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## Article

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# Programs' Efficacy to Develop Employable Skills for People With Functional Diversity: A Meta-Analysis

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## Abstract

**Purpose:** Promoting the labour integration of people with functional diversity is a key element to achieve their social inclusion. This meta-analysis aims to examine the effectiveness of experimental programs in developing employable skills for people with disabilities.

**Methods:** Literature searches up to June 2019 were conducted in four databases (Web of Science, Scopus, PsycINFO and ERIC). Studies that met the following criteria were selected: (1) The program should develop employable skills; (2) the participants should be people with functional diversity; (3) the study should have a design with an experimental group and a control group as well as pretest and posttest measurements; (4) the study had to provide enough data to calculate the effect sizes; and (5) the study had to be written in English or Spanish. 67 independent studies met the selection criteria, among 14 articles published between 1998 and 2019.

**Results:** The results revealed mean effect sizes in favour of the experimental group for the set of all studies according to data reported by people with functional diversity, as well as according their relatives and teachers. The two dimensions of the programs with a significant effect size in favour of the experimental group were interview skills and career

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planning. Furthermore, it was found that the programs showed a higher degree of effectiveness in groups formed only by people with intellectual disabilities, with a lower educational level, whose duration ranged from six to twelve months. This was particularly the case with participants from Spain and Australia.

**Conclusion:** Promoting the labour insertion of people with disability is a key element to achieve their social inclusion. Programs that support and develop employability and that are conducted upon experimental conditions do have a positive impact upon young people with functional diversity. Upon the results, we discuss practical implications for integrating disabled persons into the labour market.

**Keywords:** Employability, Transition From Education and Training to Employment, People With Disability, Career Planning, Vocational Education and Training, VET

## 1 Introduction

Along history, the notion of disability and the legislation that addresses it have evolved and have conditioned the actions and support provided to people with functional diversity. This last concept, considered less offensive and more appropriate these days, refers specifically to people who perform certain functions differently than the average population so they are different than the statistical norm due to some reason (Senent-Ramos, 2020), even though many academic and policy documents use disability, like the Convention on the Rights of Persons with Disabilities (United Nations, 2006) or the European disability strategy 2010-2020 (European Union, 2010). In the past decades, there has been an evolution towards conceptual models that define disability in rather inclusive ways; a shift has been identified from a traditional individualist segregation model, where religious or magical explanations are provided, towards a social model based upon the relevance of personal autonomy (López-Bastías, 2019). This approach contributes to a practice that acknowledges the principle of equal opportunities, and this favors self-determination of people with disability. Accordingly, in recent years there has been an increase in actions and initiatives oriented towards diminishing inequalities that people with functional diversity face both in personal and professional domains. Nevertheless, despite the update of the notion of disability has implied a proliferation of legal and institutional measures regarding disability, these approaches are not exclusive and they are able to coexist in a given time, in such a way that inequalities remain.

According to the statistics of the United Nations, 82% of people with disability who live in developing countries are below poverty threshold (Martínez-Ríos, 2011). In Spain, according to the National Institute of Statistics (2019) employment rate among people with disabilities was 25.9% in 2017, while people without disabilities doubled that number, reaching 64.4%,

similarly to previous years. Therefore, restrictions in access to employment have implied an impulse for legal measures and other actions that attempt to reduce such inequalities.

The United Nations Convention on the Rights of People with Disabilities (United Nations, 2006) has established a new policy framework to strengthen their rights and liberties, whatever their condition. Furthermore, this organization suggested in 2015 the Agenda 2030, an action plan with the aim to achieve the world commitment in favor of people, the planet and prosperity. Among its aims, the acknowledgement and protection of rights of people with disabilities (Madans et al., 2017).

Nevertheless, despite progress regarding equal opportunities, no discrimination and universal accessibility of people with disabilities; there are yet huge differences in employment indexes of people with disabilities and the rest of the active population, as well as prejudice and discrimination in work relations (Goldman et al., 2006; Schur et al., 2009). There are also reports that show that recession and economic crisis have a negative impact upon this people, with increasing wage differences with people without disabilities (Eurofound, 2013; National Institute of Statistics, 2017) resulting in damages upon health and welfare.

Active participation in the labor market is one of the keys in quality of life of the population and this is also the case for people with functional diversity (Novo-Corti, 2018), and this is more the case in times of growing precariousness. Access to decent work is crucial in order to achieve social inclusion. Labor integration of people with functional diversity has been and is an aim of social policies and employment for international organizations and an increasing number of countries adopt them (Douvitsa, 2020; Fici, 2020; Maffioletti & Sato, 2020; Meira, 2020; Salinas & Marhuenda, 2020). The social economy and Third Sector Organisations are playing a major role here (Bengoetxea & Fajardo, 2020; Marhuenda, 2021). This requires not only technical competence, but also social and personal abilities that allow workers to be employable or, in terms of Eraut (2004), to be competent in different domains or learning trajectories (job performance, role performance, working in teams, understanding and awareness or personal development among others). Findings about these possibilities with vulnerable groups have already been published (Chisvert et al., 2018; Marhuenda, 2018). In this sense, learning to work and becoming a worker are processes closely connected to becoming an adult and a citizen too, not just in individual terms, but also in societal ones; as it is the status of worker what provides acknowledgement for the status of citizen and of autonomous life, one free of dependency support provided by the administration, the families or volunteering practices.

In this regard, transition is a crucial dimension in our research, and it becomes the focus of our search question too: Transition programs are holistic as they intend to provide different supports (education, housing, health, counselling and leisure among them), as Casal (1996), Casal et al. (2015) and Merino (2007, 2019) have shown. Transition processes have become a stage of its own (Walther, 2006), beyond their instrumentality in getting a job, and it is in this context that employability gains relevance too: As a matter of fact, being employable

does not guarantee getting a job, but it is an indicator of readiness. Employability has been discussed in its relation to work and education (Gonon et al., 2008) as well as specifically focused upon people living in vulnerable circumstances (long term unemployed, people at risk of social exclusion, people with disabilities) in its individual and contextual features (Córdoba et al., 2013; Llinares et al., 2016). Transition programs try to foster employability rather than finding a job in themselves, and they do so by improving personal and social skills of the individuals, as well as their wellbeing along the process. This involves also addressing issues other than work-related ones (Hofmann et al., 2021). At this point, dealing with personal expectations, career guidance and planning, social skills to interact with other adults and self-confidence and self-knowledge are important dimensions in these programs. Therefore, occupational training is relevant, as well as the qualification level, but given limitations introduced by disabilities, the kind of disabilities have an impact upon expectations and ability to learn (Badiola et al., 2014; Elorriaga et al., 2019; International Labour Organization, 2016). Therefore, the kind of disability, educational background and duration of the program are dimensions that could have an impact upon intervention, as the country is also expected to do insofar there are specific policies, regulations and protective measures that have to be considered. Therefore, transition programs for vulnerable people often try to facilitate becoming an adult and an autonomous citizen, not just a worker: Nowadays, training for the labour market consists also of preparation for unemployment, even to increasingly precarious working conditions.

