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Supported Education and Employment Services for Young People with Early Psychosis in OnTrackNY

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Abstract

Background: Psychosis onset commonly occurs at ages 16–30 when individuals are typically developing their education, employment and career trajectories. Coordinated specialty care (CSC) programs provide access to team-based early invention services for psychosis, including supported education and employment (SEE) services.

Aims of Study: We examine factors associated with the use of SEE services and whether use of SEE services (for supported education, supported employment, or both) is associated with education and employment participation within New York's CSC program, OnTrackNY.

Methods: Participants (n=779) enrolled in OnTrackNY from October 2013-September 2017. Assessments were collected by clinical staff at admission, quarterly, and at discharge. Logistic regression models were specified to identify factors associated with the probability of use of SEE specialist services during the first year of program participation, using generalized estimating equations with an autoregressive covariance structure to account for within-subject correlations over time. Logistic models were also used to predict whether use of SEE services in the prior quarter predict the probability of work and school participation in the subsequent quarter, respectively; these were analyzed cross-sectionally for each time period. Models controlled for other factors associated with work/school outcomes for young people with early psychosis.

Results: Participants who were younger, and who had lower rates of work/school participation had greater odds of SEE service use. Use of SEE services for education support in the first quarter among clients under age 23 is significantly associated with school enrollment in the second quarter and this continued through the first year. Use of SEE services for employment support in the first quarter is significantly associated with employment in the second quarter, but significant

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associations for employment were not found at later periods of participation. Use of SEE services for both education and employment support was inconsistently associated with subsequent school enrollment or employment in the subsequent quarter. Results were upheld when limiting the sample to those not receiving other SEE services.

Discussion: Rates of school and work participation increased over the duration of OnTrackNY participation. Clients with lower work/school participation were more likely to use SEE services. Supported education services are associated with greater school participation during the first year for clients under age 23. However, this association is only significant in the first quarter for supported employment services, and is inconsistent when examining those who used both simultaneously. It is possible that we may find significant associations for employment as the program continues. It is also possible that clients may end supported employment services after obtaining employment, while those in school may require ongoing services (e.g. to renew educational accommodations). Additionally, it is possible that OnTrackNY's supported education model, designed to adhere to IPS principles, may be helping clients stay in school. However, as this is an observational study with no control condition, we cannot say that OnTrackNY, or SEE services participation, caused the observed outcomes.

Implications for Further Research: Future research should continue to develop the evidence base for supported education services.

Early psychosis generally occurs in late adolescence/early adulthood (e.g. ages 16–30), often interrupting a developmental transition period when individuals are choosing their educational focus and career paths (1). Engagement in work and school is a high priority for young people with serious mental illnesses (SMI), including early psychosis (2). Individual Placement and Support (IPS) has been shown to be effective in improving employment rates for people with SMI, through over 25 randomized controlled trials (3). However, to date, studies have not demonstrated significant improvements in education participation (4, 5).

A key component of coordinated specialty care (CSC) programs serving young people with early psychosis is access to supported education and employment services. Many programs, including OnTrackNY, base their supported education and employment services on the IPS model. The principles of IPS have been reported elsewhere (6–8), and can be summarized to include obtaining competitive employment (and/or school enrollment) as quickly as possible, with job/school goals based on the client's preferences irrespective of level of symotmatology, and including substantial time in the community for relationship building with schools and employers, and continued support for clients once engaged in school/work. Coordinated specialty care (CSC) programs serving young people with early psychosis that offer supported education services in conjunction with IPS have found improvements in vocational participation. In the Recovery After an Initial Schizophrenia Episode Implementation and Evaluation Study (RAISE-IES), a CSC program that operated in Maryland and New York from 2011–2013 and is the predecessor to the OnTrackNY program, program participation was associated with an increase of 0.96 points per month [95% CI: 0.60–1.32] in MIRECC Global Assessment of Functioning (GAF) occupational score, which raised the scores to those approaching normal levels [scores range from 0–100, with a score of 70 in the normal range] (9), and the proportion of the 65 study participants who were ever employed or in school increased from 43% (n=28) at baseline to 68% (n=44)

after six months and 51 (78%) in the first twelve months; individuals who were working (either working only or working while in school) typically had better premorbid functioning and cognition, and lower symptoms than those who were not working (10). In an earlier analysis of OnTrackNY (October 2013-August 2016; n=325), rates of school/work participation rose from 40% at baseline to an estimated 80% after six months (11). In a separate CSC program, the RAISE Early Treatment and Prevention (RAISE-ETP) study, participants assigned to the intervention increased vocational participation 28% to 43% (while rising from 41% to 43% among the control group); this effect was mediated by the use of SEE services; as has been documented in their published findings, the populations of RAISE-IES and RAISE-ETP differed, for example RAISE-ETP participants typically had longer duration of untreated psychosis than RAISE-IES participants (12). A randomized controlled trial in Australia (EPPIC) of 146 young people with early psychosis found that those randomized to the IPS group had a significantly higher rate of being employed (71%) than the treatment as usual group (48%; p=0.025) at the end of the six-month intervention, but this difference was not seen at the 12-and 18-month follow up and there was no difference on educational outcomes (5).

Other studies have identified positive effects of early intervention services on vocational outcomes. A meta-analysis of 10 randomized clinical trials found that vocational participation increased for those receiving early psychosis intervention (all services, not specifically SEE services), relative to treatment as usual (RR, 1.13; 95% CI, 1.03–1.24; P = . 01) (13). A randomized trial of the Yale STEP program (which offered referrals to other existing supported education and employment services) found that intervention participants had higher rates of work/school participation (35/48, 73%) compared to the treatment as usual group (21/39; 53%, p=0.004) (14).

