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Author/s:

Caruana, E;Allott, K;Farhall, J;Parrish, EM;Davey, CG;Chanen, AM;Killackey, E;Cotton, SM

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Parrish Emma (Orcid ID: 0000-0003-1937-8145)
Chanen Andrew (Orcid ID: 0000-0003-4468-622X)
Caruana Emma (Orcid ID: 0000-0003-4706-8291)

FACTORS ASSOCIATED WITH VOCATION AT SERVICE ENTRY

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Factors Associated with Vocational Disengagement among Young People Entering Mental Health Treatment

Caruana, E.¹, Allott, K.^{2,3}, Farhall, J.^{1,4}, Parrish, E.M.^{2,3,6}, Davey, C.G.^{2,3,5}, Chanen, A.M.^{2,3,4,5}, Killackey, E.^{2,3} & Cotton, S.M.^{2,3}.

Affiliations:

¹Department of Psychology and Counselling, La Trobe University, Kingsbury Drive, Bundoora, Victoria, Australia, 3086.

²Orygen, The National Centre of Excellence in Youth Mental Health, 35 Poplar Road, Parkville, Victoria, Australia, 3052.

³Centre for Youth Mental Health, The University of Melbourne, Parkville, Victoria, Australia, 3052.

⁴North Western Mental Health, Victoria, Australia.

⁵Orygen Youth Health, 35 Poplar Road, Parkville, Victoria, Australia, 3052.

⁶Northeastern University, 360 Huntington Avenue, Boston MA, USA, 02115.

Corresponding Author:

Dr Emma Caruana, BA (Hons), DPsych (Clinical)

La Trobe University

Bundoora Victoria Australia 3083

Tel: 0421 428 506

Email: caruana.e@students.latrobe.edu.au

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Abstract

Objective

Most mental disorders have their onset by age 25, disrupting normative vocational engagement. Factors associated with vocational disengagement at first contact with specialist treatment are important for service planning. The aim of this paper was to investigate the association between theoretically important factors and vocational disengagement for youth entering mental health treatment.

Method

A file audit was used to extract vocational data of 145 young people aged 15-25 years entering treatment in 2011 at a public youth mental health service in Melbourne, Australia. Comparisons were made across three specialist programs for: psychosis ($n=50$), mood disorders ($n=52$), and borderline personality pathology ($n=43$). Individual characteristics were entered into univariate and multivariate logistic regressions to investigate their associations with vocational disengagement.

Results

Educational disengagement was associated with being older ($OR=4.38, p=.004$) and not living with parents ($OR=2.87, p=.038$). Unemployment and being NEET (Not in Education, Employment or Training) were both associated with not having commenced tertiary education ($OR=0.23, p=.022$; $OR=0.05, p=.002$; respectively). Being NEET was also associated with being older ($OR=6.18, p=.004$). Primary diagnostic grouping was not associated with vocational disengagement, once accounting for other factors.

Conclusions

The likelihood of vocational disengagement did not differ across disorder groups, implying that intervention should be 'transdiagnostic' and might best target education first, specifically post-secondary qualifications. Other domains or variables not measured in this study are also likely to be important, and this might include young people's support systems and symptom severity. Qualitative studies may be useful for exploring further factors relevant to vocational engagement.

Introduction

Seventy-five percent of mental disorders have their onset by age 25 (Kessler et al., 2005), disrupting the normative adolescent and young adult tasks of educational attainment and transition to the workforce (i.e., vocational engagement). Impaired vocational engagement is well documented in first-episode psychosis (FEP): approximately 40-50% of young people are unemployed when they first seek help (Cotton et al., 2017; Fraser, Berger, Killackey, &

McGorry, 2006; Marwaha & Johnson, 2004), and less than one-third have completed secondary school (Killackey, Jackson, & McGorry, 2008). Emerging evidence suggests vocational disruption occurs in other youth-onset mental disorders, including major depression and borderline personality disorder (BPD; Caruana, Farhall, et al., 2017; O’Dea et al., 2016; Sio, Chanen, Killackey, & Gleeson, 2011; Waghorn, Chant, Lloyd, & Harris, 2011). Among a diagnostically mixed sample of youth with severe mental illness, 33% were ‘Not in Education, Employment or Training’ (NEET), compared with 9% of general population peers (Caruana, Farhall, et al., 2017). Vocational disengagement is a self-reported area of treatment need (Nuechterlein et al., 2008; Ramsay et al., 2011), that limits future vocational prospects and attainment (Waghorn & Lloyd, 2005), contributes to a downward trajectory towards poverty and social isolation (Dewa, Trojanowski, Cheng, & Loong, 2012) and increases economic costs (World Health Organisation, 2011). Identifying factors associated with vocational disengagement at first contact with specialist mental health treatment by delineating for whom a focus on vocational support is most needed and prompting programmatic attention to those factors.