Much research has focused upon the study of transition into adult life of people with disability, without having the desired effect to improve social and labor inclusion (Dyke et al., 2013). Therefore, Pallisera et al. (2018) took the effort to identify, through focus groups with people with disabilities, their families and professionals in the fields of education and social work, the main obstacles that they face. Among these, the need to offer them a more flexible curriculum fostering their labor inclusion and the need to improve career guidance, particularly at the end of Secondary Education. It is therefore worth paying attention to training addressed to improve the employability of people with disability. Facilitating labor insertion of people with functional diversity through training opportunities, information and practice of personal, social and technical skills to have access into the world of work is crucial in this regard. Vocational education aimed at accredited qualification is key to equip youth with functional diversity to enter the labor market (Gilson et al., 2017).

Several systematic reviews have rigorously explained the 'state of the art' about this issue. Gilson et al. (2017) provided a systematic review through the analysis of 56 studies about different training methods for training employment skills among people with disabilities. They identified 21 such methods, among which four stranded out: Assessment of performance feedback, device-assisted instruction, response prompting and community-based instruction. Englbrecht et al. (2017) reviewed 99 documents on transition programs into work for people with disabilities highlighting the need for further research. Several systematic reviews on peo-

ple with autistic spectrum disorder (ASD) pay attention to the features and results of actions based upon employment programs, transition into work and occupational activities (Hedley et al., 2017; Lee et al., 2018; Taylor et al., 2012; Walsh et al., 2017). Among these, Lee et al. (2018) point to practice within these employment programs focused not only in fostering occupational skills and improving employability results, but which also provide collateral benefits improving mental health, self-confidence or time-management, among others.

Despite systematic reviews show results indicating scientific standards, objectivity, systematization and replicability (Botella & Sánchez-Meca, 2015), it is not possible to draw conclusions based upon the measurement of effectiveness. In order to do so, meta-analytical studies allow to apply statistical techniques to integrate results in a set of empirical studies with the aim to establish the efficacy of certain programs and interventions.

Park et al. (2016) developed a meta-analysis with seven random controlled trials which analyzed the effect of training students with disabilities in social skills related to employment. Results pointed to a moderated effect size, and they found a larger effect in those studies applying direct instruction, particularly in cases with ASD, emotional or behavioral disorder and intellectual disability. Among the limitation of this research, they analyzed the isolated effect of social skills, without considering other relevant skills in access to the labor market. More recently, Alson et al. (2019), conducted a survey among managers and human resource officers, and they identified that the skills most demanded among people with disability are communication, teamwork, analysis and use of computer applications. Therefore, skills expected to be found among people with functional diversity when accessing employment are wider than mere social skills. Nonetheless, there have been no meta-analysis that analyze the effectiveness of employment programs considering skills in a wider sense.

Upon review of scientific literature, we have detected and increase in the number of studies conducted in recent years on access to employment of people with functional diversity. We are also conscious of the different measures taken to improve the awareness and engagement along the world to support the rights of people with disabilities. Nevertheless, employability indexes of people with functional diversity do not reach the expectations that neither programs nor research have cherished. Before this limitation, it seems adequate and timely to conduct a meta-analysis to allow identification of how effective prove employment programs for people with functional diversity and which are the conditions they embed that increase the success of such measures.

Therefore, our aim is to conduct a meta-analysis to assess the efficacy of employment programs addressed to young people with functional diversity. The research question we attempt to answer in our work is the following: What is the effectiveness of transition programs under experimental conditions that develop employability skills for young people with functional diversity; where effectiveness consists of a statistically significant larger size effect in the experimental groups in relation to the control groups.

## 2 Methods

### 2.1 Selection Criteria

Studies that met the following criteria were selected: (1) The program should develop employable skills; (2) the participants should be people with functional diversity; (3) the study should have a design with an experimental group and a control group as well as pretest and posttest measurements; (4) the study had to provide enough data to calculate the effect sizes; and (5) the study had to be written in English or Spanish.

### 2.2 Data Sources and Search Strategy

Studies were found using the Web of Science, SCOPUS, PsycINFO and ERIC databases for studies published in English or Spanish up to June 2019. The search strategy used was (program\* or intervent\* or train\*) AND transition AND (employment or job or work) AND (disab\* or autis\*)<sup>1</sup>. No limitations in the search strategy were considered. In addition, other sources (e.g., google scholar and the references' list of the theoretical reviews) were used to rescue research that may not have been recovered from the afore mentioned databases.

Figure 1 presents the selection process followed by the PRISMA checklist. 3934 records were identified, of which 3048 did not simultaneously appear in all the databases used. From these studies, 2527 were excluded for not addressing the specified topic of research or for being written in languages such as Korean and Russian. Thus, 521 works were subject to the inclusion criteria, identifying a final sample of 14 studies that developed employable skills through programs for youth with functional diversity. The exhaustive reading of the articles allowed us to confirm the choice of all 14 papers given that they met all the inclusion criteria. Some of them included different measures of employable skills and other variables, so they were analyzed as independent meta-analyses. This study was developed in accordance with the PRISMA diagnostic test accuracy checklist that provides specific guidance for reporting of systematic reviews and meta-analysis (McInnes et al., 2018).

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<sup>1</sup> Following a reviewer's recommendation, we have checked in the four databases and establishing the same time limit (June 2019, except in Scopus -through the year 2019-), to check whether including new keywords in the search strategy should lead us to include new articles in the meta-analysis because of meeting all the inclusion criteria. We tested the following search strategy (program\* or intervent\* or train\*) AND transition AND (employment or job or work or employability or "employment skills") AND (disab\* or autis\* or "special needs") and the results found were: Web of Science 1667 results (207 more), Scopus 1000 results all the year 2019 (86 more), ERIC 1209 results (334 more) and PsycINFO 1399 results (720 more). Although the number of studies has increased, none of them meets the selection criteria reporting enough data to calculate the effect size and be implemented with an experimental group and a control group as well as offering pre-test and post-test measurements.

