

# Employment and educational outcomes in early intervention programmes for early psychosis: a systematic review

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**Aims.** Young adults with early psychosis want to pursue normal roles – education and employment. This paper summarises the empirical literature on the effectiveness of early intervention programmes for employment and education outcomes.

**Methods.** We conducted a systematic review of employment/education outcomes for early intervention programmes, distinguishing three programme types: (1) those providing supported employment, (2) those providing unspecified vocational services and (3) those without vocational services. We summarised findings for 28 studies.

**Results.** Eleven studies evaluated early intervention programmes providing supported employment. In eight studies that reported employment outcomes separately from education outcomes, the employment rate during follow-up for supported employment patients was 49%, compared with 29% for patients receiving usual services. The two groups did not differ on enrolment in education. In four controlled studies, meta-analysis showed that the employment rate for supported employment participants was significantly higher than for control participants, odds ratio = 3.66 [1.93–6.93],  $p < 0.0001$ . Five studies (four descriptive and one quasi-experimental) of early intervention programmes evaluating unspecified vocational services were inconclusive. Twelve studies of early intervention programmes without vocational services were methodologically heterogeneous, using diverse methods for evaluating vocational/educational outcomes and precluding a satisfactory meta-analytic synthesis. Among studies with comparison groups, 7 of 11 (64%) reported significant vocational/education outcomes favouring early intervention over usual services.

**Conclusions.** In early intervention programmes, supported employment moderately increases employment rates but not rates of enrolment in education. These improvements are in addition to the modest effects early programmes alone have on vocational/educational outcomes compared with usual services.

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**Key words:** Early intervention, early psychosis, employment, supported employment.

## Introduction

Young adults experiencing early psychosis want to work (Iyer *et al.* 2011; Ramsay *et al.* 2011). Many also want to pursue education, either in conjunction with employment or as preparation for employment (Nuechterlein *et al.* 2008). Vocational and educational issues are common reasons clinicians refer patients to early intervention programmes (Cotton *et al.* 2011).

Early intervention programmes were pioneered in Australia (McGorry *et al.* 1996, 2008) and subsequently spread across wealthy countries. These programmes have varied in their specific offerings, but

most seek to identify people early in the course of psychotic illness and help them to achieve rapid remissions, prevent relapses and maintain functioning. No standard model of early intervention has yet emerged, although most experts endorse several core principles, such as early detection, family psychoeducation and assertive outreach (Addington *et al.* 2013; Hughes *et al.* 2014). Early formulations of the early intervention models recognised the importance of role functioning, but mainly restricted interventions in this area to social skills training. The short-term clinical effectiveness of the early intervention programmes is promising (Malla *et al.* 2005), but their long-term effectiveness remains uncertain (Yung, 2012). Although two narrative reviews have examined supported employment for patients with early psychosis (Killackey *et al.* 2006; Rinaldi *et al.* 2010a), no review has comprehensively examined

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employment and education outcomes in early intervention programmes.

Three recent developments suggest that employment services may play a crucial role in early intervention programmes. First, the early intervention has renewed hope for altering the course of psychotic illnesses, in part because these young people are highly motivated to pursue functional outcomes. People with early psychosis want help finding employment: thus employment services serve as an engagement strategy for enhancing participation in treatment. Second, following the success of supported employment in helping people with long-term serious mental illness to achieve competitive employment (Marshall *et al.* 2014), clinicians and researchers are adopting supported employment in early intervention programmes (Killackey *et al.* 2006). Young adults with mental illness appear to benefit as much, if not more, from supported employment than do their older counterparts (Browne & Waghorn, 2010; Burke-Miller *et al.* 2012; Ferguson *et al.* 2012; Bond *et al.* in press). Third, helping young adults experiencing early psychosis to gain employment may prevent disability. People develop schizophrenia and other psychotic illnesses early in life, typically between the ages of 16 and 26. During this developmental period, most people are making important transitions to adulthood, including finishing their educations and establishing their identities as workers. The onset of psychosis often interrupts this life trajectory (Yung, 2012), in part due to professional advice to accept long periods of treatment and functional inactivity in order to achieve stability and prevent relapses (Bassett & Lloyd, 2001).