Few studies have focused on factors associated with youth vocational disengagement. Most have focused on youth with FEP (e.g., Cotton et al., 2017; Dewa et al., 2012; Tapfumaneyi et al., 2015), with factors such as substance use and poor vocational history being significant. However, given the evidence for equivalent levels of vocational disruption in other mental illnesses (Caruana, Cotton, et al., 2017), understanding vocational disengagement in youth needs

to move beyond psychosis. In a mixed diagnostic cross-sectional study in primary mental healthcare, O'Dea et al. (2014) found that youth who were NEET were more likely to be older males with a criminal history and higher levels of depression. In a similar study, Lee et al. (2017) found that among those with a mood or psychotic disorder only cognitive dysfunction was associated with NEET status at two year follow-up.

There are no specific models of vocational disengagement for mental illness. However, Harvey and Strassnig (2012) have proposed a general model of everyday disability, including vocational disability, for those with chronic schizophrenia. The model proposes that disability results from a wide range of domains, including: demographic factors (e.g., age, sex), cognition (e.g., learning, attention), functional capacity (skills underling functional success), social cognition (cognitive skills relating to social functioning), symptoms (e.g., positive and negative symptoms, depression), environmental factors (e.g., financial and familial resources, disability benefits), and health status (e.g., obesity, smoking). To our knowledge, no study has comprehensively explored this range of factors associated with NEET among a youth mental health population. Furthermore, educational outcomes have not been examined separately to employment, which is critical in youth where education might be the primary vocational role.

The aim of this study was to identify associations between the factors proposed in Harvey and Strassnig's (2012) model and vocational disengagement (both employment and education) in young people with severe mental illness at entry to a specialist tertiary youth mental health service. The domains of interest included demographic characteristics (sex and age), clinical

presentation, health status, functional capacity, cognitive functioning and primary diagnostic grouping. We hypothesized that each domain in the model would be associated with vocational disengagement and that primary diagnostic grouping would not be associated with vocational disengagement over and above these domain variables.

Method

Study Design

This was a cross-sectional cohort design, where we audited service entry data in clinical files from Orygen Youth Health (OYH), a tertiary public youth mental health program, which services the north-western areas of Melbourne, Australia. Files contain information from high-quality assessments by trained clinicians. The Melbourne Health Human Research Ethics Committee approved the project (QA2015097).

Participants

Participants were 15-25 year olds who registered for the first time as a client of OYH in 2011. Participants attended: the Youth Mood Clinic (YMC) clinic (criteria were scoring 15 or more on the Patient Health Questionnaire-9 (Kroenke & Spitzer, 2002)), the FEP clinic (criteria was experiencing a current psychotic episode); or the BPD pathology clinic (>3 Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) BPD criteria (American Psychiatric Association, 2000)). YMC and BPD pathology clinics also have criteria of having moderate-high risk to self and/or others, and/or poor functioning (this is judged by the clinical intake team on a

case-by-case basis). Data were obtained as part of a broader research program, from a file audit of 145 files (50 from FEP clinic; 45 from BPD pathology clinic; 50 from YMC; for detailed methodology see Caruana, Cotton, et al., 2017).

Materials

A file audit tool was developed and piloted to systematically assess clinical files for pertinent information from various sources (registration form, risk assessment, in-depth assessment, outcome measures). Variables were either directly extracted from files or coded based on descriptive information. A 10% subset of files were coded by a second rater to check for errors and determine interrater reliability.

Variables of Interest. Three vocational disengagement dependent variables (education, employment and NEET), and various independent variables consistent with the Harvey and Strassnig (2012) model were extracted (Table 1).

