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Individual Placement and Support in First Episode Psychosis: A randomized controlled trial

Eóin Killackey[1,2], Kelly Allott[1,2], Henry J. Jackson[3], Rosanna Scutella[4], Yi-Ping Tseng[4], Jeff Borland[4,5], Tina-Marie Proffitt[1,2,6], Sally Hunt[7], Frances Kay-Lambkin[7], Gina Chinnery[1], Gennady Baksheev[8], Mario Alvarez-Jimenez[1,2], Patrick D. McGorry[1,2] and Susan M. Cotton[1,2]

Affiliations

1. Orygen, The National Centre of Excellence in Youth Mental Health
2. Centre for Youth Mental Health, The University of Melbourne
3. Melbourne School of Psychological Sciences, The University of Melbourne
4. Melbourne Institute, The University of Melbourne
5. Department of Economics, The University of Melbourne
6. School of Psychology, University of Waikato
7. School of Medicine and Public Health, University of Newcastle
8. Monash University

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Abstract

Background

High unemployment is a hallmark of psychotic illness. Individual Placement and Support (IPS) may be effective at assisting the vocational recoveries of young people with first-episode psychosis (FEP).

Aim

The primary aim of this study was to examine the effectiveness of IPS at assisting young people with FEP to gain employment.

Methods

Young people with FEP (*n*=146) who were interested in vocational recovery were randomised on a 1:1 ratio to: (1) 6 months of IPS in addition to treatment as usual (TAU) or (2) TAU alone. Assessments were conducted at baseline, 6-months (end of intervention), 12 months and 18 months post-baseline by research assistants who were blinded to the treatment allocations.

Results

At the end of the intervention the IPS group had a significantly higher rate of having been employed (71.2%, *n*=47, *n*=66) than the TAU group (48.0%, *n*=29, *n*=60), *OR*=3.40, 95% CI=1.17, 9.91, *z*=2.25, *p*=.025. However, this difference was not seen at 12- and 18-month follow-up points. There was no difference at any time point on educational outcomes.

Conclusions

This is the largest trial to our knowledge on the effectiveness of IPS in FEP. The IPS group achieved a very high employment rate during the 6-months of the intervention. However, the advantage of IPS was not maintained in the long-term. This seems to be related more to an unusually high rate of employment being achieved in the control group rather than a gross reduction in employment among the IPS group.

Introduction

Young people with psychotic illness, as part of their recovery, want to complete their education and gain employment more than they want to address their mental health symptoms (1, 2). Despite this, the vocational trajectory of young people with psychosis is marked by low educational completion rates (3), and rapid transition into unemployment (4). Typically, the employment needs of young people with mental illnesses are referred out from mental health services to private or government contracted employment providers. Young people with mental ill health often have difficulty accessing these services (5), and even where they do, employment outcomes are scandalously low (6, 7). The Individual Placement and Support (IPS) model was designed to assist people with chronic severe mental illness to return to mainstream employment. IPS has been very successful (8), even showing resilience to external economic downturns (9). Most of the previous studies of IPS have been in populations of people with chronic illness. Two small trials (10, 11) in young people with first-episode psychosis (FEP) have shown very promising results. In this paper we report on a large RCT of IPS in a FEP population over an 18-month follow-up period. This allows for an examination of employment outcomes at the end of intervention as well as the duration of effects of IPS.

Method

The background and methodology of the study has been described in detail elsewhere (12). Key aspects of the study methodology as well as specific details concerning the participants, interventions and analyses are briefly described here. The study received ethical approval from the Melbourne Health Mental Health Research and Ethics Committee.

Trial Design

This study was a parallel single-blinded randomised controlled trial (RCT) comparing Individual Placement and Support (IPS) with treatment as usual (TAU) on employment and education outcomes in young people with FEP. Randomisation was undertaken by the study statistician (SMC) using a computer program for blocked randomisation in random permutated blocks of 4 and 8 with an allocation ratio of 1:1. Use of permuted blocks was in order to prevent prediction of group membership before it was assigned. The statistician was not associated with assessments and treatments and was the only person aware of the allocation sequence. Group allocation was provided to the study lead who informed the employment consultant and the participant's case manager of the participant's group allocation. All effort was taken to keep research assistants blinded to study condition. RAs had no contact with the employment consultant, and participants were reminded at the start of each assessment that they were not to let the RA know whether they had been working with the employment consultant or not. Recruitment occurred over a 3-year

period. This trial was registered on the Australian and Clinical Trials Registry ACTRN12608000094370.

Participants

Young people with FEP who had expressed an interest in vocational recovery were approached to participate. Participants were clients of the Early Psychosis Prevention and Intervention Centre (EPPIC) in Melbourne, Australia. EPPIC, a component program of Orygen Youth Health Clinical Program, is a public mental health program that treats all young people with a FEP living in a geographically defined catchment area in the west and north-west of Melbourne. The catchment has a population of approximately one million people, with approximately 250,000 in the EPPIC age range of 15-25 years. Exclusion criteria were lack of fluency in English or an inability to consent due to acute symptomatology. There were no other exclusion criteria.

Interventions

The interventions being compared were Individual Placement and Support (IPS) and treatment as usual (TAU).

IPS has been extensively described (13) and researched (8), primarily in populations of people with chronic psychotic illness. IPS is based around 8 key principles (See Box 1). IPS was delivered by a vocational specialist who had a background working in general and disability employment. In keeping with the IPS principles the vocational specialist (GC) was embedded as a member of the clinical team. Participants in the IPS group received 6 months of IPS intervention.