This paper provides a systematic review of the literature on the impact of early intervention services on employment and education outcomes for people experiencing early psychosis, defined as the first 6 months of experiencing psychotic symptoms (Caton *et al.* 2005). We hypothesised that the patients receiving supported employment based on evidence-based principles would achieve improved employment outcomes compared with baseline levels and to patients receiving services as usual. Secondarily, we hypothesised that participation in supported employment would increase enrolment rates in mainstream educational programmes.

## Methods

### Overview

We conducted a systematic review of employment and education outcomes for early intervention programmes, summarising outcomes for all studies

reporting relevant longitudinal outcomes. As supported employment was the most frequently studied employment model, we examined it separately and in more detail.

### Study inclusion criteria

We included longitudinal studies of early intervention programmes with at least ten participants reporting vocational/educational outcomes (defined broadly to include a range of indicators and scales). We included studies with uncontrolled, quasi-experimental and experimental designs.

### Literature search procedures

Our literature search strategies included electronic searches of MEDLINE and of publications within the journal, *Early Intervention in Psychiatry*; a manual search of conference proceedings from three recent meetings of the International Early Psychosis Association; two published reviews (Rinaldi *et al.* 2010a; Skalli & Nicole, 2011); and manual screening of reference lists of all included studies.

We identified articles from the international literature on employment interventions among young adults with serious mental illness by searching PubMed/MEDLINE from inception to April, 2013, using key words to generate sets of records, combined by the Boolean term 'OR,' for the following themes: severe mental illness ('psychosis,' 'schizophrenia,' 'bipolar disorder,' and 'disorders with psychotic features'), employment ('job placement,' 'employment,' 'vocational rehabilitation,' 'supported employment,' 'individual placement and support' and 'occupation') and young adulthood ('young adult,' 'first episode,' 'first-episode' and 'early intervention'), restricted to English-language publications. We combined themes using the Boolean term 'AND' to find their intersections. Using similar search terms, we also performed an electronic search of *Early Intervention in Psychiatry*. Based on the abstracts from these two searches, the first author identified references for full-text review, which the first and third authors then independently assessed to determine appropriateness for inclusion. Discrepancies were resolved by consensus.

### Classification of treatments and studies

We distinguished three types of early intervention programmes: (1) those providing supported employment services, (2) those with an unspecified vocational component and (3) those without an identified vocational component.

The most widely accepted model of supported employment for adults with severe mental illness is Individual Placement and Support (IPS). It is an evidence-based model of supported employment (Marshall *et al.* 2014), guided by eight principles: eligibility based on consumer choice, focus on competitive employment, integration of mental health and employment services, attention to patient preferences, work incentives planning, rapid job search, systematic job development and individualised job supports (Drake *et al.* 2012). Programmes adhering to these principles, as measured by an IPS fidelity scale, generally have better competitive employment outcomes (Bond *et al.* 2011). For young adults with early psychosis, IPS has been expanded to include supported education as well as supported employment (Nuechterlein *et al.* 2008). In this report, we use the term ‘supported employment’ to include both programmes closely following the IPS model as well as those not explicitly adhering to IPS fidelity standards.

### Outcome measures

Although our intent was to focus on studies reporting competitive employment at baseline and follow-up, we broadened the inclusion criteria to include studies reporting any vocational outcomes, including studies reporting findings for occupational functioning scales. In addition, some studies combined employment and education outcome into a single measure. When available, we also recorded rates of enrolment in education.

### Review methods and data analysis

We summarised study characteristics and main findings for all studies meeting inclusion criteria. Heterogeneity of outcome measures precluded aggregating results for early intervention without an identified vocational component or an unspecified vocational component. As it was possible, we examined the supported employment studies in greater detail, using tabular reporting to facilitate study comparisons and aggregating follow-up employment and education rates. We tested the significance of differences in rates at follow-up using chi squares ( $\chi^2$ ) and calculated the effect size (ES) for the rate differences between supported employment and controls using the arc sine approximation (Lipsey, 1990). Using RevMan (2012), a computer software program used in Cochrane meta-analytic reviews, we evaluated aggregate employment and education for supported employment studies with comparison groups. This computer software generates forest plots displaying effect sizes weighted by sample sizes.

