other psychopathology. It is important to investigate factors associated with PLEs which could be targeted to reduce their prevalence and impact. Males and females are known to experience PLEs differently, but any gender differences in the relationships between PLEs and other, potentially targetable, factors are currently unknown.

302 adolescents (175 females, mean age=16.03, SD=0.75; 127 males, mean age=16.09, SD=0.74) from secondary schools in the West Midlands region of the UK completed baseline self-report measures of positive PLEs, measured by the Community Assessment of Psychic Experiences (CAPE-P), and several potentially related factors including: cannabis use, perceived stress, anxiety, depression, and daily hassles.

PLEs were common in this sample, with 67.5% of individuals experiencing at least one CAPE-P item 'often' or 'almost always'. Females reported significantly higher levels of PLEs, and associated distress, than males. Anxiety, depressive, and stress symptoms were similarly associated with PLEs in both genders. However, there was a significant interaction of gender and daily hassles in the association with PLEs.

In summary, there were significant gender differences in the experience of PLEs in this sample. Although daily hassles were more common in females, they had a significantly stronger association with PLEs in males. Thus, addressing "daily life stress" in adolescents may require tailoring towards the more emotional perception of stress in females, and towards everyday life hassles in males.

Keywords: Psychotic-Like Experiences, Subclinical Psychotic Experiences, Psychosis, Mental Health, Adolescents.

1. Introduction

Psychotic symptoms may exist on a continuum (van Os et al., 2000; Yung et al., 2009). "Psychotic-Like Experiences" (PLEs) are symptoms which occur at a much lower level of intensity and distress than those seen in clinically significant psychosis (Nuevo et al., 2010; Yung et al., 2009). PLEs are common in the general population, with global prevalence rates of 17% in 9-12 year old children and 7.5% in 13-18 year old adolescents (Kelleher et al., 2012). The prevalence of PLEs may differ between males and females; however, this evidence is mixed. In some studies, females report more PLEs (van Os et al., 2000; Zammit et al., 2013), while other studies find a higher prevalence in males (Laurens et al., 2007; Poulton et al., 2000). Males and females also endorse different aspects of the positive psychotic-like symptoms, with females more likely to experience subclinical hallucinations and persecutory ideation (Ronald et al., 2013; Scott et al., 2008). Furthermore, males and females may experience different long-term outcomes following the experience of PLEs. In a large birth cohort study, males who reported subclinical perceptual abnormalities at age 14 were five times more likely to meet criteria for non-affective psychosis at age 21, compared to females who were two times more likely to receive such a diagnosis (Welham et al., 2009).

While not inherently pathological, persistence of PLEs can significantly increase the risk of an individual developing a psychotic disorder (Cougnard et al., 2007; van Os et al., 2009). In longitudinal studies, the presence of PLEs in adolescence is associated with an increased likelihood of an adult schizophrenia-spectrum disorder (Fisher et al., 2013; Poulton et al., 2000). PLEs are also associated with distress (Armando et al., 2010; Yung et al., 2006), suicidality (Kelleher et al., 2013; Nishida et al., 2010), self-harm (Nishida et al., 2010; Polanczyk et al., 2010), depression (Wigman et al., 2011a) and other psychiatric comorbidity (Remberk, 2017). As such, PLEs and their potential risk factors represent an important target for early intervention to prevent or delay these more serious outcomes.

Several previously established risk factors for frank psychosis may also be associated with PLEs, such as cannabis use (Arseneault et al., 2002; Arseneault et al., 2004; Zammit et al., 2002), affective dysregulation (Hartley et al., 2013), and stress (Corcoran et al., 2003). For example, cannabis use has been linked with PLEs (Hides et al., 2009), particularly when commenced from an early age

