# CORRESPONDENCE OF JOB-PREFERENCE AND JOB-MATCHING ASSESSMENT WITH JOB PERFORMANCE AND SATISFACTION AMONG YOUTH WITH DEVELOPMENTAL DISABILITIES

by

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# ABSTRACT

Correspondence of Job-Preference and Job-Matching Assessment with Job Performance and Satisfaction among Youth with Developmental Disabilities

by

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This study investigated the effects of job preference and job match on job performance among four 19-to 20-year-old young adults with developmental disabilities placed in community-based job conditions. Prior studies have examined the effects of job preference on community-based job performance without the job-matching component. The researcher identified high-preference, high-match and low-preference, low-match job conditions and tasks using a video web-based assessment program. Each participant was subsequently placed in a randomized sequence of 30-min sessions on one high-preference, high-match job condition performing a preferred task and one low-preference, low-match job performing a non preferred task. Job coaches instructed and prompted participants throughout the study, teaching job tasks based on criteria specified by the employer or industry standard. Data collectors recorded data on (a) on-task performance, (b) productivity, (c) quality and quantity of work, (d) job satisfaction as measured

through participant judgment of preferred and well-matched jobs, and (e) an independent observer's judgment of well-matched jobs. The researcher found higher productivity, accuracy, and job satisfaction across all participants on the high-preference, high-match jobs as well as higher quantity of work completed for three of the four participants. On-task levels remained high in both job conditions for three of the four participants. Results are discussed in terms of variables in and limitations to this study as well as suggestions for future research.

(71 pages)

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# INTRODUCTION

In recent years, federal legislators and professionals working in special education and vocational rehabilitation have placed increased emphasis on promoting self-determination in adults and youth with developmental disabilities (Wehmeyer & Palmer, 2003). The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) mandates that transition planning must be "based on the individual child's needs, taking into account the child's strengths, preferences, and interests." The Rehabilitation Act Amendments of 1992 mandate self-determination on the part of all clients as they search for employment (Baker, Horner, Sappington, & Ard, 2000).

Research has addressed the importance of self-determination in increasing positive adult outcomes (Wehmeyer & Palmer, 2003), particularly in employment. Engaging in chosen and/or preferred job tasks has been shown to increase productivity on individual tasks among participants with developmental disabilities (Bambara, Ager, & Koger, 1994; Morgan & Horrocks, in press; Parsons M. , Reid, Reynolds, & Bumgarner, 1990). Parsons et al. found that clients' work performance almost doubled when given their choice of job task or when assigned a preferred job task. Morgan and Horrocks investigated the effect of job preference on on-the-job performance in a community setting among three adults with developmental disabilities and concluded that working in a chosen job may increase both performance and satisfaction. Further, Wehmeyer and Palmer found that, 1 to 3 years after graduation, young adults with mental retardation or learning disabilities who were more self-determined fared better in several major life areas, including employment, than those who were not self-determined.

In order to more effectively self-determine their career paths, adults and youth with developmental disabilities need information about employment options. Opportunities for career guidance abound for typically developed youth and adults, including assessment regarding preferences of work task and conditions and individual aptitudes related to various jobs (Career Explorer, 2008; CareerPath, 2009). An online search of career assessments or job preference assessments yields pages of possibilities for those without disabilities, including both web- and paper-based. Job seekers and those who work with them can use the information derived to guide their job or career path.

The paucity of similar measurements accessible to job seekers with significant cognitive impairments renders self-determination in employment for individuals with disabilities difficult at best. These individuals may have difficulty accessing appropriate assessments for a number of reasons, such as limited exposure or experience in work-related areas, difficulty in understanding verbal or written descriptions or connecting those descriptions with the real job, and limited experience or ability in determining personal preferences (Stock, Davies, Secor, & Wehmeyer, 2003). Individuals with developmental disabilities and their practitioners could greatly benefit from information provided by career assessments designed to meet their particular needs.