## Results

### Search results

As outlined in Fig. 1, the electronic searches yielded 237 and 252 references, respectively, from PubMed/MEDLINE and *Early Intervention in Psychiatry*, resulting in 34 publications for full-text review (26 and 13, respectively, with five duplicates). We identified 13 additional studies from other sources and conducted full-text reviews on unduplicated studies. Finally, we identified 28 studies meeting inclusion criteria.

### Early intervention programmes offering supported employment

We identified 11 studies of early intervention programmes offering supported employment, as shown in Table 1. These included four uncontrolled evaluations (Rinaldi *et al.* 2004, 2010b; Porteous & Waghorn, 2007, 2009), four controlled and quasi-controlled trials reporting employment and education rates at baseline and follow-up (Killackey *et al.* 2008, 2012; Major *et al.* 2010; Nuechterlein *et al.* submitted for publication), all of which reported separate statistics for employment and education, and three studies of early intervention programmes providing supported employment outcomes for a combined measure of employment and education, preventing their inclusion in our tabled results (Singh *et al.* 2007; Fowler *et al.* 2009a; Dudley *et al.* 2014).

The uncontrolled studies of early intervention programmes offering supported employment were naturalistic programme evaluations of ongoing service provision with a rolling enrolment and a shrinking sample over time. For two studies (Rinaldi *et al.*

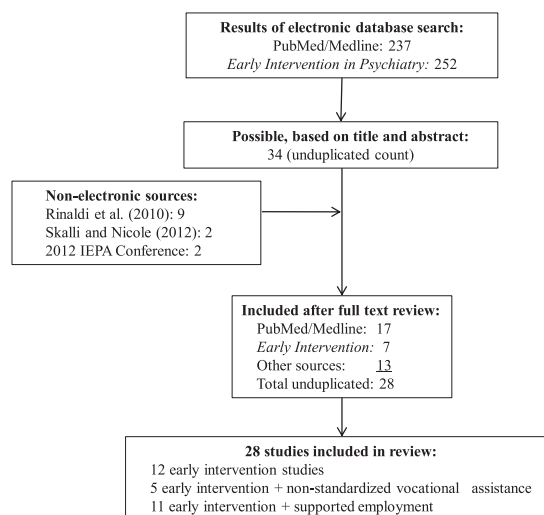


Fig. 1. Search results for systematic review of early psychosis and employment literature.

**Table 1.** Evaluation studies of early intervention programmes reporting employment outcomes

Early intervention programmes providing supported employment									
First author	Year	Location	Design	Follow-up period	Sample size (follow-up)	Sample retention	Age (Baseline)	Outcome	Main finding
Early Intervention Programs Providing Supported Employment									
Porteous	2007	New Zealand	One-group prospective (two cohorts)	Up to 24 months	C1: 110 C2: 125		C1:14–27 C2:15–26	emp rate	See <a href="#">Table 2</a> and <a href="#">Fig. 2</a>
Porteous	2009	New Zealand	One-group prospective	Up to 24 months	135		14–26	emp rate	
Rinaldi	2004	UK	One-group prospective	6 months	40		18–32	emp rate	
Rinaldi	2010b	UK	One-group prospective	12 months	142		17–32	emp rate	
Killackey	2008	Australia	RCT	6 months	SE: 20 C: 21	100.0%	15–25	emp rate	
Killackey	2012	Australia	RCT	6 months	SE: 67 C: 59	86.3%	Mn: 20.2	emp rate	
Major	2010	UK	Quasi-exp	12 months	SE: 44 C: 70	91.2%	17–34	emp rate	
Nuechterlein	2014	USA	RCT	18 months	SE: 36 C: 15	73.9%	18–45	emp rate	
Dudley	2014	UK	Cross-sectional series	Up to 1 year	SE: 104 C: 90	N/A	Mn = 24.2 (SE)/25.3 (C)	Employment and education	No differences on employment; SE had higher education rate
Fowler	2009	UK	Historical control	24 months	Baseline: SE: 102 C: 69	84–96%	Mn = 22.0 (SE)/24.7 (C)	15 h/week in paid work or education	SE: 44% C: 15%, $p < 0.05$
Singh	2007	UK	One-group prospective	1 year	121		Mn = 22.8	Employment or education	Increased from 29 to 42%
Early Intervention Programs Providing Nonstandardized Vocational Assistance									
Abdel-Baki	2013	Canada	One-group prospective	4 years	66	N/A	Mn = 23.5	Work or school	Increase from 47 to 70%
Kelly	2009	UK	Retrospective survey	Not stated	30	30% response rate	14–35	Self-report work or school	57%
Parlato	1999	Australia	Retrospective survey	Not stated	21	N/A	18–25	Part-time employment	19%
Poon	2010	Hong Kong	Retrospective survey	3 months	147	N/A	15–25	3 months in supported placement or comp emp	27%
Garety	2006	UK	RCT	18 months	EI: 67 C: 65	91.7%	Mn = 26	6 months in FT work or school	EI: 49% C: 29%, $p < 0.05$