(Stefanis et al., 2004) and when paired with other risk factors (Bourque et al., 2017). Affective dysregulation, including feelings of depression (Armando et al., 2010; van Os et al., 2000; Wigman et al., 2011a; Yung et al., 2009) and anxiety (Mackie et al., 2011) has also been associated with PLEs. Stress is another factor implicated in the development of PLEs (van Os et al., 2009). Higher levels of perceived stress (Ered et al., 2017) and greater emotional reactivity to stress (Lataster et al., 2009; Mackie et al., 2011) have been associated with higher levels of PLEs. Stressful life events may increase the risk for PLEs (Arseneault et al., 2011; Wigman et al., 2011b), and may interact with underlying vulnerability to mental illness (Zubin and Spring, 1977). Less intense 'daily hassles' can also lead to high levels of stress and be associated with psychopathology in adolescence (Seiffge-Krenke, 2000). Increased reactivity to daily stress has been identified as a key differentiator between transient and persistent PLEs (Collip et al., 2013) and, as mentioned, persistence of PLEs can increase the risk of transition to clinical psychosis (van Os et al., 2009).

There is evidence for gender differences in the prevalence, symptoms, and outcome of PLEs. However, little is known about whether these other, potentially associated, factors may differ between males and females. There is some evidence that daily hassles are more commonly reported by females (Kohn and Milrose, 1993), and that females show heightened vulnerability to stress levels (Myin-Germeys et al., 2004). Therefore, the effect of stress on PLEs may differ in these two genders, although this needs to be confirmed. Gender is often used as a covariate in investigations of factors associated with PLEs, thus removing any potential effects. Any differences between males and females in the prevalence and associated factors of PLEs could prove to be important for informing intervention strategies, in that they may need to be tailored to achieve maximum effectiveness.

In this study, we investigated the association of several previously discussed factors to positive PLEs. The present study sought to investigate the prevalence and distress of PLEs in adolescents from the general population, and aimed to clarify whether the experience of PLEs significantly differed for males and females. The study also focused on identifying the association of factors previously linked with PLEs, and whether they vary according to gender.

2. Method

2.1. Participants

Three hundred and two adolescent students aged 14-18 (175 females, mean age=16.03, SD=0.75; 127 males, mean age=16.09, SD=0.74) were recruited from secondary schools in the West Midlands, UK. Informed consent was obtained from both a parent or legal guardian and student prior to participation. All parents/ legal guardians were contacted first and opt-out consent was gained by providing a form and pre-paid envelope to withdraw their child if they wished. Students who had not been withdrawn by their parent/guardian were then also asked to provide written consent to participate. Both participants and their parents/ legal guardians received an information sheet explaining the purpose of the study, in which it was reinforced that participation was voluntary and that they could withdraw at any time. Participants did not receive compensation for completing the study. Ethical approval for the study was provided by the University of Birmingham School of Psychology Ethical Review Committee. Basic inclusion criteria were being of secondary school age, being present on the day of testing, and having capacity to provide consent and understand the materials. Provided that both student and parent/ legal guardian consent was given, there were no other exclusion criteria.

2.2. Measures

Demographic information including age, gender, and ethnicity was obtained. Lifetime cannabis use was assessed using the question *"Have you ever smoked cannabis?"* requiring a yes/no response. When participants had used cannabis, age of first use was also collected.

Frequency and distress of PLEs was assessed using the Community Assessment of Psychic Experiences, a 42-item self-report questionnaire (Konings et al., 2006). This study utilized 20 items which assessed positive symptoms (CAPE-P). Presence of each item within the past 12-months is measured on a four-point scale with frequency ranging from *'1-never'* to '*4-almost always'*. The level of distress associated with each item is measured on a four-point scale ranging from *'1-not distressed'* to *'4-very distressed'*. Reliability of the CAPE-P subscale has been found to be adequate (r= 0.63) (Konings et al., 2006) and a Cronbach's alpha of 0.83 in the present sample indicates high internal consistency.

The Perceived Stress Scale (PSS) is a 10-item self-report questionnaire which measures the degree to which individuals appraised situations in their life as stressful during the past month (Cohen et al., 1983). Responses are measured on a five-point Likert scale ranging from *'0-never'* to *'4-very often'*. A Cronbach's alpha of 0.59 indicates questionable internal consistency in the present sample.