Insert Box 1 about here

TAU in Australia, as well as in many other similar health systems and economies, involves referral to external government-contracted employment agencies, some focussed on disability employment and others on non-disabled populations of unemployed people. Apart from the referral, there is typically little follow-up between mental health and employment agencies. The burden of navigating the different systems often falls on the individual. In many countries, and particularly in Australia, people with a mental illness are able to opt out of any welfare-related obligation to seek employment via certification of a medical condition from their medical practitioner.

In addition to trial interventions, all participants continued to receive standard EPPIC treatment, including medical management and review, outpatient case management, access to group program and peer and family support.

Outcomes

The primary outcome of the study was employment over the first 6 months (0-6 months) of the intervention with secondary employment outcomes between 6-12 and 12-18-months post-baseline. Consistent with previous IPS literature (11, 14-16), employment was defined as working in a job that paid award wages for a minimum of 1 day in the previous 6-month period. While this may not seem like much work, it should be remembered that Australian and international definitions of employment consider employment to be work for wages or other in-kind payment for a period of at least 1 hour in a specified period (e.g., a week) (17). Further secondary measures assessed at the six-month intervals were duration of employment (measured in hours), educational outcome (measured in enrolment in an educational course) and receipt or not of government benefits. No measures were made of attendance at the education course, or level of academic success.

Other secondary outcomes, not reported in this paper, were symptomatology, social and economic participation, self-reported health service usage and an evaluation of the economics of the intervention.

Data analysis

Analyses were conducted using IBM® SPSS® Statistics Version 22 and Stata/IC 14.1 for Windows. To determine baseline demographic and clinical differences between the IPS and TAU groups, chi-square (χ^2) and independent samples t-tests were used. These same inferential statistics were used to test for differences on baseline and clinical variables between those who did and did not have post-randomisation and follow-up assessments (at 6, 12, and 18 months).

For the analysis of primary and secondary outcomes, a modified intent-to-treat (ITT) method was used with all participants with at least one follow-up assessment post-randomisation included in the models (18). For the analysis of the primary outcome measure of employment over 6-month intervals (0-6, 6-12, and 12-18 months, yes/no), the 'xtlogit' (random effects model) command from Stata/IC 14.1 for Windows was used. This allows for the use of panel data accrued at different time points. In the model for the primary outcome, the core predictors were treatment group (IPS versus TAU), time periods (0-6, 6-12, 12-18 months), the employment at baseline assessment (yes/no, a covariate) and the interaction between group and time period. The estimated probabilities for the 0-6, 6-12 and 12-18 months are reported from this model. Sensitivity analyses were conducted using models adjusted for imbalances that might be present at baseline. This approach was also used to analyse the data for the secondary outcome variables of studying status (yes/no) and dependence on government benefits (yes/no). For the analysis of the secondary outcome of hours of work, a mixed

model repeated measures (MMRM) was conducted using IBM® SPSS® Statistics Version 22.0. Within this model, the core predictors were again treatment group and time periods, and the interaction between these two variables. The Toeplitiz covariance structure was used to model the relations between observations on different occasions.

Results

Sample characteristics

There were 171 individuals assessed for eligibility to the study. Of these 171, 25 were excluded and 146 were randomised. Of the 25 that were excluded, 23 declined to participate (five of those began baseline assessment but declined to continue) and two were too unwell to participate (see Figure 1).

(INSERT FIGURE 1 ABOUT HERE)

The majority of the cohort were male, never married, Australian born, and were not studying or working at entry into the study. Most were in receipt of government benefits (see Table 1). Table 2 comprises details of Axis I diagnosis. The most common psychotic disorders were schizophreniform/schizophrenia, followed by bipolar disorder, and schizoaffective disorder. Comorbid substance use and anxiety disorders were common in the cohort.

(INSERT TABLE 1 AND 2 ABOUT HERE)

Baseline characteristics

The two treatment groups differed significantly with respect to gender distribution, $\chi^2(1)=9.28$, $p=.002$, with the IPS having twice the number of females as compared to the TAU group (see Table 1). There were no significant between-group differences with respect to psychotic symptoms, overall functioning and type of psychotic disorder; however, the TAU group were significantly more likely to have a substance use disorder at baseline, $\chi^2(1)=3.99$, $p=.046$ (see Table 2).

The IPS group was significantly more depressed, $t(143)=2.38$, $p=.019$ (see Table 3), had poorer psychological QoL ($t(143)=-2.27$, $p=.025$), and poorer physical health QoL ($t(143)=-2.34$, $p=.021$) at baseline as compared to the TAU group.

(INSERT TABLE 3 ABOUT HERE)

Participant flow

There were 95 participants who had complete employment data over the 18 months. A range of missing data patterns were observed: (i) 1 participant was missing 6-month data only; (ii); 5 participants had only 12-month data missing; (iii) 1 participant was missing 6- and 12-months data; (iv) 3 participants had missing data for 6 and 18 months; (iii) 15 participants had 12- and 18- month data missing; and (iv) 11 participants were missing 18-month data only. There were 15 participants who had no data for any of the follow-up data points. Therefore, post-randomisation data was available for 131 participants.

Of those with no post-randomisation data, 7 had moved out of the catchment area, 2 withdrew participation due to having employment, 5 withdrew consent with no reasons provided, and 1 withdrew consent due to lack of time. The TAU group (16.4%, *n*=12) was more likely to have no post-randomisation data than the IPS group (4.1%, *n*=3), $\chi^2(1)=6.02$, $p=.014$.