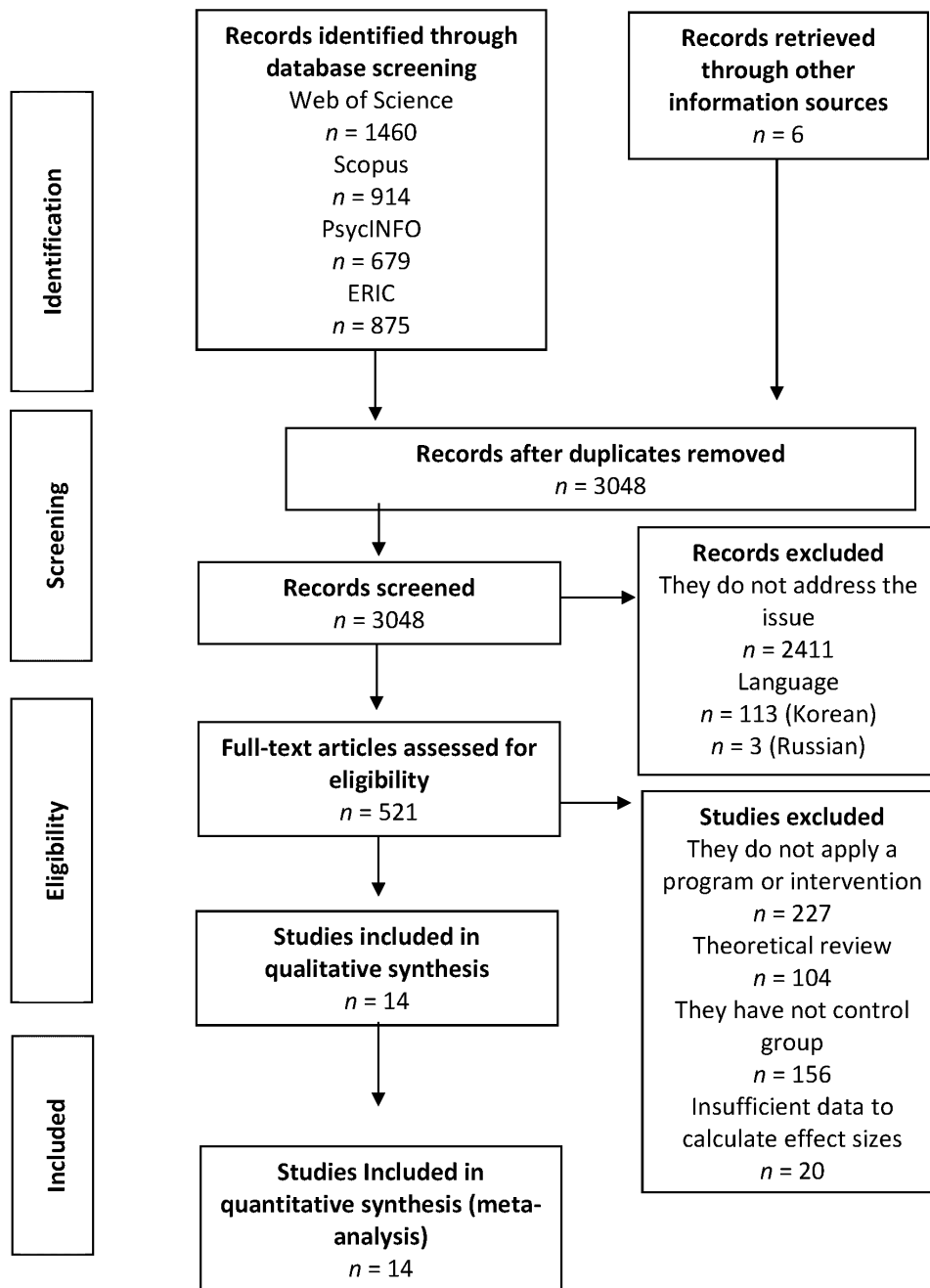


Figure 1: PRISMA Flow Diagram for Study Selection



### 2.3 Coding Moderator Variables

In order to analyze the heterogeneity between the results of the studies, the moderator variables that could be related with the effect sizes were coded. The moderator variables were classified according to Lipsey's classification (1994) as (a) participants' variables, that include personal characteristics of the samples (e.g. type of disability or disorder, the age range of the sample, the gender distribution, intelligence quotient); (b) treatment's variables, which are those that explain intervention characteristics (e.g. the magnitude of total duration, number of weekly hours of treatment (frequency), proportion of participants, use of the technology, teaching profile); (c) methodological characteristics, which have to do with the design of the research and the implementation of the empirical study (e.g. randomly group formation or not, type of control group (active versus non-active), number of participants in the control and experimental groups); and (d) extrinsic characteristics, which, in principle, should not relate to the scientific process, but that can be associated with the results (e.g. year of publication or country). The coding process was performed separately by two researchers in order to finally obtain a reliable and accurate code relationship.

### 2.4 Statistical Analyses

In this meta-analysis a random effect model was used. This statistical model is considered more appropriate because:

*"Is more likely to fit the actual sampling distribution, does not impose a restriction of a common effect size, yields the identical results as the fixed-effect model in the absence of heterogeneity and allows the conclusions to be generalized to a wider array of situation." (Borenstein et al., 2010, p. 107)*

Typified mean change difference,  $d$ , was chosen as a measure of effect size (Glass et al., 1981). Positive values of  $d$  reflected an improvement from pretest to posttest in the treated group. The statistical analysis of the effect sizes was based on the model proposed by Hedges and Olkin (1985), according to which each effect size is weighted based on the inverse of its variance, so that studies with higher sample sizes exert a greater specific weight in these analyses. The mean efficacy was calculated and the heterogeneity was assessed using the  $Q$  test and the index  $I^2$  (Higgins & Thompson, 2002). Statistical significance was set at  $p < .05$  and significant heterogeneity was considered with the following values  $p < .05$  and  $I^2 > 50\%$ . The heterogeneity will be explored through the influence of moderating variables. Statistical analyses were calculated with the RevMan5.3 program (2014).