The Depression Anxiety Stress Scale (DASS) is a 42-item self-report questionnaire measuring the negative emotional states of depression, anxiety and stress (Lovibond and Lovibond, 1995). Responses are measured on a four-point Likert scale ranging from *'0-did not apply to me at all'* to *'3-applied to me very much, or most of the time'.* The DASS has been found to show strong reliability (r=0.97; Crawford and Henry, 2003). Cronbach's alphas for the depression, anxiety, and stress subscales were 0.94, 0.88, and 0.92 in the present sample, suggesting excellent internal consistency for this measure.

The frequency of daily hassles in the past month was measured using the Inventory of High School Student's Recent Life Events (IHSSRLE); a 41-item self-report questionnaire (Kohn and Milrose, 1993). Reponses on a four-point Likert scale range from *'1-Not at all a part of my life'* to *'4-very much part of my life'*. The IHSSRLE has been found to show adequate reliability ranging between 0.75-0.91 (Kohn and Milrose, 1993). The present sample evidenced a Cronbach's alpha of 0.94, suggesting excellent internal consistency.

2.3. Procedure

Assessments were completed during class time (on average 50 minute sessions). Each participant received an information sheet, and consent form, followed by the questionnaire pack. Standardized instructions stressed the sensitive nature of the research; and independent completion of the questionnaires was required. Participants were instructed to seek assistance from the researchers present if they did not understand a question and were informed that their results would remain confidential. They did not have to answer any questions they felt uncomfortable with. Once the study was completed, participants were offered mental health support contact sheets.

2.4. Statistical Analysis

Analysis was conducted using IBM SPSS Statistics 24 software (IBM Corp, 2016). Initial exploration revealed missing data were less than five percent for each item. As such, pairwise deletion

methods were used to maximize the sample size included in analysis. The data was checked and satisfied the assumptions of a linear relationship between the independent and dependent variables, homoscedasticity, and homogeneity of variance. The data had approximate normal distribution, therefore the variables were left untransformed as the statistical tests employed have been found to be robust to mild non-normality (Bohrnstedt and Carter, 1971; Havlicek and Peterson, 1976; Lumley et al., 2002). The DASS-stress variable was not used due to multicollinearity with the DASS-anxiety subscale. First, the demographics and variables of interest were explored in the whole sample, as well as males and females separately, using independent samples t-tests for the categorical variable of lifetime cannabis use, and Pearson's correlation for the remaining continuous variables. Prevalence of PLEs and individual subdomains was then examined in males and females separately using independent samples t-tests. A measure of average distress related to PLEs was creates which was the sum of distress scores divided by the number of items endorsed. Differences in average distress between males and females was examined using independent samples t-test. Next, the relationship between gender and the variables of interest in the association with CAPE-P score was explored. An interaction variable including a dummy coded gender variable and the independent variables (Cannabis Use, PSS-stress, DASS-depression, DASS-anxiety, and daily hassles) was entered into a regression model in the whole sample. The same analysis was repeated to investigate the interaction between gender and the independent variables in the association with average distress. Subsequently, for those variables which significantly interacted with gender, a linear regression was run separately in males and females with CAPE-P Total score as the dependent variable.

3. Results

3.1. Sample Characteristics

Table 1 shows the demographics of the sample and descriptive statistics of the variables. Males and females significantly differed on whether they had used cannabis during their lifetime, and on all self-report measures. They did not significantly differ on age, ethnicity, or age of first cannabis use.

- Table 1 about here

3.2. Prevalence of PLEs

In this sample, 67.5% of individuals (74.3% of females and 58.3% of males) endorsed at least one CAPE-P item at a level of 'often' or 'almost always'. As illustrated in Table 1, females scored significantly higher on the CAPE-P than males. We further split the CAPE-P scores into four subdomains of positive psychotic-like experience previously established by Yung et al. (2009). Independent samples t-tests illustrated that females scored significantly higher than males on the subdomains of Bizarre Experiences and Persecutory Ideation (Table 2).

-Table 2 about here-

3.3. Distress Associated with PLEs

The average distress reported in relation to positive PLEs in the whole sample was 1.85 (SD=0.50) of a maximum four, indicating that on average, this sample was "a bit distressed" by the experience of PLEs. Independent samples t-test demonstrated that average distress was significantly higher for females (mean 1.94, SD 0.46) than for males (mean 1.70, SD 0.51), $t(222)=3.630$, $p<0.001$.