Continued

Table 1. Continued

Early intervention programmes providing supported employment									
First author	Year	Location	Design	Follow-up period	Sample size (follow-up)	Sample retention	Age (Baseline)	Outcome	Main finding
Early Intervention Programs Without an Identified Vocational Component									
Henry	2010	Australia	One-group prospective	7 years	456	90.0%	Mn = 21.7	emp PT or FT at follow-up	39% employed
Agius	2007	UK	Quasi-experimental	3 years	EI = 40 C = 40	N/A	14–35	In work or school	EI: 65%* C: 48%
Bertelsen	2008	Denmark	RCT	5 years	EI = 275 C = 272	100% (nat registry)	Mn = 26.6	Working or in school	EI: 42% C: 46%
Chen	2011	Hong Kong	Historical control	3 years	EI = 700 C = 700	N/A	15–25	FT emp >6 months	EI: 64%* C: 48%
Cullberg	2006	Sweden	Historical control	3 years	EI = 60 C = 41	88.6%	Mn = 27.7 (EI)/ 29.3 (C)	Working or in school	EI: 51% C: 49%
Eack	2011	USA	RCT	2 years	EI = 24 C = 22	79.3%	Mn = 25.9	Competitive emp at 2 years	EI: 54%* C: 18%
Hegelstad	2012	Norway	Quasi-experimental	10 years	EI = 101 C = 73	61.9%	18–65	FT emp	EI: 28%* C: 11%
Mihalopoulos	2009	Australia	Matched historical control	Approx. 8 years	EI = 32 C = 33	63.7%	14–30	Any paid emp in last 2 years	EI: 56%* C: 33%
Bechdolf	2007	Germany	RCT	12 months	EI = 29 C = 38	59.3%	Mn = 25.2 (EI)/ 26.4 (C)	SAS II work subscale	No difference
Fowler	2009	UK	RCT	9 months	EI = 33 C = 38	92.2%	Mn = 27.8 (EI)/ 30.0 (C)	SOFAS	No difference
Macneil	2012	Australia	Matched controls	18 months	EI = 20 C = 20	92.5%	Mn = 21.8 (EI)/ 21.3 (C)	SOFAS	EI > C
Penn	2011	USA	RCT	3 months	EI = 22 C = 22	95.7%	Mn = 22	RFS work subscale	EI > C

\*EI significantly higher than C.

EI, early intervention programme; SE, supported employment; nat, national; Mn, mean; C, control; emp, employment; PT, part time; FT, full time; SOFAS, Social and Occupational Functioning Assessment Scale; SAS II, Social Adjustment Scale II; RFS, Role Functioning Scale.

**Table 2.** Employment and education outcomes in SE studies with early psychosis clients

Primary author	Year of publication	N	% Competitively employed during follow-up	Estimated increase from baseline (employment)	% Education enrolments during follow-up	Estimated increase from baseline (education)
Pre-post evaluations without comparison groups						
Rinaldi	2004	40	28%	18%	33%	0%
Rinaldi	2010b	142	44%	31%	28%	3%
Porteous	2007	100	Cohort 1: 36%	36%	13%	13%
Porteous	2009	125	Cohort 2: 59%	59%	16%	16%
		135	47%	47%	21%	21%
Quasi-experimental evaluation						
Major	2009	SE: 44 Ctl:70	SE: 36% Ctl: 19%	SE: 23% Ctl: 5%	SE: 20% Ctl: 24%	SE: 6% Control: 7%
Randomised controlled trials						
Killackey	2008	SE: 20 Ctl: 21	SE: 65% Ctl: 10%	SE: 60% Ctl: 0%	SE: 35% Ctl: 24%	SE: 35% Ctl: 24%
Killackey	2012	SE: 67 Ctl: 59	SE: 72% Ctl: 48%	SE: 50% Ctl: 37%	SE: 54% Ctl: 41%	SE: 38% Ctl: 22%
Nuechterlein	submitted	SE: 36 Ctl: 15	SE: 69% Ctl: 33%	SE: 45% Ctl: 16%	SE: 67% Ctl: 53%	SE: 41% Ctl: 44%
Total (all studies)	SE	709	49%	41%	27%	11%
	Ctl	165	29%	17%	33%	15%
Effect size			0.41	0.54	-0.13	-0.12
			$\chi^2(1)=21.6$ , $p<0.0001$		$\chi^2(1)=2.3$ , n.s.	