Previous studies have examined client characteristics affecting vocational outcomes. A systematic literature review found that vocational outcomes for young people with early psychosis were influenced by the individual's employment history, cognitive health, duration of untreated psychosis (DUP), symptoms, medication side effects, expectations for vocational activity, motivation and self-efficacy (15); as this was a literature review, studies varied on characteristics such as treatment or observation period. In an earlier analysis of the OnTrackNY program, baseline vocational participation, educational attainment, gender and race/ethnicity were associated with vocational outcomes (11). In an analysis of the EPPIC study, educational attainment, age, living situation, immigrant status, history of legal problems and history of substance use were associated with engaging in school or work at the time of treatment entry (16).

Despite the evidence on vocational outcomes from overall CSC participation, there has been limited information on the specific role of supported education services in improving educational attainment, particularly as supported education services are a relatively new component of supported employment services. The purpose of this study is to examine patterns of SEE service use, which clients are using SEE services, and the impact of SEE service use on vocational outcomes (school and work participation).

Methods

Participants and Study Design:

The design of OnTrackNY grew out of the RAISE-IES model and has been described previously (11, 17). Individuals receiving OnTrackNY services are aged 16–30 and experienced non-affective psychosis for at least one week but less than two years. OnTrackNY operates on a CSC model, which includes evidence-based psychosocial interventions and medication, by a multidisciplinary, recovery-oriented team. OnTrackNY sites are located in licensed outpatient clinics at community agencies, state-operated facilities, and community and academic hospitals in urban and suburban areas throughout NYS. OnTrackNY started with one site continued from the RAISE-IES study, to 21 sites statewide today and is continuing to grow. At the time of this study, teams were staffed by 3.5 full-time equivalents, including a team leader, licensed primary clinician(s), outreach and recruitment coordinator, supported education and employment specialist, prescriber, and nurse (11). The program model includes the expectation that clients will receive services for an average of two years, although individual client duration is based on client needs. However, at this time, OnTrackNY is a relatively new program, and relatively few clients have been enrolled for two years at this point. Thus, these analyses focus on one-year outcomes. This study includes assessment data from clients receiving services from the time OnTrackNY enrollment began (October 2013) through September 2017.

OnTrackNY’ s supported education and employment services:

OnTrackNY has designed the supported education and employment (SEE) services based on the evidence-based IPS model. Supported employment services are provided in accordance with the IPS supported employment model. Supported education services are designed to be based on the principles of IPS. With the inclusion of the SEE specialist in the team, SEE services are integrated into the treatment model. All participants are encouraged, but not required, to utilize SEE services as soon as they enroll, and all have access to SEE services throughout their participation. Services are geared toward client preferences, which may include support in finding work or enrolling in school, and the provision of ongoing support after job start or school enrollment. SEE specialists conduct outreach to schools, akin to IPS’s job development activities. SEE manuals can be found at (http://www.ontrackny.org/Resources).

Measures:

OnTrackNY clinicians submit client-level data at admission, quarterly, and at discharge. Demographic characteristics include race/ethnicity, age, gender, highest level of education completed at time of admission, and whether the client lives with their parents (mother and/or father). Time to intervention is the number of days from onset of qualifying psychotic symptoms to enrollment in OnTrackNY (converted to months for this analysis). Report of substance use includes any use of tobacco, alcohol, marijuana or other drugs in the previous 90 days. Antipsychotic medication use was operationalized as follows: clinician reported that the client appeared adherent (appeared to be taking at least 80% of the medication prescribed), non-adherent, or the client was not prescribed antipsychotic medication. Psychosis symptoms are measured using the MIRECC Global Assessment of Functioning

(GAF) symptom scale (18), as adapted for the RAISE-IES study (9), with a scale ranging from 0 to 100 (higher score indicates better functioning). Participation in school includes those who were enrolled in some education program, including high school, vocational training, college, or graduate study, either at admission or follow-up, full or part-time. Participation in work includes any paid employment, including competitive or non-competitive work, self-employment, or internship at admission or follow-up. Use of the SEE specialist is defined by meeting with the team's SEE specialist in the preceding quarter (not counting team meetings, brief hellos or brief introductions). The purpose of the meeting was subsequently characterized as focusing on employment only, education only, both or other (e.g. SEE outreach, benefits counseling, or assistance with identifying volunteer opportunities). This was assessed each quarter (e.g. a participant might use supported education only in the first quarter and then change their focus in the second quarter)). Consistent with IPS principles of client-led activities, clients determined the purpose of the meetings, but they could receive input from clinicians and others when choosing their goals.

Data Analytic Procedures:

Logistic regression models were specified to identify factors associated with the probability of use of SEE specialist services during the first year of program participation, using generalized estimating equations with an autoregressive covariance structure to account for within-subject correlations over time (10, 11). Bivariate comparisons were conducted with each covariate separately, and then simultaneously.

Logistic models were then used to predict whether use of supported education and employment in the prior quarter predicts the probability of work and school participation in the subsequent quarter. Models were analyzed separately for the use of supported education only, supported employment only, or both, on vocational participation in the subsequent quarter.

- Supported education only: We analyze the association between use of SEE services for education only in one quarter on school enrollment in the subsequent quarter. Thus, we examine the use of SEE services for education only in the first quarter of OnTrackNY participation on the odds of school enrollment in the subsequent quarter. In a second model, we examine this association after removing clients who are receiving SEE for employment support, to remove those who might not be seeking education services. The school enrollment results were reported for those under age 23 since those are the most common ages of school enrollment.
- Supported employment only: We analyze the association between use of SEE services for employment only on employment in the subsequent quarter. Thus, we examine the use of SEE services for employment only in the first quarter of OnTrackNY participation on the odds of employment in the subsequent quarter, . In a second model, we examine this association after removing clients who are receiving SEE for education.
- Both supported employment and education: We analyzed the association between the use of SEE services for both supported education and employment on the

odds of work or school participation in the subsequent quarter. Thus, we examine the use of SEE services for both work and school in the first quarter of OnTrackNY participation on the odds of either employment or school enrollment in the subsequent quarter.