3.4. Relationship of the Predictor Variables to PLEs and Distress

As demonstrated in Table 3, PSS-stress, DASS-depression, DASS-anxiety, and daily hassles were significantly correlated with CAPE-P score. Participant age was not significantly correlated with CAPE-P scores. CAPE-P scores did not significantly differ between cannabis users versus non-users. As demonstrated in Table 4, PSS-stress, DASS-depression, DASS-anxiety, and daily hassles were also significantly correlated with average distress score. Participant age was not significantly correlated with average distress score.

-Table 3 about here-

-Table 4 about here-

3.5. Are the Predictor Variables Associated with PLEs and Distress Differently in Males and Females?

To examine whether the association of the variables of interest with CAPE-P differed in males and females, analysis examined the interaction between a dummy coded gender variable and each predictor variable by entering this interaction variable into a regression with CAPE-P as the dependent variable in the whole sample. These results demonstrated no significant interaction between gender and PSS-stress (t=0.053, p=0.958), DASS-depression (t=-0.627, p=0.531), Cannabis Use (t=0.429, p=0.669), and DASS-anxiety (t=-0.722, p=0.471). However, there was a significant interaction of gender and daily hassles (t=-2.415, p=0.016). Therefore, the associations of anxiety, depression, cannabis use, and perceived stress with positive PLEs are not significantly different in males and females. However, the association of daily hassles with PLEs is significantly different between the two genders. As such, this was explored in males and females separately. The same analysis was also utilized to identify whether the association of the variables of interest with average distress significantly differed in the two genders. There was no significant interaction between gender and PSS-stress (t=0.108, p=0.914), DASS-depression (t=-0.667, p=0.506), Cannabis Use (t=0.965, p=0.336), DASS-anxiety (t=-1.496, p=0.136), or Daily Hassles (t=-1.114, p=0.266).

3.6. Exploring the Association Between Daily Hassles and PLEs Separately in Males and Females

CAPE-P scores were available for 169 females (mean age=16.04, SD=0.75) and 115 males in this sample (mean age=16.13, SD=0.75). In the previous analysis, there was a significant interaction between gender and daily hassles. Therefore, linear regressions with daily hassles as the independent variable and CAPE-P as the dependent variable were run separately in males and females. In the female regression, daily hassles were significantly associated with CAPE-P scores $F(1,162)=53.235$, $p<0.001$, with an r_2 of 0.247. One Standard Deviation (SD) change in daily hassles predicted an increase of 0.412 SDs in CAPE-P score for females. In the male regression, daily hassles were also significantly associated with CAPE-

P scores $F(1,97)=75.124$, $p<0.001$, with an r_2 of 0.436. One Standard Deviation (SD) change in daily hassles predicted an increase of 0.661 SDs in CAPE-P score for males. Table 5 shows the regression coefficients for both linear regressions. In summary, daily hassles are significantly associated with PLEs in both genders, but to a greater extent in males.

-Table 5 about here-

4. Discussion

This study aimed to investigate gender differences in the prevalence and distress of PLEs, as well as the association of anxiety and depressive symptoms, stress, cannabis use, and daily hassles in adolescents from the general population. PLEs were common in this sample, significantly more so in females, with 67.5% of individuals endorsing at least one CAPE-P item at a frequency of 'often' or 'almost always'. In comparison, Wigman et al. (2009) previously identified a prevalence of 43.3% in a large population study of Dutch adolescents using the same criteria. Average levels of distress reported in relation to PLEs were also significantly higher in the females than the males of this sample. There were also some differences in the factors which were associated with PLEs in males and females. While the associations of anxiety, depression, and stress with PLEs were not significantly different between the two genders, our findings revealed a significantly greater association of daily hassles with PLEs in males than in females.