## 3 Results

### 3.1 Descriptive Features of the Studies

Table 1 provides the descriptive features of the studies included in this meta-analysis. Fourteen studies met all inclusion criteria, among which 67 independent studies were identified, given that most of this research analyzed data from more than a variable upon different evaluation tools. Research was published between 1998 and 2019, 85.7% being published in the current decade.

Among features defining participants, age range varies between 12 and 55. Regarding sex, most of the studies entail mixed samples. Only one of the studies was conducted with only boys (Strickland et al., 2013) and there was also another study with only girls (Lindstrom et al., 2013). Seven out of the 14 reports were shaped by people with autistic spectrum disorder, one of them with people with intellectual disability, two in which participants had several difficulties and/or disabilities. Regarding intelligence quotient, while nine of the reports do not provide these data, in those which do so, most participants were above 70. Six of the reports do not inform about the educational background either, even though most of them point to a basic mastery of reading and writing competences (Fernández-Solano et al., 2019; Hatfield et al., 2017; Lindstrom et al., 2013; Smith et al., 2014), basic digital competences (Hatfield et al., 2017) or having successfully completed secondary education (Hayes et al., 2015; Oswald et al., 2017) and even post-compulsory and higher education (Mawhood et al., 1999). Nine reports were conducted in the United States, two of them in Spain, two in Australia and one in Japan. Only one of the reports provides evidence of previous work experience of participants (Ipsen et al., 2019). Two reports include other participants in the study, through the views of families (Hatfield et al., 2017; Powers et al., 2001) and two others take into account the views of teachers (Murray et al., 2013; Powers et al., 2001).

In terms of methodology, all research reports used a quasi-experimental design and the allocation of people to the experimental or control group was random except in three cases, two of them with non-random allocation (Lindstrom et al., 2013; Verdugo et al., 1998) and another one that does not specify this information (Mawhood & Howlin, 1999). Regarding the activity of the control group during the implementation of the program, most research proceed with the ordinary treatment of the group. Finally, several tools were used to assess the progress of participants, and the skills most evaluated were those related to emotional wellbeing, social skills, job expectations, skills for a job interview and career planning.

Regarding the features of the intervention programs, the length varies from 10 minutes per session with a total of five sessions (Kumakazi et al., 2017), to programs cuya lasting up to 24 months (Mawhood & Howlin, 1999). Most programs were applied individually or in small groups; while two of them combined individual and group treatment (Powers et al.,

2001; Verdugo et al., 1998). Five of the reports included the use of technologies, with online programs (Hatfield et al., 2017), mobile phones (Hayes et al., 2015; Strickland et al., 2013) or virtual reality (Kumakazi et al., 2017; Smith et al., 2014). Trainers were in most cases researchers supported by special education teachers, professional career guidance staff or human resource managers. Six of the reports indicate that trainers received specific training for the program (Lindstrom et al., 2013; Murray et al., 2013; O'Mally & Antonelli, 2016; Oswald et al., 2017; Powers et al., 2001; Smith et al., 2014) and three of the research teams included school teachers among them (Hatfield et al., 2017; Murray et al., 2013; Verdugo et al., 1998). All reports indicate a theoretical and practical approach except the one conducted by Mawhood and Howlin (1999) where only a practical approach is considered.

Table 1: Characteristics of the Studies Included in the Meta-Analysis – 1st Part

Authors (year)	Participants					Methodology		
	Age, gender and country	Type of disability and IQ	Educational background	Professional training and previous labour experience	Other recipients	N experimental, N control and groups formation (random or not)	Activity in the control group	Instrument' name, type (self-report, interview, etc.) and specifically for people with disabilities
Fernández-Solano et al. (2019)	18-36 Girls= 14 Boys= 11 Spain	Intellectual disability from mild to moderate	Basic skills such as writing, reading or calculation	They were enrolled in a job placement course	-	E= 12 C= 13 Random	Attended to lessons about vocational guidance	SF-36 Health Survey (Alonso et al., 1995). - Self-report. No Specific. Role Checklist (Colón & Haertlein, 2002). - Self-report. No Specific. Participants' personal journals. Focus groups.
Hatfield et al. (2017)	12-18 Girls= 19 Boys= 58 Australia	Autism Spectrum Disorder. Not intellectual disability	Basic computer skills and the ability to write at a year 5 reading level	-	Parents	E= 39 C= 38 A quasi-randomized controlled trial	Regular transition planning practice	AIR Self-Determination Scale (Wolman et al., 1994) - Self-report. No Specific. Career Development Inventory-Australia-Short Form (Thompson et al., 1981). - Self-report. No Specific. Personal Wellbeing Index (PWI-SC) (Cummins & Lau, 2005). - Self-report. No Specific. Learning Climate Questionnaire (LCQ, Williams & Deci, 1996). - Self-report. No Specific. Transition Planning Objectives Scale - Self-report. No Specific.

Ipsen et al. (2019)	14-16 Girls= 487 Boys= 941 USA	Learning disabilities and speech and language delays; 18.3%), personality and impulse control disorders (13.8%), autistic disorders (13.9%), intellectual disabilities (8.2%), and mood disorders (5.9%). -	-	Labour experience is assessed in both groups	-	E= 724 C= 704 Random	They receive the current services offered by their respective state transition and education systems	American Institutes for Research Self-Determination Scale (AIR-SDS) (Wolman et al., 1994). -Self-report. No Specific. Perceived Expectations Employment items -Self-report. No Specific. Adaptation from a single item on the Youth Risk Factor Surveillance System (YBFSS) (Centers for Disease Control and Prevention, 2018) -Self-report. No Specific.
Kumakazi et al. (2017)	18-25 Girls= 3 Boys= 12 Japan	Autism spectrum disorder Social anxiety No differences in IQ between both groups	-	-	-	E= 7 C= 8 Random	Read and answer materials about question collection for which was often asked in real job interview daily for a minimum of 10 min	Autism Spectrum Quotient-Japanese version (AQ-J) (Wakabayashi et al., 2004). - Self-report. Specific. Wechsler Intelligence Scale for Children-Fourth Edition or the Wechsler Adult Intelligence Scale-Third Edition. - Self-report. No Specific. Questionnaires scored on Likert rating scales of self-confidence in performance - Self-report. No Specific. Salivary cortisol after the human interviewer sessions and at the same time each day - Participants provided salivary. No Specific.