- All models controlled for other factors that were specified above in the literature to be associated with vocational outcomes for young people with early psychosis (baseline school enrollment/employment, symptoms, program site, age, gender, race/ethnicity, educational attainment, medication adherence, substance use, living situation, legal history) (15, 16).

All analyses were run using Stata version 13.1. The NYS Psychiatric Institute (NYSPI) Institutional Review Board approved the study procedures.

Results

Baseline demographic characteristics are described in Table 1 (n=779). Average age was 21.03 years (SD 3.24), Seventy-four percent (n=574) of participants were male, 27% (n=209) were white, non-Hispanic, 36% (n=277) black, non-Hispanic, 28% (n=218) Hispanic and 10% (n=75) other. At baseline, 28% (n=218) had not completed high school, 19% (n=149) had a high school diploma/GED, 41% (n=318) had some college and 12% (n=94) had finished college. At baseline, 84% (n=654) lived with their mother or father, 9% (n=68) had a history of arrest, probation or parole, 51% (n=396) reported substance use in the past 90 days, 70% (n=545) were adherent with antipsychotic medications, 23% (n=181) were not adherent, or adherence was unknown, and 7% (n=53) had not been prescribed antipsychotic medications.

Figure 1 illustrates the sample included at each timepoint. Participants have follow up periods of variable lengths, depending on the time of enrollment. Of the 779 individuals included in this study, 634 (81%) were seen after the baseline assessment. 621 (79%) completed the first quarter assessment; the remaining 13 participants missed the first quarter assessment but had a later assessment. 283 (36%) had data up to 12-months, 142 (18%) were discharged/dropped-out before 12 months.342 (44%) were censored before 12 months (due to staggered enrollment).

Figure 2 illustrates when the first use of the SEE specialist occurred. Over the course of OnTrackNY participation, of the 634 participants who were seen after the baseline assessment, a total of 520 (520/634=82%) used the SEE specialist for supported education, supported employment, both, or other services. Of those, the vast majority began using the SEE specialist during their first quarter of participation; only 44 (6%) began using SEE services later in the first year, and only 3 (<1%) began receiving services after the first year.

Table 2 describes unadjusted rates of school and work participation and SEE service use at each quarter during the first year. At baseline, 41% (322/779) are either in school or work, rising to 75% (212/283) by the end of the first year. The largest increase in employment occurs during the first quarter of OnTrackNY participation, rising from 15% (117/779) at baseline to 36% (221/621) by the end of the first quarter. During the first quarter of

OnTrackNY participation, 76% (473/621) use the SEE specialist: 19% (121/621) for supported education services only during the first quarter, 28% (174/621) for supported employment services only, 26% (159/621) for both education and employment services, and 3% (19/621) for other services (e.g. seeking volunteer opportunities or outreach).

We first examine participant characteristics associated with SEE specialist use at any time during the first year of OnTrackNY participation. Baseline values were used because most clients who will use SEE services do so within the first quarter of OnTrackNY participation. In the multivariate model including all covariates together (Table 3), baseline work/school participation (OR=0.52 [0.37–0.73]), age (OR=0.91 [0.85–0.96]), and length of time in the program (OR=0.69 [0.62–0.76]) were associated with reduced odds of SEE service use. Additionally, we analyzed each covariate in a separate bivariate model. Bivariate models showed that individuals who were employed or enrolled in school at baseline had lower odds of SEE use (OR=0.61 [95% CI:0.45–0.81]), as did those who were not prescribed antipsychotic medication at baseline (OR=0.49 [0.27–0.91]); additionally, use of SEE services declined over time (highest in the first quarter of OnTrackNY participation) (OR=0.70 [0.64–0.78]). No significant associations were found for symptoms, age, gender, race/ethnicity, baseline educational attainment, time from onset into treatment, baseline substance use, living with parents, arrest history, or across program sites.

Next, we analyze the association between SEE service use for supported education only, supported employment only, and for both supported education and employment, on subsequent vocational participation. Models were stratified by age. In examining supported education, results were only significant for clients under age 23.

Table 4 examines the association between SEE service use for supported education services and school enrollment in the subsequent quarter. This analysis focused on clients under age 23, as these are the most common ages of school enrollment. For each quarter, SEE service use for supported education is associated with school enrollment in the subsequent quarter, in both the unadjusted models and the models adjusting for all covariates. We next remove those who were receiving SEE services for employment; results are consistent in quarters two and four. The association is only marginally significant in quarter three (p=0.057). Additionally, those who were enrolled in school at baseline and who were younger at baseline have higher odds of school enrollment in each quarter. No other covariates are consistently associated with odds of school enrollment. A sensitivity analysis examining school enrollment for all ages found consistent results.

Table 5 examines the association between SEE service use for supported employment services only and employment in the subsequent quarter. SEE service use for supported employment in the first quarter of OnTrackNY participation is associated with greater odds of employment in the second quarter (OR=2.74 [1.64–4.56] in the adjusted model). This remains consistent when removing those receiving SEE services for education (OR=4.18 [2.11–8.28]). However, this association is not significant in subsequent quarters. Being employed at baseline is significantly associated with greater odds of employment in each subsequent quarter. No other covariates are consistently associated with employment participation. As a sensitivity analysis, we stratified results for those under and over age 23,

and as results were consistent between the groups, the results from the full sample are reported here.