SE, supported employment; Ctl, control group.

2004, 2010b), we inspected sample sizes for different follow-up periods and chose the time frame that fairly reflected the outcomes while maintaining a reasonably large sample size. In two other studies (Porteous & Waghorn, 2007, 2009), the authors did not have a fixed follow-up period (Geoff Waghorn, personal communication, 2013). We reported their follow-up as 'up to 24 months.'

#### Employment and education outcomes

In Table 2 we report employment and education rates at baseline and during follow-up for eight studies of early intervention programmes providing supported employment. Overall, 709 patients received supported employment and 165 patients received early intervention services excluding supported employment. The employment rate during follow-up for the supported employment patients was 49%, compared with 29% for the control patients,  $\chi^2(1)=21.6$ ,  $p<0.0001$ ,  $ES=0.41$ . Adjusting for the rate of employment among patients at programme admission, the increased employment rate from baseline to follow-up was 41% for supported employment and 17% for controls,  $ES=0.54$ .

The enrolment rate in education during follow-up was 27% for supported employment participants compared with 33% of patients receiving usual services,  $\chi^2(1)=2.3$ , n.s.,  $ES=-0.13$ . The increase in education

enrolment rate over baseline for supported employment participants was 11% compared with 15% for patients receiving usual services,  $ES=-0.12$ .

A meta-analysis on follow-up employment rates for four studies included 167 patients receiving supported employment and 165 patients receiving usual services (early intervention clinical services without supported employment), yielding a significant overall odds ratio of 3.66 [1.93–6.93],  $p<0.0001$ , as shown in Fig. 2a. The test for heterogeneity was not significant ( $\chi^2=4.47$ ,  $p<0.21$ ). The four studies each had significant odds ratios for employment outcomes favouring the supported employment condition. Meta-analysis on the increase in employment rate over baseline also significantly favoured the supported employment group 4.97 [1.53–16.22],  $p<0.008$  (figure not shown). The meta-analytic results for follow-up rates of education for these same studies yielded an odds ratio of 1.39 [0.86–2.24],  $p=0.17$ , as shown in Fig. 2b. None of the studies found a significant difference between the supported employment and control conditions on enrolment in education.

Three studies using a combined measure of employment and education included a quasi-experimental study comparing an early intervention programme with a supported employment component to historical control participants who received usual community mental health treatment without supported employment. In