Lindstrom et al. (2013)	14-21 Girls= 110 Boys= 0 USA	Disabilities and other barriers- Learning disability (74%) Autism spectrum disorder (8%) Multiple disabilities (7%) Intellectual disability (5%) Other health impairment (2%) Visual impairment (2%) Hearing impairment (1%) Orthopedic impairment (1%).	Enrolled in high school	-	-	E= 68 C= 42 Not random	Control group received the typical transition services that were available in their high schools	PATHS survey - Self-report. No Specific.  Two subscales from the Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995) - Self-report. No Specific.  Subscales from the Student Engagement Inventory (Appleton et al., 2006) - Self-report. No Specific. Teacher Support Scale (Metheny et al., 2008) Vocational Skills Self-Efficacy Scale (VSSE; McWhirter et al., 2000) - Self-report. No Specific. The Career Outcome Expectancy Scale (COE; McWhirter et al. 2000). - Self-report. No Specific.  Self-Advocacy subscale from the College Students with Disabilities Campus Climate survey (Lombardi et al., 2011) - Self-report. Specific. Seven focus groups
Mawhood et al. (1999)	18-55 Girls= 3 Boys= 47 United Kingdom	High functioning Autism or Asperger Spectrum Disorder. IQ 70 or above	Range from bachelor's degree or higher at university to special needs courses	-	Employers Support workers	E= 30 C= 20	-	Psychometric battery assessing: Cognitive and linguistic skills, academic attainments and social understanding. - Self-report. No Specific.  Rosenberg Self-Esteem Inventory (Rosenberg, 1965) - Self-report. No Specific.  A shorter battery (WAIS-R, British Picture Vocabulary Scales and Expressive One-Word Picture Vocabulary Test) - Self-report. No Specific.

Murray et al. (2013)	14-18 Girls= 87 Boys= 135 USA	Disability	-	-	Teachers	E= 122 C= 100 Random	Received "business-as-usual" within special education settings	<p>Student report</p> <p>Vocational outcome expectations (VOCs) (McWhirter et al., 2000)</p> <p>- Self-report. No Specific.</p> <p>Social Skills Rating System (SSRS) (Gresham &amp; Elliott, 1990)</p> <p>- Self-report. No Specific.</p> <p>Teacher report</p> <p>Occupational Skills subscale on the Adaptive Behavior Inventory (Brown &amp; Leigh, 1986).</p> <p>Social Skills Rating System (Gresham &amp; Elliott, 1990).</p> <p>Absences.</p> <p>Teacher-rated school engagement, Research Assessment Package for Schools (RAPS).</p> <p>Teacher coverage of the WAGES curriculum</p>
O'Mally et al. (2016)	20-35 Girls= 32 Boys= 19 USA	Visual impairments	Participant should be within a year of graduation and seeking post-graduation employment.	-	-	E= 26 C= 25 Random	-	<p>Job-Seeking Self Efficacy (JSSE) adapted from the JSSE scale for people with physical disabilities (Barlow et al., 2002).</p> <p>- Self-report. Specific.</p> <p>Assertive Job-Hunting Survey (AJHS) (Becker, 1980).</p> <p>- Self-report. No Specific.</p> <p>Career Adaptability Scale (CAS) adapted from the Career Futures Inventory (Rottinghaus et al., 2005)</p> <p>- Self-report. No Specific.</p>

Oswald et al. (2017)	18-38 Girls= 13 Boys= 31 USA	Autism spectrum disorder. Verbal IQ $\geq$ 70	Completed high school, had spoken language and not exhibited evidence of psychosis or behavioral/ conduct problems	-	Each participant selected a parent or close relative, referred to as "Social Coach", to participate in the concurrent caregiver coaching group	E= 28 C= 16 Random	Control group received the ACCESS Program intervention 3 months after the two treatment groups had completed the program	Informant-Report Measures Adaptive Behavior Assessment System—Adult Form, Third Edition (ABAS-3) (Harrison & Oakland, 2015) - Self-report by Social coach. No Specific. Seven Component Self-Determination Skills Survey (Carter et al., 2013) - Self-report by Social coach. No Specific. Self-Report Measures Coping Self-Efficacy Scale (CSES) (Chesney et al., 2006) - Self-report. No Specific. ASEBA Adult Self-Report (ASR) (Achenbach & Rescorla, 2003) - Self-report. No Specific
Powers et al. (2001)	14-17 Girls= 13 Boys= 30 USA	Diverse disabilities	-	With regard to attendance at educational or transition planning meetings, 43% of the treatment group had attended their prior year's meeting while 41 % of the wait list group had attended their meeting.	-	E= 21 C= 22 Random	Control group would participate during the following semester	Educational Planning Assessment (EPA) (developed by this research) - Self-report. No Specific. The Transition Awareness Survey (Martin & Marshall, 1993) - Self-report. No Specific. The Family Empowerment Scale (Koren et al., 1992) - Self-report. Specific. Observational coding system evaluated student participation in transition planning meetings.



Smith et al. (2014)	18-31 Girls= 5 Boys= 21 USA	Autism spectrum disorder	(1) have at least a 6th grade reading level	-	-	E= 16 C= 10 Random	Treatment as usual	Repeatable battery for the assessment of neuropsychological status (RBANS) (Randolph et al., 1998)  Bell-Lysaker emotion recognition task (BLERT) (Bell et al., 1997)
Strickland et al. (2013)	16-19 Girls= 0 Boys= 22 USA	High functioning Autism Spectrum Disorders and Asperger's Disorder. Not intellectual disability		-	-	E= 11 C= 11 Random	None	Interview skills rating instruments  - A human resources professional completed the rating scales based on participant. No Specific.  Social responsiveness scale (Constantino & Gruber, 2005).  - A human resource professional completed the rating scales based on participant performance.  - It allows the quantification of symptomatology associated with ASD.
Verdugo et al. (1998)	18-45 Girls= 35 Boys= 49 Spain	Physical disabilities and deafness	They are studying in a professional rehabilitation center	Students of fields related to office work, artistic fields and the practical activities	-	E= 56 C= 28 Not random	-	My Vocational Situation, (Holland et al., 1980).  - Self-report. No Specific.  The Employability Maturity Interview, EMI; (Morelock et al., 1987)  - Self-report. No Specific.  Vocational Self-Awareness, (Farley, 1988)  - Self-report. No Specific.  Self-Image questionnaire Revised, OSIQR, (Offer et al., 1992).  - Self-report. No Specific.