# REVIEW OF LITERATURE

Using Google Scholar, EBSCO, Sage Journals, WilsonWeb, PubMed and ERIC, I searched for literature on job preference or job matching assessments using search terms including job preference – disabilities; job preference assessment – disabilities; self-determination; self-determination – employment - disabilities; job preference - job performance; job matching assessment - disabilities. Upon locating pertinent articles, I acquired further information by reviewing literature referenced therein. In all, I found approximately 40 studies addressing job preference, job matching, related job performance and/or self-determination in job tasks among individuals with disabilities. Of those, I examined 24 which seemed most relevant. The remaining articles were excluded because they applied to individuals with learning rather than developmental disabilities, to classroom tasks rather than employment tasks or to elementary or junior high aged students. The four articles deemed most relevant are reviewed below.

First, Mithaug and Hanawalt (1978) conducted the first study to address job task preference among individuals with significant cognitive disabilities. Second, a study by Parsons et al. (1990) found job task preference may affect job performance and provides the basis for further study. Third, Morgan and Horrocks (in press) described a recent single-subject study on whole job preference and, together with the study on a job matching assessment by Morgan (2008), underscores the proposed research.

Mithaug and Hanawalt (1978) identified three individuals with expressive and receptive language skills commensurate with developmental ages of 3 years or less. Participants chose preferred job tasks from among six available to them in a sheltered

work setting. Researchers presented each participant with a choice of two objects representing two of the tasks and instructed him or her to pick up one of the objects. The experimenter then provided the individual with the materials necessary to engage in the task represented by the object chosen. After 7 min, the researcher removed the work materials and presented a different pair of objects, continuing until all 15 pair combinations were presented. Researchers repeated the entire process every two days over a period of 34 days. Afterwards, they calculated most and least preferred tasks for the participants based on percentage of opportunities each task was chosen, considering the remaining four tasks to be moderately preferred.

In Phase 2 of their study, Mithaug and Hanawalt (1978) conducted similar sessions pairing the preferred and nonpreferred tasks with moderately preferred tasks to verify if the participants' preferences remained consistent. Participants consistently chose highly preferred tasks over moderately preferred tasks and moderately preferred tasks over nonpreferred tasks, confirming the accuracy of the Phase 1 results. Through their study, Mithaug and Hanawalt found that a forced choice format may be effective in determining job task preference among individuals with severe cognitive disabilities.

Parsons et al. (1990) used a forced choice format to determine preferred and nonpreferred tasks among four clients with moderate to severe cognitive disabilities working in a sheltered setting. Researchers considered high-preference tasks as those chosen by participants in at least 70% of all task pairings and low-preference tasks those chosen in less than 30% of all pairings. Participants were then placed in one each of three job conditions each day: a high-preference job task, a low-preference job task and a third condition in which the participant chose one of the two tasks. Parsons et al. found that

participants working in the preferred task or choice conditions remained on task an average of 90 to 91% of the time, compared to an average of 46% time on task in the low-preference condition.

Although research conducted by Parsons et al. indicated that individuals with developmental disabilities may increase job performance subsequent to identifying and working on preferred job tasks, it does not address the more complicated issue of determining preferences in relation to entire jobs, such as those found in community settings. Such jobs require that individuals be aware of sometimes several different job tasks, environmental conditions and other factors. Rapidly repeated choices and immediate access to the preferred task or job as is characteristic of many preference assessments (Mithaug & Hanawalt, 1978; Pace, Ivancic, Edwards, Iwata, & Page, 1985) may be difficult or too time consuming due to the complex nature or location of whole jobs (Hanley, Iwata, & Lindberg, 1999; Parsons, Reid, & Green, 2001). Recent studies suggest that using videos of various jobs may be a useful alternative to aid those with developmental disabilities in determining and communicating job preferences (Ellerd, Morgan, & Salzberg, 2006; Horrocks & Morgan, 2009; Stock et al., 2003).