Procedure

Lists of all clients first registered with OYH in 2011 were accessed. Stratification by age (15-18 years and 19-25 years) was undertaken because normative tasks differ across age groups, being high school and higher education/work, respectively. Sex stratification was undertaken to ensure equal representation because of potential differences between diagnoses (e.g., more males than females experience psychosis), with Australian population data indicating women have higher educational attainment and lower rates of labour force participation than men (Workplace

Gender Equality Agency, 2014). Additionally, the psychosis program had two streams based on geographical region, and this was a further stratification. An equal number of files per program was sought to ensure data were representative of all OYH clients. Stratification was completed by Health Information Services, and a random sample extracted for each stratum using IBM® SPSS® Statistics Version 22. The first author reviewed all files. For variables coded based on descriptive information from files, 10% of files were coded by two independent raters (EC and EP).

(INSERT TABLE 1)

Statistical Analysis

IBM® SPSS® Statistics Version 22 was used for data analyses. The Missing Value option was used to assess patterns of missing data. Chi-square (χ^2) analyses compared those who were and were not missing data on key variables such as age and sex. Cohen's Kappa (κ) statistic determined interrater reliability.

A series of binary logistic regression models determined which independent variables were associated with vocational disengagement variables. Exploratory univariate analyses identified independent variables associated with vocational variables at the $p < .10$ level (Tabachnick & Fidell, 2007), which were then entered into the final hierarchical multivariate models. The first block entered included control demographic variables of age and sex, as vocational disengagement varies by age and sex (Caruana, Farhall, et al., 2017). Variables

identified in univariate analyses were then entered in subsequent blocks sequentially: demographic, clinical presentation, health, functional capacity and cognitive functioning. *Primary diagnostic grouping* was the last block entered, to determine whether diagnostic grouping made a unique contribution over and above other predictors. Deviation planned contrasts were conducted with the FEP group as the reference category; to see whether YMC and BPD had as severe vocational disengagement as FEP. For final multivariate models, Pearson criterion omnibus F test determined fit, Nagelkerke pseudo R^2 measured amount of variance explained, and percentage of correct classification was examined. For individual predictors the adjusted OR and 95% CI were derived, using the Wald statistic (z) to determine significance.

Results

Sample Characteristics

The sample comprised 145 15-25 year olds (FEP $n=50$; YMC $n=50$; and BPD $n=45$). Many lived at home with parents and more than half used substances, half were taking psychotropic medication, and over half had had a previous hospital admission (Table 2).

(INSERT TABLE 2)

Missing Data

For *disengaged from education* and *unemployed* there were high proportions of missing data (9.7% and 30.3%, respectively). Missingness for these variables was related to age. For education disengagement, 15-18 year olds had less missing data than expected (1.4%), and 19-25 year olds had more missing data than expected (17.3%). For employment disengagement the pattern was the opposite, 15-18 year olds had more missing data than expected (51.4%), and 19-25 year olds had less missing data than expected (10.6%). When education and employment were combined (NEET), missingness was unrelated to sex or age.

Inter-Rater Reliability

Estimates obtained for inter-rater reliability of variables coded from qualitative information indicated 'almost perfect agreement' (Viera & Garrett, 2005) for all variables (Table 1).

Variables Associated with Disengagement from Education

Univariate comparisons indicated that disengagement from education was associated with being older (19-25 versus 15-18 years), not living with parents, having a criminal history, using tobacco, cannabis or other illicit substances, and abusing substances (Table 2). These variables were then entered into a sequential multivariate logistic regression model. Being older ($OR=4.38$, $p=.004$) and not living with parents ($OR=2.87$, $p=.038$) were significantly related to disengagement from education (Table 3). Primary diagnostic grouping did not contribute significantly to the model ($\chi^2(2)=2.82$, $p=.244$). The comparison of the final model against the constant-only model was statistically significant, $\chi^2(10)=37.36$, $p<.001$, indicating that the

predictors reliably distinguished between those who were engaged and disengaged from education. The explained variance in education status was modest (Nagelkerke $R^2=0.38$). The final model correctly classified 69.4% of those disengaged from education and 75.0% of those engaged in education (overall 72.6% correct classification).