Hayes et al. (2015)	17-18 Girls= 2 Boys= 13 USA	Autism Spectrum Disorders	Senior year of high school or had graduated high school	Receiving services from the transition program	-	E= 8 C= 7 Random	None	A rubric Researchers transcribed the research interviews for qualitative analysis
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Note. IQ= Intelligence Quotient

Table 1: Characteristics of the Studies Included in the Meta-Analysis – 2nd Part

Authors (year)	Intervention								
	Name of the program or intervention	Duration	Proportion	Use of technology	Teaching profile			Procedure	Assessment
		Frequency and total	N / group intervention	Used or not Type Access	Background education	Knowledge in research topic	Relationship with participants	Theory and/or Practice	Process or final
Fernández-Solano et al. (2019)	Occupational Self-Analysis Programme. An adaptation of the 'Age Doing' programme (Rodríguez-Bailón et al. 2016)	90 minutes/week 9 months	Group	Not used	-	-	-	Theory and/or Practice	Initial and final
Hatfield et al. (2017)	Better Outcomes & Successful Transitions for Autism (BOOST-A™)	- 12 months	Individually	Used Online program Closed Individual login	-	-	School staff	Theory and practice	Initial and final

Ipsen et al. (2019)	Achieving Success by Promoting Readiness for Education and Employment (ASPIRE) consortium, one of the six PROMISE sites.	- 12 months 24 months	Individually	Not used	Vocational Rehabilitation counselor	-	-	Theory and practice	Initial, 12 months later and 24 months later
Kumakazi et al. (2017)	Android Robot-Mediated Mock Job Interview Sessions	10 minutes/day 5 days	Individually	Used Android robot	-	-	-	Theory and practice	Initial and final
Lindstrom et al. (2013)	Postschool Achievement Through Higher Skills - PATHS	50-minute class 77 lessons 18-week semester	Small groups	Not used	-	All PATHS instructors attended an initial 1.5-day workshop, followed by three 2-hour training sessions throughout the 18-week implementation period	No relationship	Theory and practice	Initial and final
Mawhood et al. (1999)	Supported employment project for high-functioning adults with autism	- Range from 5 to 24 months	Individually in a company	Not used	-	-	Support worker	Practice	Initial and final
Murray et al. (2013)	Working at Gaining Employment Skills (WAGES)	3 and 4 days per week Approx. 4.5 months (January-May)	Activities that encourage students to participate cooperatively	Not used	Special education teachers, vocational rehabilitation counsellors, or other school personnel	All teachers were provided a free copy of the WAGES curriculum and participated in a paid (US\$35 per hour) 2-day training about WAGES	Their teachers	Theory and practice	Initial and final

O'Mally et al. (2016)	Career Mentoring on Employment Outcomes	- 1 year	-	Not used	Mentors included those who were currently employed or recently retired, legally blind, and living in the United States	Employment mentoring manual A 20-page manual in electronic format to students and their mentors	-	Theory and practice	Initial and final
Oswald et al. (2017)	Acquiring Career, Coping, Executive control, Social Skills (ACCESS) Program	1 hour and a half 19 sessions	Small groups	Not used	The supervisor was a licensed psychologist. The Participant Group leader, the Social Coach Group leader and the co-facilitators have advanced studies and prior experience working with these people.	Yes	-	Theory and/or Practice	Initial and final
Powers et al. (2001)	TAKE CHARGE For the Future	The intervention (a) individual, 50 minute bi-weekly coaching sessions for youths, (b) monthly community-based workshops, (c) community activities, (d) telephone and home visit support for parents, and (e) in-service education for transition staff 4 months	Individually and small groups	Not used	The team included an experienced secondary educator, a parent support staff person, and a peer counselor from the community independent living program.	The research teams participated in a three-day training program	Research teams	Theory and/or Practice	Initial and final

Smith et al. (2014)	Virtual reality job interview training	5 sessions of 2 hours 2 weeks	Individually	Used Virtual reality Closed	-	Two research staff members were trained to administer the intervention using a checklist devised by the scientific team	-	Theory and practice	Initial and final
Strickland et al. (2013)	JobTIPS employment program	-	Individually	Used Online program Closed	Human resources professional	-	-	Theory and practice	Initial and final
Verdugo et al. (1998)	Program of vocational evaluation and guidance	18 sessions of 1 hour and a half 27 hours	Individually and groups	Not used	Teachers, the signed language teacher and other volunteers	-	Teachers from the center and other volunteers	Theory and practice	Initial and final
Hayes et al. (2015)	VidCoach	- 1 month	Individually	Used Mobile video modelling and prompting application Closed	-	-	-	Theory and practice	Initial and final

### 3.2 Mean Effect Size and Heterogeneity Analysis

Table 2 provides the effect size and the statistics of heterogeneity of the meta-analysis conducted. First, we analyzed the medium effect of the group of all studies upon data provided by people with functional diversity. Second, we included two independent meta-analysis taking into consideration results provided by relatives and teachers respectively. Third, we conducted five meta-analysis upon skills most often developed in these programs and for which we had results in at least five studies. These consisted of interview, career planning, emotional welfare, social skills and job expectations.

The effectiveness of treatment was measured through the effect size. For the group of all studies, the average effect size was a value of .38, which indicates that programs that develop labor skills for people with functional diversity proved effective for the experimental group. Accordingly, results provided by relatives and teachers revealed values of global average effect size of .43 and .53 respectively in favor of the experimental group. These effect sizes proved of low magnitude for the group of all reports and the viewpoint of relatives, while the magnitude proved moderate for the case of teachers.

Regarding the areas promoted by the programs, an average effect size in favor of the experimental group was found in interview skills, career planning and job expectations. The magnitude of effect was moderate for career planning ( $d = .66$ ) and low for interview skills ( $d = .42$ ), while it did not achieve a practical relevance in terms of job expectations ( $d = .09$ ).

The average global effect for all studies showed a moderate magnitude of variability ( $I^2 = 74\%$ ), as well as for the area of career planning ( $I^2 = 68\%$ ). Furthermore, the degree of heterogeneity was also moderate when the relatives reported ( $I^2 = 68\%$ ), while it was high in the case of teachers ( $I^2 = 87\%$ ).

If the homogeneity test proves significative and the index  $I^2$  indicates heterogeneity in the size effect, it is convenient to conduct analysis of possible moderating variables that explain the heterogeneity. These analyses were conducted only on the set of all studies ( $k = 67$  studies), not being applied to data on the different areas nor those reported by relatives ( $k = 9$  studies) nor teachers ( $k = 5$  studies) due to the reduced numbers within these categories.