Despite the differences in availability of post-randomisation data, there were no significant differences between the two groups with respect rates of missingness at 6 months (IPS 9.6%, *n*=7; controls 17.8%, *n*=13), $\chi^2(1)=2.09$, $p=.149$, at 12 months (IPS 20.5%, n=15; TAU 28.8%, *n*=21), $\chi^2(1)=1.33$, $p=.249$, and at 18 months (IPS 23.3%, n=17; TAU 37.0%, *n*=27), $\chi^2(1)=3.25$, $p=.071$. There were no significant differences between those with and without data at each of these three time-points in terms of baseline demographics, vocational and clinical data. Analyses were also conducted to determine whether missing data at a time point depended on vocational status at the previous time point. Those who provided data at 18 months, were significantly more likely to be studying at 12 months (59.4%, *n*=57) than those individuals who were missing data at 18 months 28.6%, n=4) $\chi^2(1)=4.69$, $p=.030$; however, further breakdown by treatment group was not possible due to low numbers.

IPS Fidelity

Fidelity of IPS was measured using the Supported Employment Fidelity Scale (19). This was self-administered for pragmatic reasons by EK and KA. This was supervised by GC who is a trained administrator of the Supported Employment Fidelity Scale and overseen by a person independent of the study. The intervention was scored 107/125 which is a rating of Good Fidelity (19).

Primary outcome – employment status

The greatest difference in the predicted probabilities of employment between the IPS and TAU groups was observed over the first 6 months, with minimal differences seen at later 6-month time intervals (see Figure 2). Within the primary random effects logistic regression model the interaction

between group and time period was significant, *OR*=0.88, 95% CI=0.78-0.99, Wald *z*=-2.16, *p*=.031, even after controlling for baseline employment status. The odds ratio comparing employment between the IPS and TAU groups for the 0-6 month period was significant, *OR*=3.40, 95% CI=1.17, 9.91, *z*=2.25, *p*=.025; however, no significant between-group differences in odds of employment were seen at 6-12 and 12-18 months (*p*=.288 and *p*=.594, respectively). The percent change in estimate odds was calculated for the two groups (20). The conditional odds of employment increased by 2.8% per 6-month time period in the TAU group whereas there was a decrease by 9.5% per 6-month period in the IPS group. An adjusted model was also run controlling for baseline employment status, gender and baseline depressive symptoms. QoL was not included in this model because of the overlap with depressive symptoms. For this adjusted model the interaction between group and time remained significant, *OR*=0.88, 95% CI=0.78-0.99, Wald *z*=-2.26, *p*=.024. The odds ratio comparing groups at 0-6 months also remained significant, *OR*=3.57, 95% CI=1.19, 10.70, *z*=2.28, *p*=.023) whereas group comparisons at 6-12 and 12-18 months were non-significant (*p*=.293 and *p*=.576, respectively).

(INSERT FIGURE 2 AND 3 ABOUT HERE)

Secondary outcomes – hours worked, studying and Government pensions

The average hours worked over the three time periods for the two groups is displayed in Figure 3. Note that information regarding hours worked in the 6-month period prior to randomisation was not collected so there were no covariates in this model. The interaction between treatment group and time was not significant, $F(2, 148.4)=0.95$, $p=.390$. Furthermore, the main effects for time, $F(2, 148.4)=0.50$, $p=.608$ and for group, $F(1,112.9)=0.20$, $p=.652$, were not significant.

The predicted probability of the two groups studying over the 18 months are displayed in Figure 4. Notably, the IPS group was more likely to be studying at each of the follow-up 6-month time intervals. There was a significant interaction between group and time with respect to studying status, *OR*=0.87, 95% CI=0.77, 0.97, Wald *z*=-2.37, *p*=.018, after controlling for baseline study status. The odds ratio comparing studying status between the IPS and TAU groups at 0-6 month time interval was significant, *OR*=3.04, 95% CI=1.01, 9.17, Wald *z*=1.97, *p*=.049. No between-group differences were observed at 6-12- and 12-18- months (*p*=.584 and *p*=0.300, respectively). The conditional odds of studying increased by 7.6% per 6-month time period in the TAU group whereas there was a decrease by 6.9% per 6-month period in the IPS group. The model was re-run controlling for baseline studying status, gender, and baseline depressive symptoms; the interaction remained significant, *OR*=0.86, 95% CI=0.77, 0.97, *z*=-2.40, *p*=.016. Controlling for these three

variables; however, the point-estimate for difference between the groups in the 0-6 months interval was no longer significant (p=.084).

The interaction between group and time period for dependence on pensions was not significant, *OR*=0.98, 95% CI=0.84, 1.13, z=-0.31, p=.757, after controlling for baseline dependence on Government pensions. This result remained non-significant after controlling for gender, baseline Government pension status and baseline depressive symptoms.

Discussion

This is the largest trial to our knowledge on the efficacy of IPS in FEP. It is also one of the only trials in FEP to examine the duration of employment past the intervention stage. The key findings were that IPS was superior to TAU in rates of employment over 6 months, but this finding was not sustained after the intervention period at 12- and 18-month follow-up. Duration of employment and educational engagement did not differ between groups at any time point.

In previous trials of IPS in FEP populations, IPS has produced favourable employment outcomes compared to comparison conditions (21). This finding has been replicated here, at least at the end of 6 months of intervention. However, the benefit of IPS in the present study is seen to disappear relative to the control group over the follow-up period. This contrasts with studies of IPS in populations with chronic illness in which the benefit of IPS persists over time (9, 22, 23). However, the result in the present study seems to be as much about the higher than expected performance of the control group as it is about the failure of the IPS group to maintain its initial significant benefit. In a previous, albeit smaller (n=41) RCT of IPS conducted in the same clinic, the control group achieved only a 9.5% employment outcome at the end of the 6-month intervention (11). However, in the current study the control group employment rate was 48% at the six-month time-point. In comparison, the IPS group in our initial study (11) had a 65% employment rate that is similar to the 71% achieved in the present study. This raises the question of what could account for this type of improvement in the control group results. We believe that there are three possible explanations.