The prevalence of PLEs in our sample was higher than in some other studies of adolescents. Yung et al. (2009) observed prevalence rates of 8.59% for bizarre experiences, 3.76% for perceptual abnormalities, 12.03% for persecutory ideation, and 7.03% for magical thinking, occurring 'at least sometimes'. Our findings demonstrate the same pattern of prevalence for each subtype, but were reported more frequently in the present sample. For their identified subtypes of positive symptom, Wigman et al. (2009) observed prevalence rates ranging from 6.4% for hallucinations to 26.4% for paranoia. However, in a study of Irish adolescents, prevalence rates of perceptual abnormalities were higher than the present sample. Dolphin et al. (2015) observed a prevalence of 10.4% for visual hallucinations and 13.7% for auditory hallucinations in their sample compared to a 9.3% prevalence of

perceptual abnormalities in the current sample. Taken together, these results suggest that self-reported positive PLEs are relatively common in the adolescent general population; although the prevalence of PLEs may vary according to the measurement scale used, and factors such as the age or nationality of the sample. Further, our observation of females reporting significantly more PLEs than males is in line with previous findings (Mackie et al., 2011; Thapar et al., 2012; van Os et al., 2000; Zammit et al., 2013).

Daily hassles were associated with PLEs to a greater extent in males than in females. This is surprising, as females in this sample reported significantly higher levels of daily hassles (see Table 1), consistent with previous findings (Kohn and Milrose, 1993). It could be interpreted, therefore, that daily hassles are rarer in males, but when they do occur they can lead to an increase in the experience of PLEs. This could be due to gender differences in coping strategies, which have been found to mediate the relationship between PLEs and psychosocial functioning (Chisholm et al., 2018). Females are more likely to use social support and problem-focused coping strategies than males, who use avoidant strategies (Eschenbeck et al., 2007; Williams and McGillicuddy-De Lisi, 1999). It is possible, therefore, that this use of social support and problem focused coping offsets the effect of daily hassles in females, leading to a heightened risk for PLEs in the context of daily hassles for males. Another consideration is that the PSS and the IHSSRLE (our measure of daily hassles) may be capturing different aspects of an overarching construct, such as "daily life stress". The two measures were highly correlated in this study ($r=0.71$, $p<0.01$), therefore it is possible that the observed gender differences may result from different expressions of this daily life stress. As evidence demonstrates that stress-reactivity is significantly associated with PLEs in females (Collip et al., 2013), a more negative reaction to stress might result in higher levels of perceived stress. Males, however, may experience the same daily life stress, but instead focus on the smaller, less emotion-based, hassles they experience.

Several previous studies have also identified a significant association between PLEs and anxiety (Nishida et al., 2010; Polanczyk et al., 2010; Ronald et al., 2013). In addition, a recent study of 655 adolescents also identified a significant correlation between perceived stress and PLEs, including significant correlations with each separate subdomain of PLEs (Turley et al., 2019). Gibson et al. (2014) also identified that perceived stress mediated the relationship between traumatic life events and PLEs

in their sample of 671 university students. Depressive symptoms have also been found to be significantly associated with PLEs, particularly the subdomains of bizarre experiences and persecutory ideas (Armando et al., 2010; Yung et al., 2006). In this study, anxiety, depressive, and stress symptoms contributed significantly and equally to the prediction of PLEs in both genders, and could therefore potentially serve as primary targets for reducing these experiences.

In this sample, lifetime cannabis use did not show a meaningful relationship with PLEs. There was no significant difference in CAPE-P scores between cannabis users and non-users in the whole sample. Although, CAPE-P scores were significantly higher in male cannabis users compared to male non-users. In some previous studies, both lifetime cannabis use and earlier use have been associated with an increased prevalence of PLEs (Hides et al., 2009; Stefanis et al., 2004). It is possible that cannabis use was under-reported in this sample. Previous samples have evidenced higher prevalence in adolescents than that of 13.2% observed in our sample of adolescents aged 14-18. For example, a national survey of Australian adolescents identified that 25% of their sample aged 13-17 had used cannabis in their lifetime (Rey et al., 2002). A study by Williams and Nowatzki (2005) identified that self-report of substance use may not be valid in adolescents, and it is possible that this effect was compounded in a classroom setting leading to underreporting in this sample. Other studies suggest that it may be the *degree* of cannabis use which significantly predicts PLEs (Linscott and van Os, 2013). Additional information about the frequency of drug use may be required to detect the relationship between cannabis use and PLEs which has been observed in other studies.