(INSERT TABLE 3)

Variables Associated with Unemployment

In exploratory univariate analyses (Table 2), being born overseas and not having commenced tertiary education were associated with being unemployed. These variables were then entered into a sequential multivariate logistic regression model. In the final model one variable was associated with unemployment: not having commenced tertiary education ($OR=0.23$, $p=.022$; Table 3). Primary diagnostic grouping in the last block did not add significantly to the model ($\chi^2(2)=2.11$, $p=.349$). The comparison of the full model against the constant-only model was not statistically significant, $\chi^2(7) = 11.41$, $p=.122$, indicating that the predictors did not reliably distinguish between those employed and unemployed. The explained variance in employment status was weak, with Nagelkerke $R^2 = 0.16$. The final model correctly classified 68.1% of those unemployed and 59.5% of those employed (overall 64.0% correct classification).

Variables Associated with NEET

Univariate comparisons indicated that NEET status was associated with being older (19-25 versus 15-18 years), being born overseas, using tobacco, using cannabis, using other illicit

substances, abusing substances, and not having commenced tertiary education (Table 2). The final model found an overall effect of educational attainment (Wald $\chi^2(2)=10.19$, $p=.006$), with planned contrasts indicating not having commenced tertiary education ($OR=0.05$, $p=.002$; Table 3) was significantly related to NEET. Older age ($OR=6.18$, $p=.004$) was also significantly related to NEET. Again, primary diagnostic grouping in the last block did not add significantly to the model ($\chi^2(2) = 2.47$, $p=.291$). The comparison of the full model against the constant-only model was statistically significant, $\chi^2(11)=26.61$, $p=.005$, indicating that the predictors reliably distinguished between those engaged in any vocational activity and those who were NEET. The explained variance in overall vocational status was modest, with Nagelkerke $R^2 = 0.31$. The final model correctly classified 34.5% of those who were NEET and 90.7% of those engaged in any vocational activity (overall 76.5% correct classification).

Discussion

We explored variables associated with vocational disengagement among youth with severe mental illness entering specialist public mental health treatment. This extends existing FEP literature by: including additional diagnoses; separately examining disengagement from education, employment, and NEET; and, basing the investigation on a model of disability (Harvey & Strassnig, 2012). Our hypotheses were only partially supported. Consistent with the model, some demographic and functional capacity variables were associated with vocational disengagement: demographic factors associated with education, and both demographic and functional capacity domains associated with NEET status. However, none of the clinical

presentation, health, and cognitive functioning domain variables were associated with vocational disengagement. Primary diagnosis was not significantly associated with disengagement from education, unemployment, or NEET. Independent variables associated with vocational disengagement had weak to moderate explanatory power, indicating that there are other variables not measured in the current model which are likely to be important.

Education

Being older and not living with parents were both associated with disengagement from education. The greater likelihood of 15-18 year olds being in education than 19-25 year olds is unsurprising given education is the developmentally normative task for this age group. Not living with parents was associated with education disengagement, which is a novel finding. This accords with a review of parental support and pupil achievement for children and adolescents, which found that parental involvement at home has a significant positive effect on youth educational achievement and adjustment, above all other variables (Desforges & Abouchar, 2003). It suggests that additional educational support may be needed for youth living out of home who present for mental health treatment.

Employment and Overall Vocational Status

Not having commenced tertiary education was associated with unemployment and NEET status, and older age was also associated with being NEET. No other independent variables were significant. There was poor predictive power for overall vocational status (correctly classifying 34.5% of NEET, cf. 69.4% of educationally disengaged and 68.1% unemployed); and for

unemployment (the final model was not significantly different from the constant-only model). Older age being associated with NEET status is consistent with O'Dea and colleagues' (2014) mixed diagnostic sample. It might reflect the competitive nature of post-secondary education and employment for 19-25 year-olds, whereas for younger people (15-18 years) completing secondary education is open to everyone of school age. The finding that educational attainment was associated with unemployment and NEET status in a mixed diagnostic sample is novel (Lee et al., 2017; O'Dea et al., 2014). Previous FEP research has reported that poor educational attainment was associated with unemployment and NEET status (Cotton et al., 2017; Dewa et al., 2012; Goulding, Chien, & Compton, 2010; Norman et al., 2007; Tapfumaneyi et al., 2015). On the one hand, our diagnostic mix was more comparable to research on mixed diagnostic samples than to FEP research; though on the other, our sample's illness severity (tertiary mental health) was more comparable to FEP samples than to mixed diagnostic samples (primary mental health). Therefore, educational attainment might only be an important factor among youth with greater illness severity.