Table 6 examines the association between SEE service use for simultaneous supported education and employment on vocational participation in the subsequent quarter (either work or school). This association is inconsistent – only significant in the third quarter (OR=2.59 [1.29–5.20] in the adjusted model). Enrollment/employment at baseline is the only covariate significantly associated with subsequent work/school participation. As with the employment results, we conducted a sensitivity analysis stratifying by age, and as results were consistent, the full sample is reported here.

We also conducted a number of sensitivity analyses. First, in order to further assess the population who might, appropriately, not be seeking supported education or supported employment services, we excluded those who were employed full time or in school full time, respectively. Thus, we examined whether SEE supported education use was associated with subsequent school enrollment, excluding those who were in full time employment, and conversely, whether SEE supported employment use was associated with subsequent employment, excluding those who were enrolled in school full time. The results were consistent with the main results. As a second sensitivity analysis, we controlled for employment/education participation and all other covariates in the quarter prior to the onset of SEE services tested rather than at baseline (19). Since results were consistent, the models reported in Tables 4–6 control for baseline school/work participation, as this is consistent with prior research (5, 12, 19). Additionally, we examined those who were enrolled for the full year (n=283); results were consistent. We also excluded those who received Social Security disability benefits during the year and results were consistent; OnTrackNY enrollees have a low rate of Social Security disability receipt (20). We also examined stratifying by gender. Sensitivity analyses limited to males were consistent; due to the smaller numbers of females enrolled in OnTrackNY, models were unstable and several of the female-only models did not converge.

Discussion

Rates of school and work participation increased over the duration of OnTrackNY participation. Most participants use SEE services and most begin during their first quarter of OnTrackNY enrollment. Lower baseline work/school participation and younger age are associated with greater odds of SEE specialist use; this suggests that those who were more likely to need SEE services (e.g. those not in school or work) were more likely to use the SEE services. Moreover, use of SEE for supported education only is associated with greater odds of school enrollment throughout the first year of OnTrackNY participation, while the use of SEE for supported employment only is significant in the second quarter; the use of SEE for both services simultaneously is inconsistently associated with vocational participation (third quarter only). However, as this is an observational study with no control condition, with clients selecting into services, we cannot say that OnTrackNY, or the SEE services participation, caused the observed outcomes.

Despite the lack of causality, the associations show findings that warrant further investigation. The impact of supported education services is in contrast to some previous studies: a meta-analysis of eight early psychosis intervention programs found no significant effects of supported employment and education services on school enrollment (4), and RAISE-ETP did not find significant effects of their intervention on school enrollment (12), nor did a recent analysis of the EPPIC trial in Australia (5). However, a randomized controlled trial of an enhanced IPS model found significant improvements in work and school participation (83% in intervention group compared to 41% in the control group ($p<0.005$) (21). Moreover, the associations of SEE service use are only significantly associated in the first quarter with subsequent employment.

There are several possible explanations for the contrast between the supported education and supported employment findings in this study. First, it is possible that as the program continues, we will see significant effects for employment as well as education. Second, it is possible that clients who get jobs may end supported employment services while supported education services may require ongoing service use (e.g. to renew educational accommodations). Additionally, it is possible that OnTrackNY's supported education model, which is designed to adhere to IPS principles, may be helping clients to stay in school. Future research should examine whether the findings in this study remain consistent over time, as the OnTrackNY program grows, and as participants are observed for longer duration, and whether these (or other) possible explanations may explain the results.

Study limitations should be noted. As previously discussed, this is an observational study without a comparison group. In the absence of a control condition, analytical techniques such as instrumental variables may be used. However, in this case, valid instruments could not be identified. Thus, the observational nature of this study should be understood when interpreting the results. The study relies on clinical administrative data reported by the clinicians, rather than the clients themselves. OnTrackNY is a new and growing program model; many participants have not yet been observed for the full duration of their participation and some have left the program before optimal services were completed. In most cases, discharge before one year of services is premature, but research is ongoing to define and capture the "successful" program completion from premature dropout. In some cases, the estimated odds ratios are large, which may be due to small sample sizes; additional data collected over time would help to shed light on whether these estimates decrease over time. Future studies should examine whether the impact of OnTrackNY (and other early intervention programs) changes over time, the impact of treatment and social support in influencing outcomes, and examine outcomes after participants leave the program. The OnTrackNY program is located only in New York State.

As CSC services are growing in popularity, partially in response to state and federal funding initiatives, and younger people are receiving evidence-based vocational services, greater research is needed to establish how to provide supported education services in particular, to help clients achieve their goals.