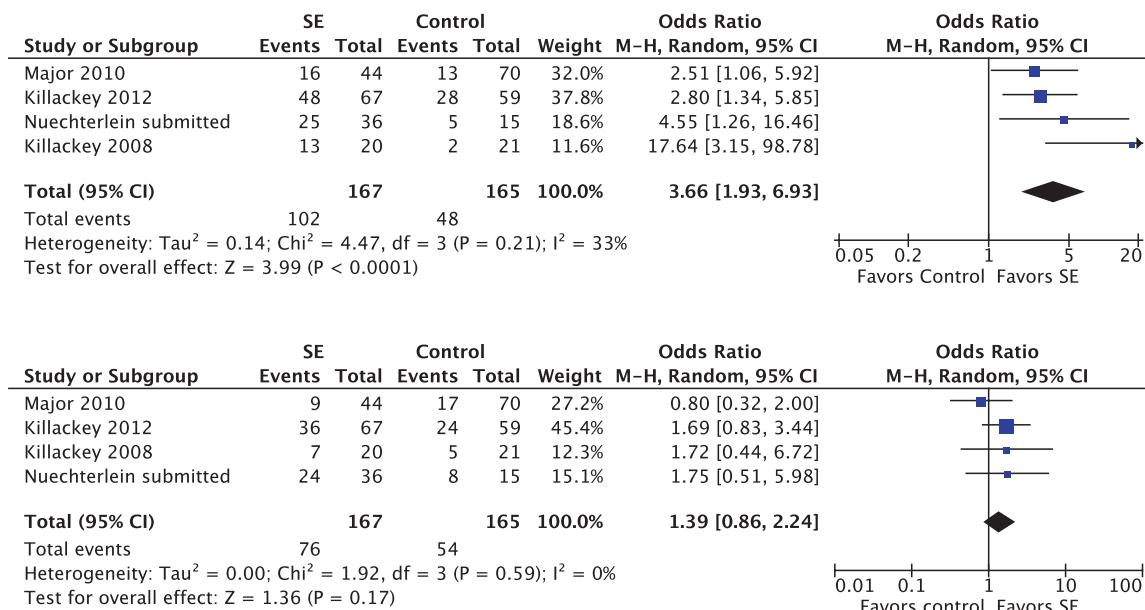


Fig. 2. Forest plots for controlled and quasi-experimental studies of supported employment (SE).

the first, 44% of the early intervention group and 15% of the control group achieved ‘full functional recovery,’ defined as either 15 h per week in paid work or full-time student at 2-year follow-up (Fowler *et al.* 2009a). A second was an evaluation of an early intervention team providing supported employment that found that the rate employed or in education significantly increased from 29% at baseline to 42% at 1-year follow-up (Singh *et al.* 2007). A third study compared two early intervention programmes, one providing supported employment and the other not (Dudley *et al.* 2014). At 12 months, a measure of any vocational or educational activity significantly favoured the programme providing supported employment. However, because the authors did not follow fixed cohorts, the findings are difficult to evaluate.

After this paper was accepted for publication, another relevant study was published online ahead of print (Craig *et al.* 2014). Although the study focus was motivational interviewing, the authors reported a 31% paid employment rate during 12-month follow-up for 134 patients served by four early intervention teams providing IPS services. If we include these data in calculating the overall employment rate for early intervention programmes providing supported employment, the overall rate decreases from 49 to 46%.

*Methodological characteristics of the supported employment studies*

Of the four studies included in the meta-analysis, three were randomised controlled trials (Killackey *et al.* 2008, 2012; Nuechterlein *et al.* submitted for publication).

One used a naturalistic design comparing early intervention programmes in two jurisdictions, only one staffed with an employment specialist (Major *et al.* 2010).

Variability in sampling can be seen across studies, as shown in Table 1. The studies differed substantially in the age eligibility criteria. In most studies, some participants were employed at the time of programme enrolment, thereby complicating the interpretation of employment outcomes. An admission criterion for two programmes was that patients had a goal of competitive employment (Porteous & Waghorn, 2007, 2009; Geoff Waghorn, personal communication, email, 2013), while in two other projects, all the patients had a goal to either get a job or complete their education (Rinaldi *et al.* 2004, Rinaldi *et al.* 2010b) (Miles Rinaldi, personal communication, 2013). The Major *et al.* (2010) study appears to have offered employment services to all patients who were enrolled in an early intervention programme regardless of interest in employment. Nuechterlein *et al.* (submitted for publication) excluded patients with significant substance abuse and required an initial period of clinical stabilisation period before enrolment.

As group, strength of these evaluations was attention to model fidelity. All but one of the eight studies identified in Table 1 was explicitly modelled after IPS. The exception was the Major *et al.* (2010) study, which adopted many IPS principles without overtly labelling their services as IPS. The remaining studies all monitored services using the supported employment fidelity scale (Bond *et al.* 1997). Nevertheless,

several projects also made adaptations either tailored to the population or to funding requirements. Most offered educational assistance, but did not follow a standardised supported education protocol. The supported employment programme in the Nuechterlein *et al.* (submitted for publication) study augmented their IPS services with a vocational skills training group. Because of funding restrictions, the two Australian studies (Killackey *et al.* 2008, 2012) limited IPS services to 6 months, a departure from the IPS model.