Morgan and Horrocks (in press) conducted one such study seeking validation data on Your Employment Selections (YES), a motion video, web-based tool designed to determine job preferences for individuals with developmental disabilities and reading skills at or below a second-grade level. Three transition-age students with moderate intellectual disabilities selected job categories that appealed to them. Based on their selections, the program generated a list of jobs in their areas of interest. From that list, the participants selected jobs they would like to see and watched videos of individuals

performing those jobs. Each video lasted approximately 2–4 min and showed employees performing various tasks associated with the job, while a narrator explained the tasks and environmental conditions. After watching each video, participants selected a thumbs up or thumbs down icon to accept or reject that job. The program then generated a list of preferred jobs for each participant. Researchers and participants followed a similar process to obtain a list of less preferred jobs for each participant.

Based on the results, students participated in three community-based job sessions each day for 10 days, including one high- and one low-preference job condition and a third condition in which participants worked in their choice of the high- or low-preference job. Data collectors measured participants' time on task and work productivity. Two of the three participants had higher levels of on task performance and productivity in preferred or chosen jobs and consistently chose the high-preference job when given the opportunity. The third participant also experienced higher rates of on-task performance at the preferred job, but chose the low-preference job condition as often as the high-preference. Researchers noted that this participant struggled with the task requirements of the high-preference job and, in fact, maintained higher productivity at the low-preference job, although his productivity at that job decreased over the length of the study. At the conclusion of the study, all three participants identified the high-preference job as the one they liked the most.

As illustrated in the above studies, assessments that effectively determine job preference among individuals with developmental disabilities are associated with improved job performance. However, job preference alone may not be sufficient to predict job satisfaction or performance. For example, Morgan and Horrocks (in press)

found that youth participating in high-preference jobs who do not have the prerequisite skills for those jobs may alter their preferences, which resulted, for one study participant, in lower productivity and job satisfaction. According to Sitlington and Clark (2001), students wishing to effectively plan for future careers must participate in assessments that will sufficiently inform them concerning not only their preferences and interests, but also their strengths and needs. Such assessments, though plentiful for typically developing teens and adults, are difficult to find for individuals with developmental disabilities (Morgan, 2008).

Currently, a job matching component has been added to the YES program which determines degree of skill match for the preferred jobs. Developers of this component identified 106 dimensions available from the Occupational Information Network (O*NET) that pertained to entry-level jobs such as those depicted in the YES program. O*NET has assigned importance weightings from 0 (unimportant) to 100 (important) to each dimension in relation to over 800 occupations included in its database (National Center for O*NET Development, 2010). These importance weightings have, in turn, been assigned to each of the 120 jobs included in the YES program (Morgan, 2008).

To complete the job-matching assessment, a facilitator familiar with the student rates his or her skill level for each of 106 dimensions. The program multiplies the rater's rating for each job dimension times the O*NET importance score, then sums all scores across 106 dimensions. It then assigns a proportion score from 0.00 to 1.00 and ranks preferred jobs in order of best to poorest match, as well as provides a list of the participant's strengths and weaknesses relative to that job. These results can be printed out on a computer-generated job matching report.

In his initial field study of the job-matching component of this program, Morgan (2008) conducted job preference and job matching assessments for 18 youth, 17 with severe intellectual disabilities and one with autism, ranging in age from 17 to 21 years. The group included 10 males and eight females, all of whom were enrolled in high school or post-high school special education classrooms for the severely disabled. After administering the job preference portion of the program and working with participants and teachers to reduce each participant's preferred job list to his or her two or three most preferred jobs, facilitators collaborated with classroom teachers to complete the skill matching assessment for each participant and printed the job-matching report. Although results showed relatively small differences in proportion scores among the top three jobs, the program was able to rank the jobs from best- to worst-matched. The program also indicated strengths and weaknesses of the participant relative to each job. Jobs with more strengths and less weaknesses were associated with higher job matching scores and those with less strengths and more weaknesses generated lower job matching scores. This preliminary research indicates a web-based job preference and job matching assessment may be a useful tool in determining how well preferred jobs match skills of job seekers with developmental disabilities.