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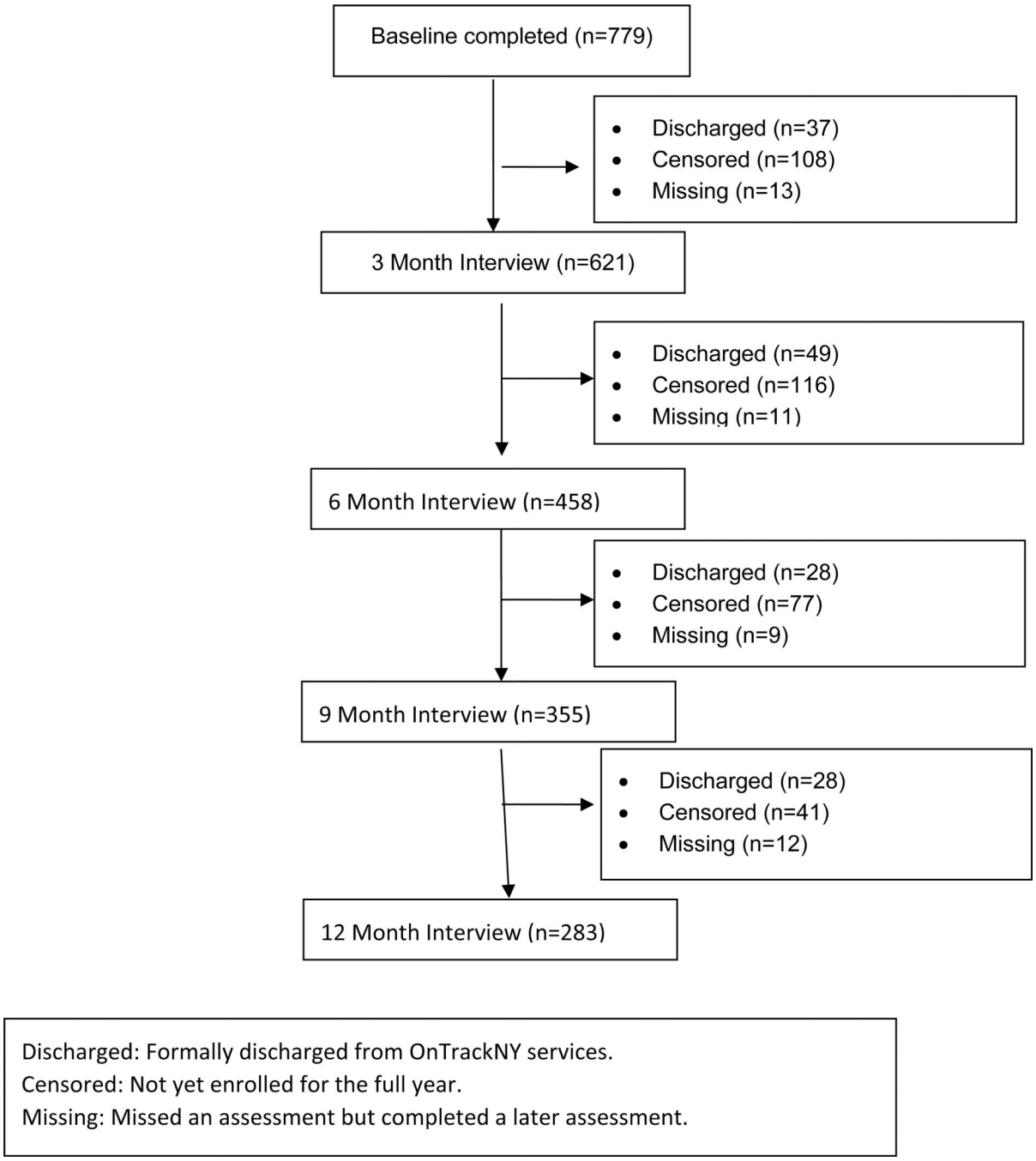

Figure 1.
OnTrackNY Enrollment In the First Year

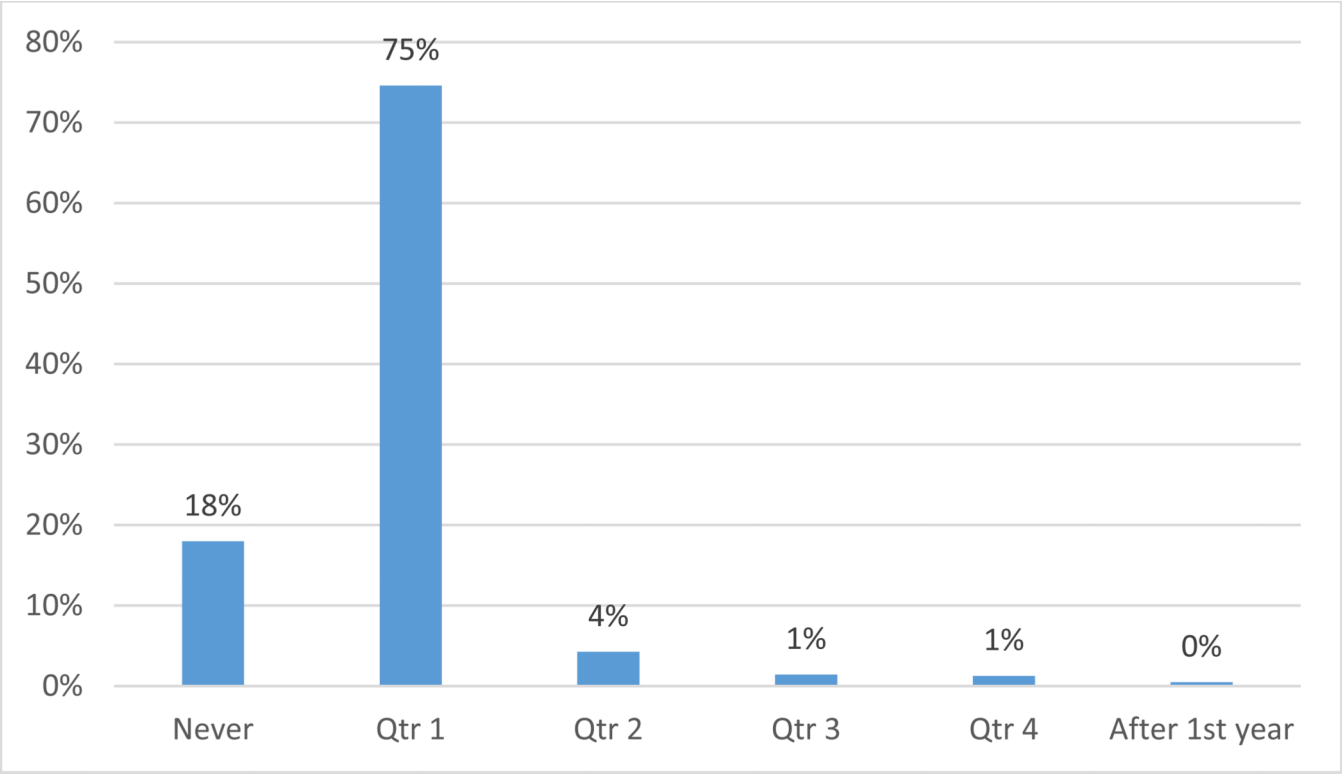

Figure 2.
First Time Use of SEE Specialist (n=634)

Table 1.