Table 2: Effect Size and Analysis of Heterogeneity in the Posttest

	<i>k</i>	<i>d</i>	95% CI		<i>Q</i>	<i>df</i>	Test for overall effect ( <i>z</i> , <i>p</i> )	<i>I</i> <sup>2</sup>
			<i>d</i> <sub>l</sub>	<i>d</i> <sub>u</sub>				
Global effect	67	.38	.28	.48	258.09	66	7.45, <.001	74%
Family	9	.43	.16	.69	25.22	8	3.17, <.05	68%
Teachers	5	.53	.14	.92	38.03	4	3.88, <.05	87%
Interview skills	13	.42	.10	.75	19.03	12	2.53, <.05	37%
Career planning	8	.66	.34	.98	22.02	7	4.03, <.001	68%
Emotional welfare	6	.22	-.14	.59	10.24	5	1.21, .23	51%
Social skills	6	.30	-.06	.65	21.94	5	1.65, .10	77%
Labor expectations	5	.09	.01	.17	4.73	4	2.20, <.05	15%

Note. *k*= number of studies, *d*= mean effect size, CI= confidence interval, *d*<sub>l</sub> and *d*<sub>u</sub>= lower and upper confidential limits of the 95% confidence interval around the mean effect size, *Q*= homogeneity test, *df*= degrees of freedom of *Q* statistic, *I*<sup>2</sup>= heterogeneity index

### 3.3 Analysis of Moderating Variables

The analysis of moderating variables was applied to the set of studies with data reported by people with functional diversity. Thirteen variables were tested, which are classified in participants' variables (age of participants, type of disability, educational background, other participants in the study, training of the instructors, relation of the participants with the instructors), treatment's variables (length of the program, use of technologies, type of technologies), methodological characteristics (type of allocation to control/experimental group, type of grouping for the intervention) and extrinsic characteristics (publication year, country). The inter-category homogeneity statistic was significant for the variables type of disability, educational background, length and country.

Regarding participant's variables the type of disability and educational background were significant moderating variables. With regard to the type of disability, we compared the efficacy of treatments by differentiating four groups according to the type of disability or disorder of participants in the programs: (1) Autistic spectrum disorder, (2) intellectual disability, (3) physical or sensory disability and (4) several disabilities or disorders in the same group and program. The results revealed statistically significant differences between the four groups ( $Q_b = 10.68, p = .01$ ), reaching a larger effect size of intervention when groups were shaped by people with intellectual disability ( $d = .84$ ; 95% IC: .38 and 1.31) before the remaining types whose impact was lower, despite also significative.

Regarding educational background, we distinguished two groups (1) basic educational level or young people enrolled in secondary education and (2) intermediate educational background with a degree in secondary education or higher education studies. We obtained

statistically significant differences between groups ( $Q_b = 6.07$ ;  $p = .01$ ), where the group with lower educational background achieved a larger effect size ( $d = .62$ ; 95% IC: .36 and .88).

Regarding treatment's variables, the length of the programs was a significant moderating variable. We distinguished four groups (1) less than 10 sessions or shorter than a month, (2) 11 to 20 sessions or between two to five months, (3) six to twelve months and (4) beyond a year. Statistically significant differences resulted among the average effects of the groups ( $Q_b = 7.20$ ;  $p = .03$ ), where programs between six and twelve months ( $d = .68$ ; 95% IC: .34 and 1.01) proved more effective than shorter and longer ones.

Finally, regarding the extrinsic characteristics, some words about the four countries in the studies (1) United States of America, (2) Spain, (3) Australia and (4) Japan; results revealed statistically significant differences among the groups ( $Q_b = 8.50$ ;  $p = .04$ ), where Spanish studies ( $d = .58$ ; 95% IC: .36 and .80) and Australian ones ( $d = .55$ ; 95% IC: -.08 and 1.17) obtained a larger impact in comparison to the USA and Japan.

Table 3: Moderating Variables

Moderating variables		<i>k</i>	<i>d</i>	IC 95%		Results
				<i>d<sub>l</sub></i>	<i>d<sub>u</sub></i>	
Type of disability	ASD	28	.35	.09	.61	$Q_b = 10.68$ , $p = .01$ $I^2 = 71.9\%$
	Intellectual disability	10	.84	.38	1.31	
	Physical o sensory disability	12	.45	.28	.61	
	Several	17	.21	.10	.32	
Educational background	Basic or high school skills	25	.62	.36	.88	$Q_b = 6.07$ ; $p = .01$ $I^2 = 83.5\%$
	Secondary completed or higher	16	.22	.03	.41	
Duration	Less than 10 sessions or up to 1 month	13	.22	-.04	.47	$Q_b = 7.20$ ; $p = .03$ $I^2 = 72.2\%$
	Between 11-20 sessions or 2-5 months	26	.38	.23	.52	
	Between 6-12 months	20	.68	.34	1.01	
	More than a year	6	.05	.00	.10	
Country	USA	38	.26	.16	.36	$Q_b = 8.50$ ; $p = .04$ $I^2 = 64.7\%$
	Spain	19	.58	.36	.80	
	Australia	7	.55	-.08	1.17	
	Japan	2	-.11	-.83	.62	

Note. ASD = Autism Spectrum Disorder, *k* = number of studies, *d* = mean effect size. *d<sub>l</sub>* and *d<sub>u</sub>* = lower and upper confidence limits of the 95% confidence interval around the mean effect size,  $Q_b$  = inter-category homogeneity statistic,  $I^2$  = heterogeneity index



## 4 Discussion

The issue we have addressed in this paper is currently being discussed by the academy, and 85.7% of the articles reviewed have been published in the last decade. The fact that such research is addressed by the scientific community is also an indicator of the growing weight of fostering employability among people with disabilities in order to facilitate their access into the labor market, as one more dimension having an impact upon social inclusion: There is enough employability appraisal nowadays to allow for research to be conducted in the field. That being the context for our research question, we can now discuss our results.

First, we can state that programs have a positive effect upon the experimental groups as we can see in tables 2 and 3. Results obtained from the views of relatives as teachers provide a statistically significant mean effect in favor of the experimental group. Furthermore, if we take into account the skills developed in the different programs, we identified a mean effect size in favor of the experimental group in the areas of career planning, interview skills and professional expectations; while no significant effect was found in comparison with the results of the control group for dimensions such as emotional welfare or social skills. Effect sizes we found vary from small magnitudes for all of the reports, family perception and interview skills, to a moderating magnitude for the perception of teachers and career planning. We did not find any large magnitude.