Primary Diagnostic Grouping

Primary diagnostic grouping was unrelated to disengagement from education, unemployment and NEET across univariate and multivariate analyses. A clear implication is that services need to attend to vocational disengagement among youth with major depression and borderline personality disorder pathology as much as they do among those with FEP.

Clinical Presentation, Cognitive Functioning, and Health

Across all models, neither clinical presentation, nor cognitive functioning, nor health factors were associated with vocational disengagement. Differences in variables used compared with previous research might partly explain the discrepancy between our findings and findings from past research. Clinical presentation factors have been associated with vocational disengagement in studies utilising clinical measures of symptoms and symptom severity (e.g., Lee et al., 2017; O'Dea et al., 2014; Stouten, Veling, Laan, van der Helm, & van der Gaag, 2017). We used service use indicators of severity of clinical presentation which might be less relevant than specific symptoms and symptom severity. Furthermore, cognition has previously been found to be significantly associated with youth vocational functioning when measured objectively (e.g., Chang et al., 2014; Lee et al., 2017; Stouten et al., 2017). Our measure was a simple yes/no clinical judgement of cognitive deficit, which may have been insensitive. The absence of a relationship between health factors (substance use-related, medication and physical health) and disengagement is also inconsistent with past research linking substance use with vocational disengagement (Cotton et al., 2017; Dickerson et al., 2007; O'Dea et al., 2014). However, past research measured problematic substance use, whereas only one of our measures assessed this, with the remainder measuring any use over the past 3 months. A lack of association between medication and physical health with vocational disengagement might reflect the cohort being young people first entering specialist mental health treatment, for whom these factors might be less relevant compared with older, more chronic cohorts (cf. Harvey and Strassnig). Given the differences in measures between the current study and past research, it

might be that the domains proposed by Harvey and Strassnig are still important, however need to be measured face-to-face using comprehensive, objective measures.

Limitations

Our cross-sectional data identifies associations but prevents conclusions about causality of relationships, which is important information for informing interventions. We had a high proportion of missing data (employment: 44 out of 145 files; education: 14 out of 145 files). Cases with no information recorded on employment or education might be due to them not being engaged in the activity. Consequently, our data might represent a conservative assessment of vocational disengagement. With only two files having missing data for both employment and education, and missingness associated with age, the most likely explanation of the missing data is that the clinician did not deem education or employment as relevant to record when it was not the developmentally normative task of an individuals' age group. Our small sample size meant that multivariate regression analyses were run with less than the recommended 15 cases per independent variable (Tabachnick & Fidell, 2007). Future research with larger sample sizes is needed, and the inclusion of continuous predictors would enrich findings. A final limitation is that our file audit did not identify a variable for measurement of the social cognition domain of the Harvey and Strassnig model.

Conclusions and Implications

Unemployment and NEET status were associated with not having commenced tertiary education, implying that vocational intervention may do well to target education first, with a

focus on post-secondary qualifications. Likelihood of disengagement from education, employment, or overall vocational status was no different across disorder groups, suggesting vocational disengagement needs to be assessed and treated beyond FEP, for youth with major depression and BPD pathology. Only half the domains of Harvey and Strassnig's model contributed significantly using the available variables, and there was poor predictive power, suggesting other domains or variables not measured in this study might be more important. It may be that youth have more reliance on support systems around them compared to adults (e.g., living with parents increasing likelihood of educational engagement), thus future research could extend the model to investigate this. Qualitative studies exploring the experience of individuals with a range of diagnoses, ages and family supports may be an additional way to identify further factors relevant to vocational disengagement in youth with mental illness.

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Table 1

Details of independent and dependent variables, including names, values, source, and inter-rater reliability