# PURPOSE STATEMENT AND RESEARCH QUESTIONS

The purpose of this study was to determine whether level of preference and degree of match is associated with increased or decreased job performance and satisfaction for young adults with developmental disabilities. This study addressed the following questions:

1. Using a web-based assessment's job-matching and job preference components, will 18- to 22-year-old young adults with developmental disabilities perform at higher levels of on-task behavior on high-preference, high-match jobs compared to low-preference, low-match jobs?
2. Using a web-based assessment's job-matching and job preference components, will 18- to 22-year-old young adults with developmental disabilities perform at higher levels of productivity on high-preference, high-match jobs compared to low-preference, low-match jobs?
3. Using a web-based assessment's job-matching and job preference components, will 18- to 22-year-old young adults with developmental disabilities consistently identify the high-preference, high-match job as their preferred and better matched job?
4. Using a web-based assessment's job-matching and job preference components, will naïve job coaches of 18- to 22-year-old young adults with developmental disabilities identify the high-match jobs as the young adults' better matched jobs as determined by the facilitator?

# METHOD

## Participants

The researcher selected four 18-to 22-year-old young adults with moderate to severe developmental disabilities from among 100 students enrolled in a post high school transition program. In collaboration with transition program teachers, the researcher selected students who (a) were able to identify job and job task preferences through verbal English, pointing responses, or other discriminable behaviors; (b) had demonstrated basic vocational skills, including adequate behavioral control for working in a public setting and following simple verbal or modeled instructions; (c) had at least six months combined part-time employment training experience across two or more community jobs or job tasks; (d) had demonstrated an ability to work with less familiar staff; and (e) attended on a regular basis.

Kristin is a 19-year-old female with Down Syndrome, classified for special education services under the guidelines of intellectual disability. Based on most recent testing results, Kristin has a full-scale IQ of 47 and academic standard scores ranging from 48 in math to 65 and 67 in written language and reading. She is able to verbally express her basic wants, needs, and opinions. Kristin struggles with choosing realistic careers; her career goals prior to this study included becoming a king, a lawyer, or an astronaut. Kristin learns new tasks quickly and can complete them accurately; however, she does not consistently follow instructions or accept feedback from supervisors, particularly with non-preferred tasks or staff. At her work training sites, she may stomp her foot, leave the work area, or stand and refuse to work.

Mark is a 20-year-old male classified for special education under the guidelines of traumatic brain injury. Testing indicates a full-scale IQ of 69, broad independence standard score of 37 and academic standard scores ranging from 66 in math to 87 and 92 in reading and written language. He can express wants, needs and opinions verbally and in a variety of situations. He overestimates his abilities and may become frustrated with supervisor feedback or instruction. Mark learns new skills relatively quickly, but requires repetition or prompts to retain the skills, which has made placement on an independent job difficult. Without close supervision, Mark can be easily distracted by co-workers or conversations around him.

Natalie is a 20-year-old female with autism and a visual impairment. She has received blended services from transition programs serving mild/moderate and severely disabled students. She is able to read on about a fifth-grade level and complete math problems on a third- to fourth-grade level. Natalie is an avid reader and, with glasses, reads youth or adult fiction and accesses a computer screen at 25 cm without additional magnification and without eye fatigue. Natalie's depth perception is compromised; however, with repetition, she is able to complete activities requiring hand/eye coordination, fine motor skills and depth perception such as cutting on a line, lacing or putting templates on a ring. Although Natalie is a visual learner, she also uses tactile information to aid in her learning.