The first possible reason is that the external, government–contracted employment agencies which are current best practice have improved their performance in relation to facilitating the employment of young people with psychosis, but this seems unlikely. During the time period of the current study the government department responsible for employment services in Australia, conducted a review of performance of the system. That review found that in relation to outcomes for people with psychiatric and psychological disabilities, that the highest level of support provided only resulted in

14% of people obtaining employment lasting 13 weeks (6). Although there was at that time also a payment for agencies that assisted people to access 26 weeks of employment, no data was reported for the percentage that made it to 26 weeks. One possible interpretation was that the number who did so was so small as to not be worth reporting. In a system that is performing so poorly at a national level it is possible but less likely that our local employment services were producing results that would be sufficiently better than the rest of the national system to explain our outcomes.

The second possible explanation of the results of the control group is speculation that there was a change in the clinical culture in relation to vocational outcomes in the EPPIC clinic where the study was conducted. As mentioned, EPPIC was also the site at which we conducted a previous RCT of IPS in FEP (11). That first RCT was the first time that IPS had been introduced to the EPPIC clinic. Initially, when we introduced IPS there was scepticism from clinicians that young people with IPS would be able to enter or return to employment in significant proportions. However, as they witnessed the success of the young people with psychosis in that trial in returning to and successfully engaging with employment, much of their scepticism translated to enthusiasm for exploring the vocational ambitions of their clients. Further, there was a 2-year window between the end of the first study and commencement of the second. During this time, demand for IPS services outstripped the resources that were available to supply IPS. In order to assist, a number of workshops were conducted with clinical staff about how to engage in assisting their clients to obtain employment or return to school. As a consequence the clinical staff were upskilled around employment. The net effect was a staff that were enthusiastic and optimistic about the prospect of employment for young people with psychosis, and who had a set of skills that were able to convert that enthusiasm to action. Some evidence that may support this supposition comes from a file audit study of a cohort of EPPIC clients conducted before the current trial (24). The file audit showed that at discharge from EPPIC, the majority of clients were unemployed and not studying. Further evidence of the acceptance of the possibility and importance of vocational recovery among the clinical staff and management of EPPIC was that during this time one clinical position was converted to an IPS position. In a cash-strapped public mental health service, this is a strong indication of the perceived value of an intervention. The positive impact of changed staff attitudes on employment outcomes for people with FEP has previously been demonstrated by Craig et al. (25), providing some tentative support for this hypothesis. Nevertheless, this possible explanation is speculative as there was no systematic measurement of clinical staff attitudes and skills in relation to vocational recovery. If there is an acceptance of the possibility that this cultural change explains elements of the results, there are a number of positive conclusions to be drawn.

Too often in the past clinicians and others involved in care have 'protected' young people with psychosis from the possible stressors that exist in pursuing vocational recovery (4). This is a classic example, although often well motivated, of the 'soft bigotry of low expectations'. Where it leads to failure to realise educational potential, abandonment of vocational dreams, lifelong unemployment and social exclusion, this form of protection is no protection at all. It is therefore very positive that the expectations that clinicians hold for their clients can be adjusted in light of new evidence. In this case, that young people with psychosis can and should obtain and retain employment. Further, it is exciting that clinician behaviour around vocational recovery can respond to simple training.

To that end it is positive that there is a possibility that clinical staff can be trained to have better and effective vocational recovery skills. As IPS is still largely a research intervention in many parts of the world, there is not a ready workforce to conduct IPS in mental health services. Being able to upskill existing mental health workforces to more directly address this much-desired element of recovery therefore may be a more efficient way of translating IPS into routine practice. At the same time, the fact that the end of intervention outcomes were significantly better for IPS suggests that the expertise of a specialist IPS worker still has something to offer over and above the enhanced skills of a mental health clinician. This then opens the possibility of allocating vocational recovery services on a stepped basis where for those with better employment or educational prospects, the assistance of their mental health clinician who has done further training might be sufficient. For those with poorer vocational prognoses, or who have not achieved the vocational outcomes they sought with their mental health clinician, referral to an IPS specialist would be indicated.

Importantly, irrespective of which level of vocational intensity was accessed, our findings suggest that strategies to promote long-term maintenance of vocational functioning should be implemented. While IPS was effective while being implemented, in common with many psychosocial interventions, the benefit of IPS in this study was reduced over time. This suggests a need to focus in future on mechanisms to extend this positive benefit, which can be scalable over time and are not excessively resource intensive. Examining the ways in which technology can be of assistance in this area may be worthwhile (26).

A third possible explanation that is not mutually exclusive from the others is a change in government policy in relation to young people, employment, education and welfare that may have impacted on the results of the control group. Such a change in policy did occur during the course of the study. The effect of this policy change was that to remain eligible for welfare payments, young

people who had not completed high school or an equivalent had to be enrolled in an educational course of some kind. While this may explain why there was no difference in the level of educational outcomes in the study, it does not explain the high rates of employment seen in the control group.

Given the age range of people typically attending FEP services, a focus on education as part of vocational recovery is important. However, the treatment groups did not differ on educational outcomes at any time point. This is consistent with other IPS study results(15) and indicates that IPS as currently practiced may require adaptation for enhanced education outcomes. There is no reference to education in the IPS fidelity scale which in turn comes from IPS being an intervention primarily developed in adults with severe mental illness and with a sole focus on employment. In addition to this it suggests an addition education focused skill-set may be needed for IPS workers to successfully address educational vocational recovery in young people. Recent evidence tentatively suggests that adapting IPS to a specific focus on education, with an IPS worker with expertise in working in the education sector can achieve good educational outcomes (27, 28). However, this is an area in need of more and controlled research (29).