| Variables | Values | Extracted directly from file? ^a | Inter-rater reliability | |
|---|----------------------------|--|-------------------------|-------------------|
| | | | Cohen's κ | <i>p</i> value |
| Dependent Variables | | | | |
| <i>Vocational Disengagement</i> | | | | |
| Disengaged from education | yes/no | no | 0.93 | <i>p</i> <.001*** |
| Unemployed | yes/no | no | 1.00 | <i>p</i> <.001*** |
| NEET | yes/no | no | 1.00 | <i>p</i> <.001*** |
| Independent Variables | | | | |
| <i>Demographics</i> | | | | |
| Age | 15-18years/ 19-25 years | yes | - | - |
| Sex | male/female | yes | - | - |
| Born overseas | yes/no | yes | - | - |
| Living with parents | yes/no | yes | - | - |
| Receiving government benefit ^d | yes/no | yes | - | - |
| Criminal history | yes/no | yes | - | - |
| Neighbourhood SES | 1 to 10 ^b | no ^c | - | - |
| <i>Clinical presentation</i> | | | | |
| Legal status | voluntary/involuntary | yes | - | - |
| Substance use diagnosis | yes/no | yes | - | - |
| Presentation(s) to ED | yes/no | no | 1.00 | <i>p</i> <.001*** |
| Hospital Admission(s) | yes/no | no | 1.00 | <i>p</i> <.001*** |
| Psychotropic medication | yes/no | no | 1.00 | <i>p</i> <.001*** |
| <i>Health status</i> | | | | |

| | | | | |
|---|---|-----|------|-----------|
| Physical illness | yes/no | yes | - | - |
| Non-psychotropic medication | yes/no | no | 1.00 | p<.001*** |
| Alcohol use | yes/no | no | 0.93 | p<.001*** |
| Tobacco use | yes/no | no | 0.93 | p<.001*** |
| Cannabis use | yes/no | no | 0.93 | p<.001*** |
| Other illicit substance use | yes/no | no | 0.93 | p<.001*** |
| Substance abuse | yes/no | yes | - | - |
| <i>Functional capacity</i> | | | | |
| Educational attainment | completed year 7-10/ completed year 11-12/ tertiary commenced or completed | yes | - | - |
| Problems with relationships | yes/no | yes | - | - |
| Problems with ADLs | yes/no | yes | - | - |
| <i>Cognitive performance</i> | | | | |
| Cognitive deficit | yes/no | yes | - | - |
| <i>Primary diagnostic grouping</i> | | | | |
| Primary diagnostic grouping ^e | FEP MOOD BPD | yes | - | - |

Note. NEET = Not in Education, Employment or Training; SES = socio-economic status; ED = emergency department, were not subsequently admitted to hospital; ADLs = activities of daily living; FEP= first-episode psychosis; MOOD = mood disorder; BPD = BPD pathology; ^a = variables not directly extracted from file were coded based on descriptive information extracted from files, unless otherwise indicated; ^b = lower scores indicate more economic and social disadvantage and less advantage, and higher scores indicate a lack of disadvantage and greater advantage; ^c = Postcodes were extracted directly from files. For each postcode we allocated the respective Index of Relative Socio-Economic Advantage and Disadvantage, which was obtained from the 2011 ABS dataset Socio-Economic Indexes For Areas which was based on information from the Census (Australian Bureau of Statistics, 2012). From this we created the variable *neighbourhood SES*; ^d = receiving government benefit was not included in analyses because receipt of government benefit is more

likely a consequence rather than a predictor of vocational disengagement for young people first entering specialist mental health treatment; ^e = primary diagnostic grouping based on clinic attended; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Table 2

Frequencies of participant characteristics, and odds ratios derived from initial exploratory univariate logistic regression models