#### *Early intervention programmes providing unspecified vocational assistance*

As shown in Table 1, we identified five evaluations of early intervention programmes offering unspecified vocational services, classified as such by the absence of any clear suggestion of the intent to follow a specific vocational model (Parlato *et al.* 1999; Garety *et al.* 2006; Kelly *et al.* 2009; Poon *et al.* 2010; Abdel-Baki *et al.* 2013). Four were rudimentary programme evaluations with results that were difficult to evaluate. One was a randomised controlled trial reporting significant differences on a combined measure of employment and education favouring the programme with vocational services.

#### *Early intervention programmes without formal vocational assistance*

Twelve studies evaluating early intervention programmes without formal vocational assistance included eight reporting either a measure of employment outcome (Mihalopoulos *et al.* 2009; Henry *et al.* 2010; Chen *et al.* 2011; Eack *et al.* 2011; Hegelstad *et al.* 2012) or a combined measure of employment and education (Cullberg *et al.* 2006; Agius *et al.* 2007; Bertelsen *et al.* 2008). Four others reported changes on occupational functioning scales (Bechdolf *et al.* 2007; Fowler *et al.* 2009b; Penn *et al.* 2011; Macneil *et al.* 2012), as shown in Table 1.

Most controlled and quasi-controlled studies used treatment-as-usual control groups, which were usually less intensive services not tailored specifically to early psychosis. Such control groups were described as 'standard' or 'generic' community mental health treatment (Cullberg *et al.* 2006; Agius *et al.* 2007; Bertelsen *et al.* 2008; Mihalopoulos *et al.* 2009; Chen *et al.* 2011; Macneil *et al.* 2012). Other control groups were described as 'enriched supportive therapy' (Eack *et al.* 2011), 'usual methods of detection of psychosis' (Hegelstad *et al.* 2012), supportive counselling (Bechdolf *et al.* 2007), multidisciplinary case management (Fowler *et al.* 2009b), and a comprehensive, multi-

element clinic for the treatment of psychosis (Penn *et al.* 2011). Methodological limitations were common in these studies, including uncertain equivalence between treatment groups. The sample retention rates ranged from 62 to 100%. The studies ranged in follow-up period from 2 to 10 years, all but one with a follow-up period of 3 years or more. Another limitation was the variability across study in the outcome measure used (e.g., time employed, full-time employment). Most studies identified employment as a secondary outcome measure, with clinical outcomes primary.

Of the seven studies with comparison groups reporting employment or employment/education rates at follow-up, five had significant results favouring early intervention services over usual services. We did not conduct meta-analysis on these studies, concluding that the results would be uninterpretable, given the great variability in measures used. For the same reasons, it was infeasible to calculate a meaningful overall employment rate or employment/education rate for this group of studies. Two of four studies examining changes in standardised occupational scales had significant results favouring early intervention services over usual services. One study with non-significant findings used a control group receiving some supported employment services, confounding the results (Fowler *et al.* 2009b). Aggregating the findings for all 11 studies with comparison groups, seven (64%) reported significant vocational/education outcomes favouring early intervention over usual services.

## Discussion

This review found that incorporating well-defined evidence-based supported employment services into comprehensive early intervention programmes for patients in early psychosis significantly increases employment rates but does not improve educational outcomes compared with programmes lacking these services. About half of all patients in the programmes offering supported employment obtain competitive jobs during follow-up compared with 29% of those receiving supported employment. Although the number of studies was small, the findings for effectiveness of supported employment were consistently positive. By contrast, we cannot draw any conclusions about the effectiveness of unspecified vocational services in early intervention programmes, given the small and descriptive literature in this area.

The third type of study examined in this review evaluated specialty early intervention services *v.* generic, usually less intensive, community treatment. These studies hypothesised that specialised clinical care for early psychosis would promote vocational



recovery, even absent specific vocational services. This hypothesis resembles the assumption held historically by many clinicians and researchers in the psychiatric field that helping patients with severe mental illness address psychiatric symptoms through medications and psychotherapy would enable them to pursue vocational rehabilitation and to gain employment – an assumption that proved false (Bond, 1992). In the current review, the parallel evidence regarding early intervention programmes without an identified vocational component was inconclusive because of the huge variability in measures of employment/educational outcome. The majority of studies did find significant improvement in functional outcome for early intervention patients compared with those in usual services, usually measured over a period of years. Confounding this overall finding, however, are methodological weaknesses in this heterogeneous group of studies.