Findings reported here must be interpreted within the context of the study's limitations. This study relied on self-report of PLEs, which may lead to an overestimation of their prevalence or clinical relevance (Kendler et al., 1996; Nelson et al., 2012). However, several other studies have identified significant associations between self- and interviewer- rated measures of PLEs (Konings et al., 2006; Poulton et al., 2000) and demonstrated the predictive validity of self-report screening measures (Kelleher et al., 2011). The use of self-report measures is a time- and cost- effective method for recruiting a large sample of adolescents from the general population. Future use of interviewer-rated measures of PLEs may help to confirm any gender differences in the prevalence of PLEs and the contribution of associated factors. This data is cross-sectional, and therefore further work is required to

examine causality and temporal sequence, as well as how the presence of these factors may affect long-term outcomes. In the future, the field may benefit from studies which assesses whether targeting these factors may reduce the incidence and long-term effects of PLEs in adolescents. A further limitation is that no clinical diagnostic measures were completed with the sample, therefore it is possible that some participants could potentially meet the criteria for being at ultra-high risk for, or experiencing a first-episode of, psychosis. The proportion of individuals in this sample experiencing more severe psychotic symptoms is likely to be low. Firstly, the presence of PLEs is a poor predictor of an at-risk mental state or psychotic disorder (Schultze-Lutter et al., 2014). Secondly, the prevalence of clinical psychotic disorder in general population samples is low, having been estimated at around 1.5-4% (Newman et al., 1996; Perälä et al., 2007; van Os et al., 2009). Given that the average age of onset for clinical psychotic disorder has been established as approximately age 15-35 (Kessler et al., 2007), presence in this young (mean age 15.64) sample is likely to be even lower.

Ultimately, the experience of PLEs is likely to be transitory (Hanssen et al., 2005), not leading to a transition to psychosis in the majority of individuals who experience them. However, they may be associated with distress (Armando et al., 2010; Yung et al., 2006) and negative health outcomes such as suicidality (Nishida et al., 2010), and therefore represent an important target for research and potential intervention. In this sample, PLEs were more common, and distressing, in females. Depression, anxiety, and stress were associated with PLEs in both genders, and could therefore serve as primary targets for interventions seeking to reduce PLEs. However, the current results hint at the effectiveness of tailored interventions for males and females in order to maximize efficacy. It may be important to address “daily life stress”, but tailor towards the more emotional perception of stress in females, and towards everyday life hassles in males.

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Table 1
Demographics and descriptive statistics of the dependent variable (CAPE-P) and the individual predictor variables

	Total Sample	**Males (N=127)**	**Females (N=175)**	**Statistics**		
Variables				**Statistic**	**p-value**	**Cohen's D Effect Size**
Age						
Mean (SD)	15.64 (3.29)	16.09 (0.74)	16.03 (0.75)	t=-0.606	0.545	
Ethnicity						
N (%)				χ^2=5.372	0.372	
African	7 (2.3)	2 (1.6)	5 (2.9)			
Asian	32 (10.7)	10 (8)	22 (12.6)			
African-Caribbean	6 (2)	4 (3.2)	2 (1.1)			
White British	221 (73.9)	96 (76.8)	125 (71.8)			
White Other	11 (3.7)	6 (4.8)	5 (2.9)			
Other	22 (7.4)	7 (5.6)	15 (8.6)			
Lifetime Cannabis Use						
"Yes" N (%)	40 (13.2)	23 (18.1)	17 (9.7)	χ^2=4.515	0.034*	φ=0.12
Age of First Use						
Mean (SD)	14.62 (1.16)	14.57 (1.21)	14.69 (1.14)	t=0.297	0.768	
CAPE-P						
Mean (SD)	30.26 (6.57)	28.37(5.82)	31.62 (7.03)	t=4.232	<0.001*	0.5
PSS-Stress						
Mean (SD)	18.24 (7.94)	15.41 (7.5)	20.2 (7.65)	t=5.178	<0.001*	0.63
DASS-Depression						
Mean (SD)	10.20 (9.84)	7.92 (8.48)	11.74 (10.34)	t=3.385	0.001*	0.4
DASS-Anxiety						
Mean (SD)	8.15 (7.66)	6.24 (6.35)	9.42 (8.19)	t=3.685	<0.001*	0.43
Daily Hassles						
Mean (SD)	80.81 (21.01)	74.02 (20.92)	85.16 (21.64)	t=4.211	<0.001*	0.52

* Statistically significant at a level of $p \leq 0.05$. N= Number of participants. SD= Standard Deviation.