| Participant Characteristics | | Overall Sample n=145 | Disengaged from education ^b | | Unemployed ^c | | NEET ^d | |
|-------------------------------------|-------|----------------------------|---|---------------------|-------------------------|-------------------|-------------------|-------------------|
| | | | OR | <i>p</i> value | OR | <i>p</i> value | OR | <i>p</i> value |
| Demographic | | | | | | | | |
| Age | | | | | | | | |
| 15-18 years ^a | % (n) | 48.3 (70) | | | | | | |
| 19-25 years | % (n) | 51.7 (75) | 4.46 | < .001 [^] | 0.86 | .729 | 2.49 | .014 [^] |
| Sex (% female) | % (n) | 60 (87) | 0.57 | .120 | 1.07 | .875 | 0.74 | .411 |
| Born overseas (% yes) | % (n) | 21.4 (30) | 1.64 | .282 | 2.82 | .052 [^] | 3.24 | .006 [^] |
| Not living with parents (% yes) | % (n) | 36.4 (52) | 2.95 | .005 [^] | 1.04 | .932 | 1.59 | .210 |
| Neighbourhood SES | M(SD) | 5.01 (2.46) | 0.95 | .449 | 1.04 | .663 | 0.97 | .646 |
| Government benefit (% yes) | % (n) | 21.8 (27) | - | - | - | - | - | - |
| Criminal History (% yes) | % (n) | 14.2 (19) | 3.52 | .027 [^] | 0.83 | .744 | 1.92 | .200 |
| Clinical Presentation | | | | | | | | |
| Presentation(s) to ED (% yes) | % (n) | 30.8 (32) | 1.39 | .466 | 0.60 | .317 | 0.75 | .538 |
| Hospital Admission(s) (% yes) | % (n) | 66.7 (70) | 1.07 | .883 | 1.46 | .460 | 1.84 | .200 |
| Psychotropic medication (% yes) | % (n) | 51.2 (66) | 1.74 | .138 | 1.13 | .771 | 1.63 | .196 |
| Legal Status (% involuntary) | % (n) | 11.9 (15) | 1.29 | .668 | 1.07 | .922 | 1.05 | .931 |
| Substance Use Diagnosis (% yes) | % (n) | 16 (23) | 1.87 | .207 | 1.05 | .920 | 1.71 | .251 |
| Health | | | | | | | | |
| Physical illness (% yes) | % (n) | 7.1 (10) | 0.89 | .862 | 1.22 | .800 | 2.23 | .226 |
| Non-psychotropic medication (% yes) | % (n) | 22.5 (29) | 1.67 | .262 | 0.82 | .696 | 1.20 | .672 |
| Alcohol use (% yes) | % (n) | 65.2 (90) | 1.79 | .123 | 0.58 | .226 | 1.03 | .947 |
| Tobacco use (% yes) | % (n) | 52.6 (71) | 3.55 | .001 [^] | 0.81 | .612 | 2.51 | .023 [^] |

| | | | | | | | | |
|--|-------|------------|------|-------------------|------|-------------------|------|-------------------|
| Cannabis use (% yes) | % (n) | 40.7 (57) | 3.02 | .003 [^] | 0.94 | .871 | 2.16 | .039 [^] |
| Other illicit substance use (% yes) | % (n) | 29.1 (41) | 3.85 | .001 [^] | 0.88 | .768 | 1.96 | .085 [^] |
| Substance abuse (% yes) | % (n) | 36.2 (51) | 2.69 | .009 [^] | 0.98 | .970 | 1.87 | .093 [^] |
| Functional capacity | | | | | | | | |
| Educational Attainment | | | | | | | | |
| Secondary Year 7-10^a | % (n) | 42 (58) | | | | | | |
| Secondary Year 11-12 | % (n) | 35.5 (49) | 0.70 | .372 | 0.73 | .519 | 1.14 | .747 |
| Tertiary commenced/complete | % (n) | 22.5 (31) | 0.87 | .745 | 0.36 | .038 [^] | 0.27 | .024 [^] |
| Problems with relationships (% yes) | % (n) | 77.5 (110) | 1.23 | .630 | 0.50 | .205 | 0.77 | .550 |
| Problems with ADLs (% yes) | % (n) | 40.8 (58) | 1.41 | .336 | 0.96 | .916 | 1.57 | .219 |
| Cognitive performance | | | | | | | | |
| Cognitive deficit (% yes) | % (n) | 13.9 (19) | 1.48 | .476 | 1.27 | .700 | 1.75 | .268 |
| Primary Diagnostic Grouping | | | | | | | | |
| Psychosis^a | % (n) | 34.5 (50) | | | | | | |
| BPD pathology (vs psychosis) | % (n) | 31 (45) | 0.79 | .352 | 0.77 | .367 | 0.69 | .172 |
| Mood disorder (vs psychosis) | % (n) | 34.5 (50) | 0.90 | .667 | 0.88 | .636 | 0.77 | .319 |

Note. SES = socio-economic status; ED = emergency department, were not subsequently admitted to hospital; BPD = borderline personality disorder; ADLs = activities of daily living; CI = confidence interval; LCI = lower confidence interval; UCI = upper confidence interval; ^a= reference category; ^b= Engaged in education is coded as 0, and disengaged from education is coded as 1; ^c= Employed is coded as 0, and unemployed is coded as 1; ^d= Engaged in employment and/or education is coded as 0, and NEET (not in employment, education or training) is coded as 1; [^]= $p < 0.10$