Baseline Characteristics (n=779)

	N (%)	Mean (SD)
Male	574 (74%)	
Age (years)		21.03 (3.24)
Race/ethnicity:		
White, non-Hispanic	209 (27%)	
Black, non-Hispanic	277 (36%)	
Hispanic	218 (28%)	
Other, non-Hispanic	75 (10%)	
Highest education at baseline:		
Less than high school	218 (28%)	
High school/GED	149 (19%)	
Some college	318 (41%)	
College graduate or higher	94 (12%)	
Time from onset (months)		7.71 (6.26)
MIRECC GAF Symptoms Score		30.65 (15.10)
Medication adherence (baseline		
Not adherent/unknown	181 (23%)	
Adherent	545 (70%)	
No meds prescribed	53 (7%)	
Substance use (baseline)	396 (51%)	
Live with parents (baseline)	654 (84%)	
History of arrest, probation or parole (baseline)	68 (9%)	

Table 2.

Work/School Participation and SEE Use, by Quarter

	Baseline (n=779)	**Q1 (N=621)**	**Q2 (N=458)**	**Q3 (N=355)**	**Q4 (N=283)**
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**
Any work/school participation	322 (41%)	388 (63%)	338 (74%)	264 (74%)	212 (75%)
Enrolled in school	244 (31%)	227 (37%)	199 (43%)	166 (47%)	133 (47%)
Employed	117 (15%)	221 (36%)	212 (46%)	158 (45%)	130 (46%)
Any Use of SEE Services (except brief hellos or introductions)	NA	473 (76%)	306 (67%)	222 (63%)	170 (60%)
Use of SEE Services for Supported Education only	NA	121(19%)	72 (16%)	52 (15%)	40 (14%)
Use of SEE Services for Supported Employment only	NA	174(28%)	105(23%)	81 (23%)	57 (20%)
Use of SEE Services for both Supported Employment and Education	NA	159(26%)	120(26%)	82 (23%)	71 (25%)
Use of SEE Services for other than supported employment or education	NA	19(3%)	9 (2%)	7 (2%)	2 (0.7%)

Table 3.

Predictors of SEES Use during the first year of OnTrackNY participation

	OR	[95%CI]
Education or Employment participation at baseline	**0.52**	**0.37–0.73**
MIRECC GAF Symptom at baseline	1.00	0.99–1.01
Age (baseline)	**0.91**	**0.85–0.96**
Male	1.16	0.81–1.65
Time Onset to Admission	1.01	0.98–1.03
Race/ethnicity (ref: non-Hispanic White)		
Black, non-Hispanic	1.13	0.77–1.66
Hispanic	1.44*	0.94–2.20
Other	0.97	0.56–1.67
Educational attainment at baseline: (ref: less than high school)		
HS/GED	1.40	0.89–2.21
Some college	1.17	0.78–1.75
College	1.47	0.77–2.83
Live with parent (mother or father) - baseline	0.79	0.49–1.26
Substance use - baseline	1.00	0.72–1.37
History of arrest, probation or parole - baseline	1.15	0.65–2.06
Antipsychotic Medication adherence at baseline (ref: not adherent)		
Adherent	0.89	0.59–1.33
Medications not prescribed	0.56*	0.30–1.07
Time in program	**0.69**	**0.62–0.76**
Program site	0.99	0.95–1.02

Bold indicates significance ($p<0.05$)

* indicates approaching significance ($p<0.10$). Includes participants in first year of participation.

Table 4:

Association between Use of SEE for Education Only and School Enrollment in Subsequent Quarter – Participants under age 23