Even assuming that we were to give the most generous interpretation of the findings from the studies of the early intervention programmes without identified vocational services, the control conditions for these studies were mostly generic mental health treatment services, which were not tailored specifically to patients with early psychosis. Also unknown is the extent to which control patients received these services rather than dropped out.

By contrast, the control groups in the supported employment studies were much more stringent, examining the *added* effects of supported employment for patients who were all receiving early intervention services. We conclude that the impact on employment of adding supported employment to early intervention programmes is larger than that for early intervention programmes compared with usual services.

While adding supported employment services to an early intervention programme leads to better competitive employment outcomes, the ES is moderate for the difference in employment rates at follow-up compared with services as usual. Furthermore, the overall competitive employment rate at follow-up in this review of 49% for young adults receiving supported employment is less than the overall rate of 59% in a review of 15 controlled trials of IPS for adults with severe mental illness (Bond *et al.* 2012*b*). It would be important to understand the reasons for this apparent diminished impact of supported employment for the early psychosis population.

Several interpretations are possible: First, people with early psychosis may be less responsive to evidence-based employment interventions than adults with longer-term illnesses. This conclusion seems unlikely, given a meta-analysis showing that young adults benefit from IPS as much, if not more, than older adults (Bond *et al.* *in press*). Second, some

patients with early psychosis may prioritise education over employment, thereby diluting the employment rate. Third, the early intervention studies reviewed above may not have implemented IPS supported employment with high fidelity or followed patients long enough, given that some patients initially pursued education.

The field needs longer-term and more rigorous studies of employment services within early psychosis programmes. The lack of findings for educational outcomes surprises, given the importance of educational goals in this age group, but the field lacks an evidence-based model of supported education. Researchers also should track disability benefits status, although these vary tremendously from country to country.

The cost implications of increasing employment through supported employment in early intervention programmes are enormous because young people with psychotic illnesses tend to remain disabled for decades. Worldwide, people with serious mental illnesses constitute the largest and fastest-growing group of disability beneficiaries (McAlpine & Warner, 2000; Danziger *et al.* 2009). Many experts recommend refocusing policy on preventing entry to disability programmes rather than on promoting exits from these programmes (Burkhauser & Daly, 2011). Observational studies suggest that, after initial episodes of psychosis, young adults who join or remain in the labour market are more likely to forestall entry into the disability system (Cougnard *et al.* 2007; Krupa *et al.* 2012; Drake *et al.* 2013). Two evaluations aimed at diverting new applicants for disability benefits through early interventions incorporating employment services had disappointing results (Fraker, 2013; Gimm *et al.* 2014), but neither study used an evidence-based employment model.

### Limitations

Our review has several limitations. First, although it is the most comprehensive and rigorous to date, it did not meet the full standards of a PRISMA review (Moher *et al.* 2009). For example, we did not examine publication bias or method of concealment for randomised trials, nor did we exhaustively search the grey literature. Second, study quality was highly variable. The supported employment studies were small with short follow-ups. The effects on the population and the long-term effects of supported employment interventions are almost entirely unknown. Third, with the exception of supported employment, which was usually well described and systematically monitored with a fidelity scale, many papers lacked adequate descriptions of their interventions. This deficiency is widespread in the intervention literature (Michie *et al.* 2009). Fourth, the study methodologies were

heterogeneous, using diverse measures, observational periods, and data collection procedures. The lack of methodological consistency across studies included in this review is striking and in sharp contrast to the consensus among IPS researchers on methodological standards for evaluation studies (Marshall *et al.* 2014). Shared standards permit comparisons across studies and meta-analytic syntheses. Future early intervention studies should include a comprehensive set of employment measures, including job duration, earnings and time to first job (Bond *et al.* 2012a). Fifth, the use of inferential statistics to evaluate differences between combined treatment and control conditions should be interpreted with caution, given multiple threats to validity, including selection and sampling biases.

## Conclusions

Early intervention researchers recognise the need to include vocational interventions in programmes for early episode patients, and are now explicitly identifying IPS as the preferred model (Nordentoft *et al.* 2013). This review provides additional support for this recommendation. The potential of these programmes to reduce participation in disability programmes remains unclear.

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## Conflict of Interest

None.

## Ethical Standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

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