Nevertheless, we must consider that the struggle for social inclusion in the field of disabilities has been a history of small yet steady advances, rather than sudden improvements nor high-impact solutions (López-Bastías, 2019). If we look back thirty years, work integration of people with disabilities was not even an expectation, and we are now discussing not just training for an occupation but even development of employability skills, the focus of our review. This is a step beyond occupational training, as employability embeds social and personal skills that are useful both in work and in everyday life domains (Llinares et al., 2020a).

Second, we have to consider the assessment of teachers and trainers, who share a higher perception of the impact of the programs under review. This is relevant for the fact that teachers and trainers are able to compare and contrast among people who have taken part in the experimental programs and those who have not, but also for they are able to compare among these people ready to improve their employability and others with similar handicaps whose employability is lower and therefore not appropriate to consider further preparation for integration in the labor market. Given that employability can be measured (most employability assessment tools synthesize achievement in terms of grades), the perception and evaluation of teachers becomes even more relevant; as families and people with disabilities themselves do not have that comparative context. Teachers have specific training, they are aware of labor market conditions, they know the results of integration into the labor market of former cohorts of people attending their programs, and they can assess people's employability with less personal engagement and larger group reference.

If we move now in the specific detail regarding dimensions, our results do not match the previous study upon social skills (Park et al., 2016), as we have not found significant impact in this domain. We suggest different explanations for this result: First, our study has focused not only upon this dimension, and once we have conducted a broader search, we may have missed some study. This is however a common limitation in meta-analysis studies known as selection and publication bias (Sandoya, 2008) despite our methodological approach is robust enough, as we have detailed above. However, social skills are not only trained for employability purposes, and they can also be part of other integration and training programs (Bundock & Hewitt, 2017).

Furthermore, social skills have the opportunity to be developed in most everyday activities also out of training programs, this being an issue that cannot be measured under experimental conditions: The more participation a person has in ordinary life in society, the more chances to develop and improve social skills. In fact, there is literature on employability that considers the advantages of developing social skills out of specific training measures (Ibáñez & Mudarra, 2005).

Anyhow, the effect size has resulted significantly positive in favor of the experimental group in the domains that can be linked to a greater extent to work, such as career planning, interview skills and labor expectations. This is relevant for these are issues that, in contrast to general social skills, are labor-specific and are part, as such, of any vocational education and training program also for all kinds of people as well as for all levels of qualification (Hedley et al., 2017; Jordan et al., 2016; Lee et al., 2018; Walsh et al., 2017). These are crucial in the preparation for employment and therefore these results are particularly relevant in our study, as they do not deal just with social inclusion but directly with integration into the labor market.

In summary, these results contribute to encourage the research community (and practitioners in first place) to keep working in other dimensions surrounding employability such as the emotional wellbeing and overall health, as these constitute the basis to strengthen the impact of all other variables (Cavadel et al., 2017; Llinares et al., 2020a, 2020b).

Regarding the moderating variables, we found that four of the 13 variables analyzed had a positive impact upon the effectiveness of the interventions: Where the participants have a lower educational level and intellectual disability (participants moderating variables); where the duration of the programs is between 6 and 12 months (treatment moderating variable); and those from Spain or Australia (extrinsic moderating variable). It becomes evident that participant variables, treatment variables and extrinsic characteristics do play a role, while methodological features do not.

Lower educational level has a direct impact not only upon career expectations, but also upon the qualification level to which one can prepare and, therefore, it introduces serious limitations in prospective employments which are less demanding not only in terms of occupational skills but also of employability skills.

Intellectual disability is well studied, it is different to mental illness and subject to medical measurement that indicates degrees of impairment that have an impact upon job choices, which is sometimes twofold: They can be obstacles to find proper jobs, though there are companies that sometimes search for candidates with certain percentage of disability as this provides social security and fiscal benefits for the company.

Duration of the training programs makes a difference as the impact of short-term programs upon long-term issues like career planning, career expectations and chances to engage in the job-search process, that are not as frequent as desirable and are also subject to labor market chances, as we have stated just above.

The country effect can be weighed by two different conditions: First, the cultural consideration that functional diversity has among the population and the overall awareness of inclusion rights and practices. This will be consequently reflected in employment and employability policies. Second, the productive fabric of the different countries indicates different labor market structures as well as labor relations which are also directly related to the chances to hire people with functional diversity.

At this point, some limitations of this meta-analysis should be mentioned. As in this study, most conventional meta-analytic procedures assume independence among the effect sizes (Cheung, 2014, 2019). The homogenization of the results was carried out by applying the index of effect size typified mean change difference. Homogeneous and comparable quantitative index independently of the different tests used in the different studies, interpreting them as typical units of separation between the means of the two groups (Sánchez-Meca & Botella, 2010). However, averaging the effect sizes or selecting one effect size per study may lead to missed opportunities to utilize all available data. In order to overcome this limitation, multivariate meta-analysis and three-level meta-analysis have been proposed as a future research line to handle non-independent effect sizes (Cheung, 2019). Another limitation was the scarce number of studies that fulfilled the selection criteria. Consequently, results need to be interpreted with caution pending the publication of new studies in this field.

Finally, we would like to focus upon the social and educational implications of the meta-analysis we have conducted. First, without doubt, more experimental research is needed in order to contrast the results showed so far. Furthermore, it would be advisable to produce research that is applied to people with similar handicaps in different countries, something which is possible particularly in short-term training programs, and several of them were mentioned in our study. Second, this is also possible in relation to certain disabilities which, in a way, contribute to homogenize the population and therefore the groups of people that attend such training interventions, allowing for more experimental design than research upon training programs in other domains where there is much wider variability of conditions that may have an impact upon the effects of vocational or employability programs. Third, long-term training programs are advisable if we want to strengthen issues like career planning

and the development of vocational expectations and identities, as these are dimensions that demand educational rather than training interventions.

Programs that support and develop employability and that are conducted upon experimental conditions do have a positive impact upon young people with functional diversity, and this is a promising result in relation to the expansion of such programs in order to facilitate their access into the labor market and hence more and better chances for social inclusion and participation as adult citizens.

Our contribution has intended to advance knowledge in this terrain, and it has also allowed us to identify the scarcity of programs and of experimental research in an area in which, due to the medical diagnostic behind several disabilities, they might apply better than in other circumstances surrounding vulnerable transitions, such as those caused by social instead of biological factors.

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