Natalie is able to express her opinions, wants and needs verbally and in a variety of situations. She does not always interact in a socially acceptable manner and often refuses instruction or feedback, indicating that she already knows how to accomplish the

task or knows a better way. She tends to rush through tasks or present an incomplete task as complete, particularly if non-preferred.

Conner is a 20-year-old male with autism. Testing indicates a full scale IQ score of 58 with a verbal comprehension score of 67. Standard academic scores range from 40 in math to 44 on written language and 55 in reading and in oral language. Conner is able to verbally express his wants and needs. At work training sites, Conner becomes frustrated and may clench his fists or verbally argue given feedback from supervisors. He requires moderate supervision to stay on task or move to a new task.

## Roles and Responsibilities

The researcher served as facilitator for the job-preference assessment. Staff familiar with the job skills of the participants completed a paper copy of the web-based job-matching assessment which the researcher subsequently entered into the web-based assessment's database. The researcher also served as primary or secondary data collector.

A para-educator (hereafter referred to as job coach/data collector) experienced in job coaching individuals with developmental disabilities served as job coach and secondary data collector for Kristin and Natalie and as primary data collector for Conner and Mark, with the researcher taking the opposite roles and calculating data percentages for all participants.

The job coach/data collector worked in the same transition program attended by the participants, but had not worked with them in the capacity of job coach. She did not know which jobs were selected by individual participants as high- or low-preference or identified by the web-based matching assessment as high- or low-match.

## Settings

### Web-based Job Preference and Matching

Participants completed the web-based job preference assessment using a computer in a 4 m by 4 m office located at the participants' transition program. Furniture in the office included a desk with return, filing cabinets, bookshelf, desk chair and two other chairs. Staff familiar with the work skills of individual participants completed the web-based job-matching assessments at their own desks without participants present.

### Job Locations

Participants worked in community-based job settings including (a) a deli located within a supermarket; (b) a carpentry shop in an industrial strip mall; (c) a Mexican restaurant in a community location; (d) an electronics lab located at a technology college; (e) an elementary school library; and (f) a dining room located in an assisted living center.

## Independent Variable

The independent variable in this study was placement of participants in high-preference, high-match and low-preference, low-match jobs as determined by a web-based job preference and job-matching assessment.

## Dependent Variables

### On Task

A participant was considered on task if engaging in verbal or motor behaviors related to the task assigned, including eye contact with the assigned task, even if performing the task with errors. On task could also include (a) listening to instructions or asking for help, (b) asking for more work once finished with an assigned task, or (c) talking oneself through the task (e.g. telling oneself "You can do this."). Following instructions from the job coach, even if unrelated to the original task (e.g. an instruction to wait while the job coach retrieved additional materials), was considered on task. However, engaging in a similar task outside of the requested area, standing or staying in the assigned area without engaging in the task requested, engaging in motor behaviors related to performing an assigned task while looking in another direction, engaging with task materials without engaging in a task-related activity, or engaging in an unassigned task were not considered on task. Talking about non-task related topics while engaged in the assigned task, or involuntary actions, such as sneezing, were scored NA.

### Productivity

For a given job task, productivity was defined as the number of tasks or subtasks completed to criteria specified by the employer or supervisor as compared to the quantity completed by a typically developed adult in the same amount of time. Each task was analyzed to produce a sequence of subtasks and task steps or criteria required to complete the task correctly.

### Accuracy and Quantity of Work Performed

Accuracy was defined as the number of tasks the participant completed to criteria specified as compared to the total number of tasks he or she completed during a set amount of time. Quantity of work performed was defined as the total number of tasks completed, regardless of accuracy, as compared to the total number of tasks completed by a typically developed adult in the same amount of time.

### Choice/Satisfaction

At the end of each work day, after having left the second job site, the job coach/data collector asked the participant "Which job did you like best today?" Similarly, each day, the job coach/data collector asked the participant, "Which job did you work best at today?" For both measures, a choice was scored if the participant pointed to a picture of one job site or verbally stated the name of one job.