The strengths of this study include that it was adequately powered to explore the effect of IPS on employment rates of young people with FEP. Further, only 4 participants did not complete the intervention, and there was low attrition across the 18 months of the study with 87% included in the final analysis. The study also reflected real-world practice in having few exclusion criteria. This is important in considering translation of IPS into routine practice in FEP services.

The study had some limitations that should be taken into account. First, as it was conducted in Australia the employment intervention is limited in its generalisability by the economic, welfare and labour market context that it occurs within. Second, the intervention period was only 6 months. This is short by contrast with other international IPS trials. Primary outcome measurement is an issue in the IPS literature with no set standard. Some use obtainment of employment with no measure of duration, some use a day, a week or a number of hours per week as a threshold. Our study used at least 1 day of work in the previous 6 months. It is possible that using a different definition would have led to different results. However, our definition is consistent with some IPS literature and our own previously published work in this area. Measurement of education is important in this cohort, some of whom are younger than the legal working age. There are currently few good measures of educational outcomes for people with mental illness and this is an area that requires attention. Another limitation is that there was likely to be less post-randomisation data in the TAU group. This is mitigated somewhat by there being no differences between the groups in terms of

missingness, and baseline vocational, clinical and demographic data. Finally, although there was an initial benefit of IPS for education at the 6-month time-point, this is seen to disappear when baseline variables are taken into account. The implications of this are considered below.

In conclusion, IPS is effective at supporting young people with FEP to return to work. However, this benefit was not maintained compared to usual treatment in a clinic in which clinical staff are optimistic about, and have been upskilled around, the provision of vocational recovery. This suggests that specialist vocational recovery services may be most usefully deployed for people who have failed to make an initial vocational recovery during their usual treatment. Further, this study along with others has not demonstrated that a general approach to vocational recovery using IPS leads to superior educational outcomes. A more specific and targeted approach to education may be needed.

Table 1

Baseline demographic data of the total cohort and separately for the IPS and TAU groups

		Total (n=146)	IPS (n=73)	TAU (n=73)	Statistic	value	df	p value
Demographic								
Gender %Female	% (n)	30.8 (45)	42.5 (31)	19.2 (14)	χ^2	9.28	1	.002
Age	M (SD)	20.4 (2.4)	20.4 (2.7)	20.5 (2.1)	*t*	-0.14	144	.890
Marital status								
Never married	% (n)	97.3 (142)	98.6 (72)	95.9 (70)	χ^2	1.03	1	.311
Country of birth								
Australian born	% (n)	76.0 (111)	79.5 (58)	72.6 (53)	χ^2	0.94	1	.332
Education								
Current study status								
Not studying	% (n)	82.2 (120)	83.6 (61)	80.8 (59)	χ^2	0.19 [1]	1	.665
Studying part-time	% (n)	8.2 (12)	8.2 (6)	8.2 (6)				
Studying full-time	% (n)	9.6 (14)	8.2 (6)	11.0 (8)				
Highest year of school								
Years 7-9	% (n)	22.6 (33)	17.8 (13)	27.4 (20)	χ^2	3.17	3	.366
Year 10	% (n)	18.5 (27)	21.9 (16)	15.1 (11)				
Year 11	% (n)	18.5 (27)	16.4 (12)	20.5 (15)				
VCE/VCAL [2]	% (n)	40.4 (59)	43.8 (32)	37.0 (27)				
Employment								
Age at first job	M (SD)	15.7 (2.1)	15.7 (2.2)	15.7 (2.0)	*t*	0.18	134	.859
Currently in paid work	% (n)	16.4 (24)	21.9 (16)	11.0 (8)	χ^2	3.19	1	.074
Income								
Registered with a government agency	% (n)	58.2 (85)	53.4 (39)	63.0 (46)	χ^2	1.38	1	.240
Receiving government payments	% (n)	66.2 (96)	65.8 (48)	66.7 (48)	χ^2	0.01	1	.907

Main source of income								
Wages, salary, own employment	% (n)	13.7 (19)	18.3 (13)	8.8 (6)	χ^2	3.13	3	.372
Centrelink payments [3]	% (n)	64.7 (90)	63.4 (45)	66.2 (45)				
Family or friends	% (n)	18.7 (26)	15.5 (11)	22.1 (15)				
Other sources	% (n)	2.9 (4)	2.8 (2)	2.9 (2)				

[1] Chi-square value derived from comparison of collapsed categories (studying or not studying)
[2] VCE is Victorian Certificate of Education and VCAL is Victorian Certificate of Applied Learning - year 12 courses
[3] Centrelink is the Australian national welfare agency responsible for the managing welfare payments

Table 2
Diagnostic characteristics of the IPS and TAU groups.