	Q2			Q3			Q4		
	Unadj	**Adj**	**Without those using SEE for employment**	**Unadj**	**Adj**	**Without those using SEE for employment**	**Unadj**	**Adj**	**Without those using SEE for employment**
	OR 95% CI	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**
SEE use for education only, previous qtr	**5.442.98–9.94**	**4.772.26–10.08**	**5.041.81–14.03**	**3.271.63–6.57**	**3.201.36–7.49**	2.92 * 0.97–8.81	**4.832.03–11.50**	**7.792.58–23.52**	**11.962.53–56.51**
School enrollment, baseline	--	**4.802.48–9.30**	**4.541.51–13.62**	--	**3.641.73–7.66**	1.880.58–6.03	--	**4.631.83–11.72**	**5.111.13–23.01**
GAF symptoms, baseline	--	**1.021.00–1.04**	1.01 0.98–1.05	--	**1.031.01–1.05**	**1.051.00–1.09**	--	1.01 0.99–1.04	1.01 0.96–1.06
Program site	--	1.02 0.96–1.09	1.10 0.97–1.26	--	0.99 0.91–1.08	1.00 0.87–1.15	--	1.03 0.93–1.15	1.09 0.86–1.38
Age	--	**0.660.54–0.82**	**0.510.36–0.74**	--	**0.670.52–0.86**	**0.490.32–0.76**	--	**0.680.50–0.91**	**0.590.37–0.96**
Male (ref: not male)	--	**0.490.25–0.98**	0.44 0.14–1.32	--	0.80 0.36–1.74	1.13 0.34–3.70	--	**0.290.11–0.78**	0.26 * 0.05–1.24
Race/ethnicity (ref: white non-Hispanic)									
Black non-Hispanic	--	**0.440.21–0.93**	0.51 0.14–1.80	--	0.76 0.34–1.70	0.52 0.14–1.97	--	0.47 0.18–1.21	0.64 0.14–2.93
Hispanic	--	**0.370.16–0.83**	0.23 * 0.05–1.07	--	0.45 * 0.18–1.12	0.24 * 0.05–1.05	--	0.65 0.20–2.10	0.27 0.04–2.03
Other non-Hispanic	--	0.44 0.15–1.33	1.08 0.18–6.44	--	2.25 0.57–8.92	0.36 0.05–2.50	--	0.52 0.12–2.34	0.12 0.01–1.15
Educational attainment at baseline (ref: less than high school)									
High school/GED	--	0.40 * 0.16–1.00	0.60 0.13–2.77	--	0.60 0.22–1.65	0.70 0.14–3.48	--	0.56 0.16–2.02	0.45 0.05–4.03
Some college	--	0.85 0.38–1.91	1.06 0.27–4.12	--	1.33 0.50–3.52	5.67 * 0.94–34.36	--	1.37 0.43–4.30	2.34 0.31–17.77
College or more	--	1.14 0.17–7.78	--	--	1.08 0.11–11.11	7.70 0.16–376.69	--	0.41 0.02–10.87	4.30 0.13–138.20
Time from onset to admission	--	1.01 0.97–1.06	0.96 0.89–1.03	--	1.05 * 0.997–1.12	1.07 0.98–1.17	--	1.01 0.94–1.08	0.98 0.89–1.09
Antipsychotic Medication adherence at baseline (ref: not adherent or adherence unknown)									
Adherent	--	1.31 0.63–2.72	1.78 0.53–6.00	--	1.86 0.80–4.32	1.48 0.35–6.22	--	2.14 0.75–6.10	0.95 0.12–7.83
No medications prescribed	--	1.32 0.35–4.91	1.03 0.07–14.87	--	1.22 0.31–4.80	2.12 0.21–20.95	--	0.42 0.08–2.33	0.35 0.02–5.42
Used substances (baseline)	--	0.95 0.52–1.76	1.42 0.49–4.16	--	1.14 0.57–2.27	0.69 0.24–2.03	--	0.72 0.32–1.64	0.40 0.10–1.65

	Q2			Q3			Q4		
	Unadj	**Adj**	**Without those using SEE for employment**	**Unadj**	**Adj**	**Without those using SEE for employment**	**Unadj**	**Adj**	**Without those using SEE for employment**
	OR 95% CI	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**
Live with parents (baseline)	--	1.09 0.41–2.88	0.52 0.07–3.69	--	1.16 0.38–3.59	1.27 0.18–8.89	--	0.63 0.16–2.40	0.51 0.02–10.76
Legal history(baseline)	--	0.62 0.21–1.86	1.45 0.18–11.55	--	0.51 0.17–1.58	0.20 0.03–1.42	--	0.47 0.11–2.09	0.19 0.01–3.14

Bold indicates significance ($p<0.05$)

* indicates approaching significance ($p<0.10$).

Table 5:

Association between Use of SEE for Employment Only and Employment in Subsequent Quarter

	Q2			Q3			Q4		
	Unadj	**Adj**	**Without those who used SEE for education**	**Unadj**	**Adj**	**Without those who used SEE for education**	**Unadj**	**Adj**	**Without those who used SEE for education**
	OR 95% CI	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**
SEE use for employment only, previous qtr	**2.891.89–4.43**	**2.741.64–4.56**	**4.182.11–8.28**	1.09 0.66–1.82	0.72 0.37–1.39	0.95 0.44–2.09	1.08 0.61–1.90	1.06 0.55–2.06	1.28 0.58–2.81
Employment status, baseline	--	**7.573.47–16.51**	**8.903.33–23.79**	--	**10.683.94–28.99**	**14.834.11–53.47**	--	**8.142.53–26.16**	**23.133.63–147.34**
GAF symptoms, baseline	--	1.01 0.99–1.02	1.00 0.98–1.03	--	0.98 * 0.96–1.00	**0.970.94–0.997**	--	1.01 0.99–1.02	1.02 0.99–1.05
Program site	--	1.00 0.95–1.05	1.00 0.94–1.07	--	1.06 0.99–1.14	1.06 0.96–1.17	--	1.02 0.94–1.10	0.98 0.89–1.08
Age	--	1.03 0.95–1.13	1.04 0.92–1.17	--	0.96 0.87–1.07	0.92 0.79–1.06	--	1.06 0.94–1.19	0.99 0.85–1.14
Male (ref: not male)	--	**0.560.33–0.95**	0.52 0.24–1.15	--	**0.520.27–0.99**	0.39 * 0.15–1.03	--	0.52 * 0.26–1.04	0.84 0.32–2.21
Race/ethnicity (ref: white non-Hispanic)									
Black non-Hispanic	--	0.63 0.36–1.12	0.59 0.27–1.29	--	0.74 0.38–1.44	0.48 0.19–1.23	--	0.68 0.34–1.37	0.61 0.23–1.62
Hispanic	--	1.36 0.75–2.48	0.93 0.39–2.24	--	1.36 0.66–2.80	0.78 0.28–2.16	--	1.07 0.48–2.40	0.72 0.22–2.32
Other non-Hispanic	--	0.56 0.24–1.27	0.93 0.29–3.03	--	0.48 0.18–1.29	0.29 * 0.07–1.17	--	0.39 0.13–1.21	**0.140.03–0.75**
Educational attainment at baseline (ref: less than high school)									
High school/GED	--	1.61 0.80–3.21	0.90 0.32–2.56	--	1.98 0.87–4.54	1.62 0.48–5.42	--	1.43 0.59–3.44	2.06 0.59–7.18
Some college	--	**2.121.16–3.88**	1.54 0.60–3.93	--	**2.811.36–5.84**	1.86 0.60–5.81	--	1.79 0.83–3.86	2.01 0.67–5.99
College or more	--	2.05 0.73–5.73	1.02 0.26–3.92	--	**10.132.65–38.70**	**9.761.62–58.96**	--	2.83 0.74–10.91	4.94 * 0.95–25.62
Time from onset to admission	--	**0.960.92–0.99**	**0.930.88–0.98**	--	0.96 0.92–1.01	0.96 0.91–1.03	--	**0.940.90–0.99**	0.95 0.88–1.01
Antipsychotic Medication adherence at baseline (ref: not adherent or adherence unknown)									
Adherent	--	1.36 0.78–2.39	1.33 0.61–2.92	--	**1.991.00–3.94**	2.49 * 0.96–6.46	--	0.72 0.35–1.50	0.63 0.24–1.63
No medications prescribed	--	2.11 0.78–5.71	2.17 0.52–9.04	--	0.83 0.24–2.85	1.48 0.30–7.38	--	0.79 0.22–2.78	0.38 0.06–2.34