## Response Measurement

### Web-based Job Preference Assessment (YES program)

During completion of the job preference portion of the assessment, participants selected and watched videos of jobs of interest to them, then selected a thumbs up or thumbs down icon to indicate their preference regarding the job. The student researcher and the participants worked together to reduce the list of preferred jobs to three, after which participants selected preferred tasks for these jobs from among tasks pictured under the "more info" tab for each job.

The researcher and participants repeated the job preference portion, with the participant indicating which jobs and tasks were not preferred rather than which jobs and tasks were preferred.

**Web-based Job Matching Assessment**

Facilitators familiar with the job skills of the participants completed a paper copy of the job-matching assessment, rating the participant's skills as *poor, fair* or *good* for each of 106 job dimensions included in the assessment. A higher proportion score denotes a better match. A printed report includes strengths and weaknesses related to the best-matched job, as calculated by the web-based assessment.

**On-task Performance**

The researcher collected data on a participant's time on task and number of requests for a break or to stop work.

Time on task was measured daily at each job site using momentary time sampling, with a signal device set for 20-s intervals on a fixed schedule over 15 min. Total observations on task were divided by total observations in the session and multiplied by 100 in order to obtain a percentage of time on task. As a measure of appropriately requested off-task behavior, the researcher and job coach/data collector recorded the number of requests for a break or to stop work using a frequency count per 30-min session.

**Productivity**

Productivity was measured using a per opportunity measure of the number of discrete tasks independently completed to criteria by the participant divided by the number completed by the job coach or researcher in the same amount of time and multiplied by 100 to obtain a productivity percentage. Trendlines were calculated for each set of data. Job tasks included (a) making dollar-size ham, turkey or roast beef sandwiches; (b) measuring and marking 2.5 cm by 5 cm by 2.44 m strips of wood for garden trellises; (c) sanding wood for the same; (d) preparing fried ice cream balls; (e) soldering wire connectors to posts; (f) scanning in library books for end-of-year inventory; and (g) cleaning and setting tables.

The researcher and job coach/data collector did not count partially completed or partially correct tasks. If the 10-min productivity probe did not allow enough time for a whole task to be completed, productivity was measured on subtasks. For each participant, the researcher and job coach/data collector conducted a minimum of four 10-min productivity probes per job site throughout the study, with one probe scheduled the first day, one on the last day and others interspersed in between.

**Accuracy and Quantity of Work Performed**

Data indicating accuracy and quantity of work performed at each job site were extracted from productivity data. Accuracy was measured by dividing tasks completed correctly by total tasks completed by the participant during the productivity probe and multiplying by 100 to obtain a percentage. Work speed or percent job tasks completed was measured by dividing total number of tasks completed by the participant during the

productivity probe, regardless of accuracy, by total completed by a typically developed adult and multiplying by 100 to obtain a percentage. Trendlines were calculated for each set of data.

### Choice, Satisfaction, and Job Match

The total number of days the high-preference, high-match job was chosen by the participant as his or her preferred and then better-matched job was divided by the total number of days a selection was offered (high-match plus low-match) to obtain a percentage of the participant's self-selected preference and then match.

At the end of the study, the researcher asked the job coach/data collector to identify which job she felt was the better match for each participant.

## Research Design

An alternating treatment design (Cooper, Heron, & Heward, 2007) was used to evaluate the effects of job preference and job skill matching on job performance among young adults with developmental disabilities. This design was selected because it allowed the researcher to concurrently examine the effects of high-preference, high-match and low-preference, low-match jobs on the dependent measures. The alternating treatments included daily sessions of high-preference, high-match jobs and low-preference, low-match jobs.