		Total (n=146)	IPS (n=73)	TAU (n=73)	Statistic	value	df	p value
Psychotic disorder								
Schizophreniform/schizophrenia	%(n)	43.8 (64)	45.2 (33)	42.5 (31)	χ^2	4.26	5	.513
Schizoaffective disorder	%(n)	13.0 (19)	11.0 (8)	15.1 (11)				
MDD psychotic features	%(n)	11.6 (17)	9.6 (7)	13.7 (10)				
Bipolar disorder	%(n)	13.7 (20)	12.3 (9)	15.1 (11)				
Psychosis NOS	%(n)	11.6 (17)	16.4 (12)	6.8 (5)				
Other	%(n)	6.2 (9)	5.5 (4)	6.8 (5)				
Substance use disorder	%(n)	29.5 (43)	21.9 (16)	37.0 (27)	χ^2	3.99	1	.046
Post-traumatic disorder	%(n)	13.0 (19)	15.1 (11)	11.0 (8)	χ^2	0.55	1	.461
Anxiety disorder	%(n)	32.2 (47)	37.0 (27)	27.4 (20)	χ^2	1.54	1	.215

MDD = Major Depressive Disorder; NOS = Not otherwise specified

Table 3

Baseline differences between IPS and TAU groups on clinical, functioning, and QoL

		Total (n=146)	IPS (n=73)	TAU (n=73)	Statistic	Value	df	p value
Symptoms								
BPRS								
Total score	M(SD)	45.5 (12.0)	45.6 (11.7)	45.4 (12.4)	*t*	0.10	144	.923
Positive symptoms	M(SD)	8.5 (4.4)	8.5 (4.4)	8.6 (4.4)	*t*	-0.19	144	.851
SANS								
Affective flattening or blunting	M(SD)	9.4 (7.2)	8.8 (7.5)	9.9 (6.9)	*t*	-0.93	144	.352
Alogia	M(SD)	5.2 (4.1)	5.0 (4.1)	5.4 (4.2)	*t*	-0.54	144	.589
Avolition	M(SD)	7.5 (3.7)	6.9 (3.7)	8.0 (3.7)	*t*	-1.78	144	.078
Anhedonia [a]	M(SD)	9.3 (5.3)	9.1 (4.7)	9.5 (6.0)	*t*	-0.45	135.9	.653
Attention	M(SD)	3.5 (3.1)	3.1 (3.0)	4.0 (3.1)	*t*	-1.81	143	.073
Summary [b]	M(SD)	9.3 (3.9)	8.7 (3.7)	10.0 (4.1)	*t*	-1.91	144	.058
Composite [c]	M(SD)	25.5 (12.4)	24.2 (12.1)	26.8 (12.6)	*t*	-1.27	144	.206
CESD	M(SD)	19.7 (11.5)	22.2 (12.0)	17.7 (11.9)	*t*	2.38	143	.019
Functioning								
SOFAS	M(SD)	51.5 (10.4)	52.1 (10.2)	50.8 (10.6)	*t*	0.73	144	.465
Quality of life								
Psychological QoL	M(SD)	64.7 (16.1)	61.7 (16.0)	67.7 (15.8)	*t*	-2.27	143	.025
Physical Health QoL	M(SD)	53.4 (19.6)	49.6 (18.7)	57.1 (19.8)	*t*	-2.34	143	.021
Social Relations QoL	M(SD)	57.4 (21.9)	54.5 (21.5)	60.2 (22.2)	*t*	-1.56	143	.122
Environmental QoL	M(SD)	62.0 (16.0)	60.5 (16.1)	63.4 (15.8)	*t*	-1.09	143	.276
Premorbid IQ								
WRAT (ss)	M(SD)	92.4 (13.9)	93.5 (13.7)	91.3 (14.2)	*t*	0.92	144	.359

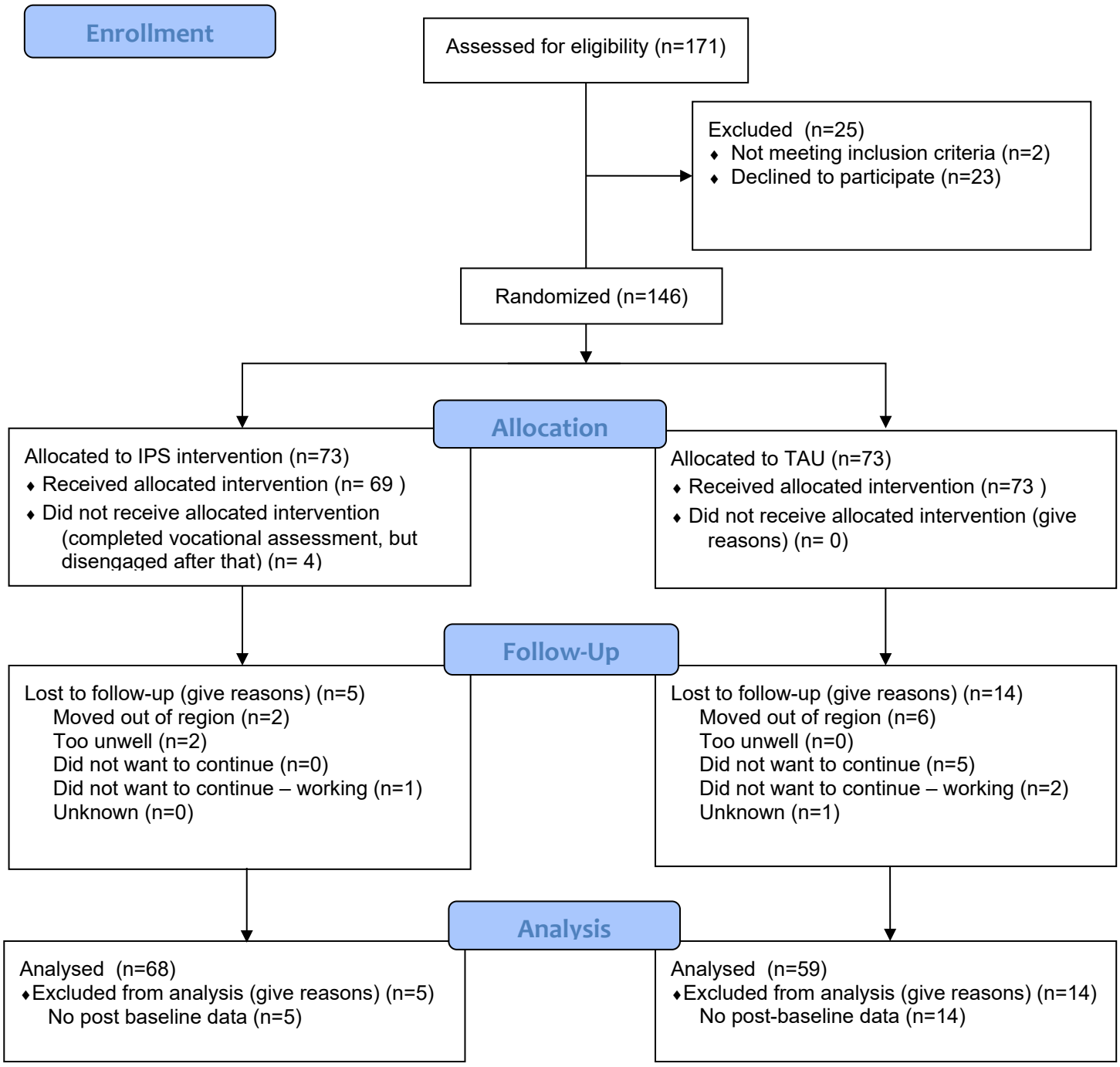
*Note: BPRS, Brief Psychiatric Rating Scale; SANS, Scale for the Assessment of Negative Symptoms; CESD, Centre for Epidemiologic Studies of Depression Scale; SOFAS, Social and Occupational Functioning Scale; QoL, Quality of Life; IQ, Intelligence Quotient; WRAT, Wide Range Achievement Test; ss, Standard score