	Q2			Q3			Q4		
	Unadj	**Adj**	**Without those who used SEE for education**	**Unadj**	**Adj**	**Without those who used SEE for education**	**Unadj**	**Adj**	**Without those who used SEE for education**
	OR 95% CI	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**
Used substances (baseline)	--	1.45 0.92–2.29	**1.931.01–3.68**	--	**2.641.55–4.51**	**2.451.12–5.36**	--	1.42 0.80–2.52	2.03 * 0.93–4.44
Live with parents(baseline)	--	0.93 0.47–1.86	0.90 0.37–2.20	--	**0.390.16–0.92**	0.69 0.21–2.25	--	**0.350.14–0.91**	0.62 0.18–2.14
Legal history(baseline)	--	**2.661.16–6.11**	0.74 0.23–2.42	--	2.03 0.83–4.96	1.47 0.38–5.71	--	2.53 * 0.95–6.68	0.80 0.19–3.25

Bold indicates significance ($p<0.05$)

* indicates approaching significance ($p<0.10$).

Table 6:

Association between Use of SEE for Education and Employment and Vocational Participation in Subsequent Quarter

	Q2		Q3		Q4	
	Unadj	**Adj**	**Unadj**	**Adj**	**Unadj**	**Adj**
	OR 95% CI	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**	**OR 95% CI**
SEE use for both education and employment, previous qtr	0.94 0.59–1.51	0.93 0.54–1.62	**1.851.03–3.30**	**2.591.29–5.20**	**2.381.14–4.95**	2.14 * 0.90–5.08
Work/school participation, baseline	--	**5.542.91–10.56**	--	**5.792.61–12.81**	--	**7.252.76–19.00**
GAF symptoms, baseline	--	1.01 0.996–1.03	--	1.01 0.99–1.03	--	**1.031.01–1.06**
Program site	--	1.03 0.98–1.09	--	1.04 0.97–1.13	--	1.02 0.93–1.12
Age	--	0.91 * 0.83–1.00	--	**0.790.70–0.89**	--	**0.830.72–0.95**
Male (ref: not male)	--	**0.330.17–0.64**	--	0.49 * 0.22–1.06	--	**0.350.13–0.96**
Race/ethnicity (ref: white non-Hispanic)						
Black non-Hispanic	--	**0.470.25–0.88**	--	0.51 * 0.24–1.06	--	**0.340.14–0.80**
Hispanic	--	1.16 0.58–2.30	--	0.73 0.32–1.69	--	0.59 0.21–1.65
Other non-Hispanic	--	0.62 0.24–1.58	--	1.32 0.38–4.55	--	0.34 0.09–1.28
Educational attainment at baseline (ref: less than high school)						
High school/GED	--	0.71 0.33–1.52	--	0.69 0.28–1.71	--	0.95 0.33–2.79
Some college	--	0.94 0.48–1.84	--	1.37 0.59–3.14	--	2.13 0.83–5.49
College or more	--	1.27 0.41–3.93	--	4.01 0.93–17.18	--	3.17 0.65–15.57
Time from onset to admission	--	0.96 * 0.93–1.00	--	0.97 0.93–1.02	--	**0.940.89–0.996**
Antipsychotic Medication adherence at baseline (ref: not adherent or adherence unknown)						
Adherent	--	1.51 0.84–2.72	--	1.69 0.83–3.42	--	0.54 0.22–1.32
No medications prescribed	--	1.85 0.58–5.87	--	2.03 0.51–7.98	--	0.55 0.12–2.54
Used substances (baseline)	--	1.04 0.63–1.72	--	**2.561.37–4.78**	--	1.22 0.61–2.48
Live with parents (baseline)	--	0.95 0.44–2.06	--	0.45 0.17–1.21	--	0.33 * 0.10–1.05
Legal history (baseline)	--	1.30 0.55–3.03	--	0.80 0.31–2.07	--	1.04 0.36–3.05

Bold indicates significance ($p<0.05$)

* indicates approaching significance ($p<0.10$).