Table 2
A Table Illustrating the Prevalence of CAPE-P Items at a Level of "Often" or "Almost Always"

Prevalence (%) Mean (SD)	**Whole Sample**	**Males**	**Females**	**t**	**p-value**	**Cohen's D Effect Size**
Bizarre Experiences	36.1 8.8 (2.5)	29.9 8.3 (2.2)	40.6 9.2 (2.6)	3.009	0.003*	0.37
Perceptual Abnormalities	9.3 3.6 (1.2)	8.7 3.5 (1.1)	9.7 3.7 (1.3)	1.163	0.246	
Persecutory Ideation	49.7 11.5 (3)	37 10.3 (2.5)	58.9 12.2 (3.1)	5.815	<0.001*	0.67
Magical Thinking	30.8 6.3 (2)	32.3 6.1 (1.9)	29.7 6.4 (2)	1.237	0.217	

* Statistically significant at a level of p≤0.05. SD=Standard Deviation.

Table 3
A Table Demonstrating the Relationship of Each Predictor Variable to CAPE-P Scores

	Whole Sample		**Males**		**Females**	
	r	**p-value**	**r**	**p-value**	**r**	**p-value**
Age	-0.105	0.080	-0.038	0.687	-0.126	0.106
PSS-Stress	0.540	<0.001*	0.527	<0.001*	0.576	<0.001*
DASS-Depression	0.552	<0.001*	0.572	<0.001*	0.517	<0.001*
DASS-Anxiety	0.623	<0.001*	0.633	<0.001*	0.596	<0.001*
Daily Hassles	0.570	<0.001*	0.661	<0.001*	0.497	<0.001*
			Cannabis Users	**Cannabis Non-users**	**t**	**p-value**
Mean CAPE-P (SD)						
Males			30.84 (5.17)	27.89 (5.84)	2.051	0.043*
Females			33.18 (5.79)	31.44 (7.15)	0.966	0.336
Whole Sample			31.94 (5.52)	30.06 (6.88)	1.567	0.118

* Statistically significant at a level of p≤0.05.SD=Standard Deviation. r= Pearson's Correlation.

Table 4
A Table Demonstrating the Relationship of Each Predictor Variable to Average Distress Scores

	Whole Sample		**Males**		**Females**	
	r	**p-value**	**r**	**p-value**	**r**	**p-value**
Age	0.118	0.082	0.116	0.301	0.167	0.051
PSS-Stress	0.598	<0.001*	0.557	<0.001*	0.591	<0.001*
DASS-Depression	0.543	<0.001*	0.512	<0.001*	0.540	<0.001*
DASS-Anxiety	0.495	<0.001*	0.539	<0.001*	0.462	<0.001*
Daily Hassles	0.489	<0.001*	0.480	<0.001*	0.468	<0.001*
			Cannabis Users	**Cannabis Non-users**	**t**	**p-value**
Mean CAPE-P (SD)						
Males			1.85 (0.51)	1.66 (0.51)	1.271	0.207
Females			1.91 (0.45)	1.94 (0.46)	-0.265	0.792
Whole Sample			1.88 (0.48)	1.84 (0.49)	0.410	0.682

* Statistically significant at a level of p≤0.05.SD=Standard Deviation. r= Pearson's Correlation

Table 5
Regression coefficients for the separate linear regressions for females and males.

Variables	**B**	**Beta (β)**	**p-value**	**CI**
Females				
Daily Hassles	0.161	0.497	<0.001*	0.118, 0.205
Males				
Daily Hassles	0.184	0.661	<0.001*	0.142, 0.226

* Statistically significant at a level of p≤0.05.SD=Standard Deviation. CI=95% Confidence Intervals