[a] Degrees of freedom were adjusted for the t-test because of violation to the assumption of homogeneity of variance

[b] Based on the sum of the global items

[c] Based on the sum of the 20 individual items

Figure 1: Consort flow chart



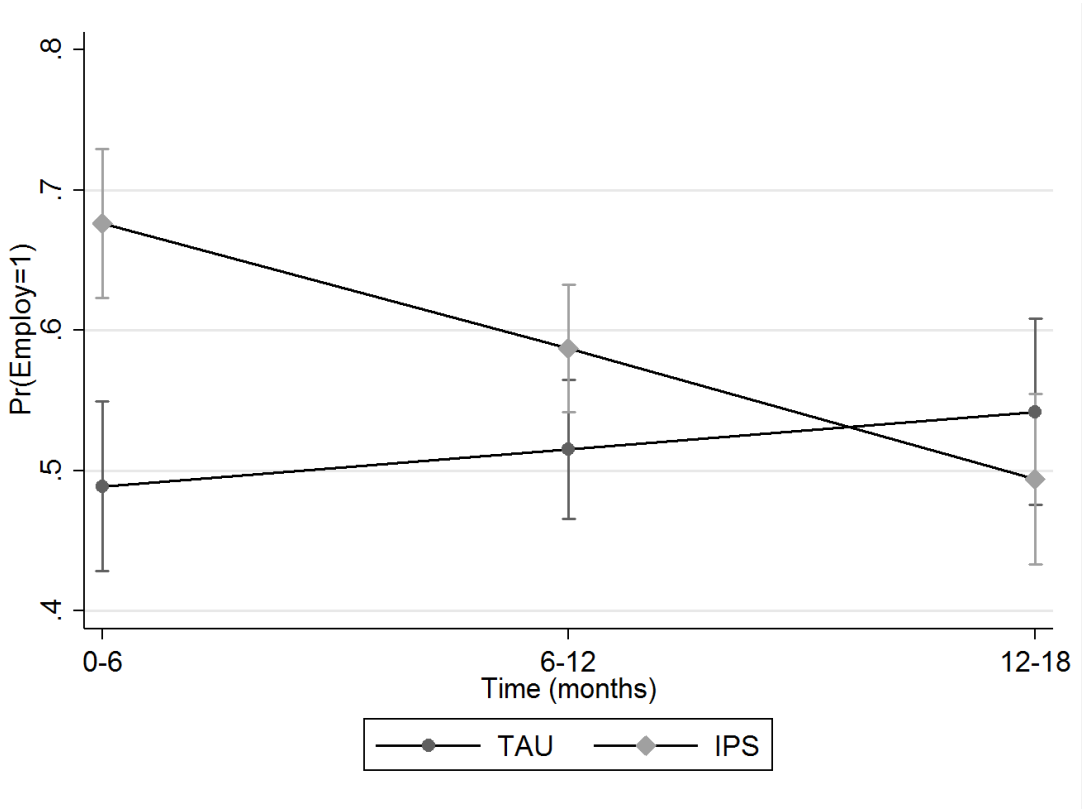


Figure 2
Predicted probabilities (±SE) of employment in IPS and TAU groups over 18 months