Table 3

Odds ratios derived from final three sequential multivariate logistic regression models indicating which participant characteristics are associated with vocational disengagement at service entry

| Participant Characteristics | Disengaged from Education ^b | | | | Unemployed ^c | | | | NEET ^d | | | | | |
|--|--|--------------|-------|----------------|-------------------------|--------------|------|----------------|-------------------|--------------|-------|----------------|--------|------|
| | OR | 95% CI of OR | | <i>p</i> value | OR | 95% CI of OR | | <i>p</i> value | OR | 95% CI of OR | | <i>p</i> value | | |
| | | LCI | UCI | | | LCI | UCI | | | LCI | UCI | | | |
| Control | | | | | | | | | | | | | | |
| Age 19-25 years (vs 15-18 years) | 4.38 | 1.60 | 11.95 | .004** | 1.27 | 0.42 | 3.87 | .678 | 6.18 | 1.81 | 21.13 | .004** | | |
| Sex (% female) | 0.52 | 0.18 | 1.51 | .231 | 1.53 | 0.52 | 4.54 | .441 | 0.93 | 0.30 | 2.89 | .899 | | |
| Demographic | | | | | | | | | | | | | | |
| Born overseas (% yes) | - | - | - | - | 2.68 | 0.74 | 9.68 | .131 | 2.53 | 0.68 | 9.41 | .165 | | |
| Not living with parents (% yes) | 2.87 | 1.06 | 7.80 | .038* | - | - | - | - | - | - | - | - | | |
| Criminal History (% yes) | 1.56 | 0.34 | 7.03 | .566 | - | - | - | - | - | - | - | - | | |
| Health | | | | | | | | | | | | | | |
| Tobacco use (% yes) | 2.45 | 0.81 | 7.44 | .114 | - | - | - | - | 1.94 | 0.53 | 7.07 | .315 | | |
| Cannabis use (% yes) | 2.18 | 0.54 | 8.84 | .277 | - | - | - | - | 1.58 | 0.37 | 6.82 | .537 | | |
| Other illicit substance use (% yes) | 1.05 | 0.29 | 3.75 | .942 | - | - | - | - | 0.32 | 0.07 | 1.47 | .143 | | |
| Substance abuse (% yes) | 0.97 | 0.24 | 3.99 | .965 | - | - | - | - | 1.49 | 0.34 | 6.47 | .596 | | |
| Functional capacity | | | | | | | | | | | | | | |
| Educational Attainment | | | | | | | | .070 | | | | | .006** | |
| Secondary Year 11-12 (vs Yr 7-10) | - | - | - | - | 0.74 | 0.25 | 2.19 | .590 | 0.72 | 0.24 | 2.15 | .551 | | |
| Tertiary commenced/complete (vs Yr 7-12) | - | - | - | - | 0.23 | 0.07 | 0.81 | .022* | 0.05 | 0.01 | 0.33 | .002** | | |
| Primary Diagnostic Grouping | | | | .259 | | | | | .359 | | | | | .298 |

| | | | | | | | | | | | | |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| BPD pathology (vs psychosis) | 0.54 | 0.24 | 1.20 | .132 | 0.67 | 0.30 | 1.47 | .317 | 0.55 | 0.22 | 1.39 | .204 |
| Mood disorder (vs psychosis) | 1.07 | 0.55 | 2.06 | .851 | 0.91 | 0.47 | 1.75 | .767 | 0.97 | 0.46 | 2.03 | .932 |

Note. EPPIC = Early Psychosis Prevention and Intervention Centre; HYPE = Helping Young People Early (emerging BPD) clinic; YMC = Youth Mood Clinic; CI = confidence interval; LCI = lower confidence interval; UCI = upper confidence interval; ^a= reference category; ^b= $n= 86$, engaged in education is coded as 0, and disengaged from education is coded as 1; ^c= $n= 77$, employed is coded as 0, and unemployed is coded as 1; ^d= $n= 95$, Engaged in employment and/or education is coded as 0, and NEET (not in employment, education or training) is coded as 1; - = N/A as variable was either 1) not significant at 0.01 level during exploratory univariate analyses and therefore not entered into final regression model; 2) primary diagnostic group did not significantly change model and therefore was not included in final model; or 3) educational attainment was not included in model for educational disengagement due to circularity; *= $p < .05$; **= $p < .01$