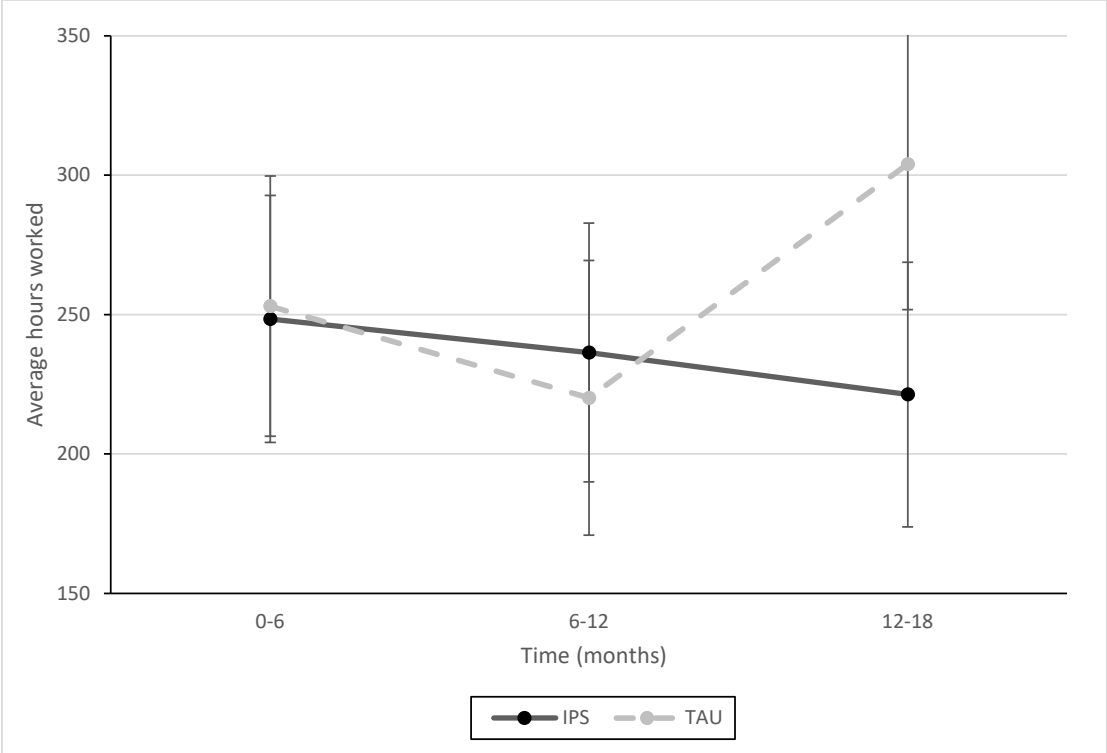


Figure 3
Estimated average (±SE) hours worked in IPS and control groups over 18 months obtained from MMRM

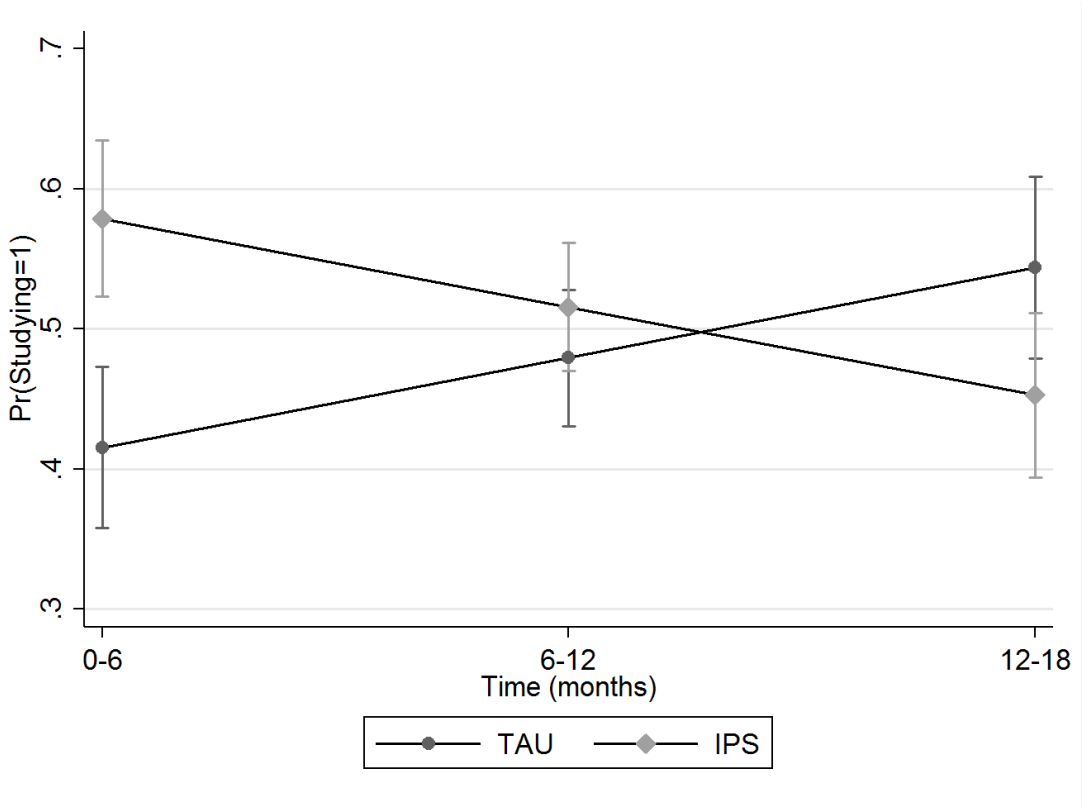


Figure 4
Predicted probabilities (±SE) of studying in IPS and control groups over 18 months

Box 1: Principles of Individual Placement and Support

1. IPS is open to any person with mental illness who wants to look for work.
2. IPS is integrated with the mental health treatment team.
3. IPS is focused on competitive employment as an outcome.
4. Personalized benefits planning/counselling is provided in IPS.
5. Job searching commences directly on entry into the IPS programme and is not determined by measures of work-readiness or illness variables.
6. The IPS worker develops relationships with employers based upon client interests.
7. Potential jobs are chosen based on consumer preference.
8. Support provided in the programme is time unlimited, continuing after employment is obtained and is adapted to individual needs

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