## Experimental Procedures

### Job Preference and Job-matching Assessment

Prior to being placed on jobs, each participant completed the web-based job preference assessment. The researcher helped each participant log on to the web-based job–preference assessment and read a scripted introduction. The researcher assisted the participant during the job preference portion with procedural questions, such as logging into the program, or maneuvering from one screen to the next. The assessment has verbal instructions to guide the student. The program initially presents sets of four icons representing broad categories of jobs, such as working with animals, using heavy machinery, or working with money. Following the program instructions, each participant selected preferred categories of desired jobs, after which the program generated a list of jobs relating to the areas selected. The program offers the opportunity to reduce the list by showing only those jobs which relate to two, three, four or more of the preferred job categories. The researcher selected the appropriate option in order to reduce the participant's job list to between 10 and 35 jobs.

From this list, participants selected and watched videos of jobs of interest to them. As required by the participant, the researcher read job titles on the participant's job list and/or briefly described their meaning. The participant selected job titles he or she was interested in and viewed a video depicting that job. A narrator instructed the participant to "click on thumbs up if you like the job" and thumbs down if not. The researcher answered questions posed by the participant regarding instructions or vocabulary he or she did not understand. If the participant asked questions regarding whether to choose a

job, the researcher directed him or her to “click on the thumbs up if you like the job and on the thumbs down if you don’t.”

When finished watching the desired videos, the program provided pictures of the jobs selected as preferred. The researcher printed a copy of the resultant preferred jobs and asked each participant to “choose the three jobs you like best.” If the participant chose three jobs that would be difficult to procure for the research based on job availability, licensure or certification requirements, or other factors, the participant was asked to choose his or her next preferred job, continuing until the participant selected at least one preferred job. For all participants, the researcher numbered the jobs in the order chosen, unless the participant indicated a different order of preference. The researcher then navigated to the “more info” section included with each job and printed pictures of representative tasks related to that job. She directed each participant to select his or her three preferred tasks for each job, following the same guidelines as outlined above.

In a separate session, the researcher met with each participant to identify low-preference jobs, following the same procedures as outlined above, only with instructions to choose job categories and then jobs and job tasks “you do not think you would like.” The researcher muted the instructions provided by the program except during the job videos. When presented with the screen of job categories, the researcher asked the participant to “point to or tell me the categories of jobs you *don’t* like.” The researcher then used the mouse to select the job categories indicated by the participant. After each video, the researcher asked the participant if he or she liked or did not like that job and selected the appropriate icon.

The researcher provided a paper copy of the web-based job-matching assessment to staff familiar with the job skills of each participant. Participating staff already had experience completing both the paper and web-based version of the assessment. Staff completing the job-matching assessment were given the following written instructions:

> Review the list of "Job Dimensions" below. See the Description [of the job dimension] for more information. Using the buttons below at left, *rate the participant's current behavior or performance on the job dimension.* Rate the participant on each dimension by circling "Good," "Fair," or "Poor" below. Do not skip any. Do not place marks halfway between ratings. If not sure, write "DK" in the left margin.

Upon receipt of the completed assessment, the researcher inputted data from the paper assessment and printed the job-matching results as calculated by the web-based assessment. A separate report was printed for the low-preference jobs. When a participant had chosen more than three jobs, either because the participant indicated he / she could not choose fewer or because the researcher requested more, the researcher printed summary pages for all jobs selected.

**Job placement conditions**

Based on the results of the job-preference and job-matching assessment, the researcher developed two job conditions for each participant. A high-preference, high-match job condition, selected from the preferred jobs chosen by the participant, consisted of one for which the participant's skills most closely matched those required for the job. The researcher selected a low-preference, low-match job from the jobs the participant indicated as low-preference and for which his or her skills evidenced a low match with job requirements. For the purposes of this study, high-match jobs were those with the highest proportion score and low-match those with the lowest.

The researcher met with employers or researched industry standards to determine standards of productivity for each job task. In carpentry, the employer defined two measurement standards: Measurements for making furniture were required to be within 1/32 in (0.79 mm) and for general construction within 1/4 in (6.35 mm). The job coach/data collector or researcher practiced the tasks, as needed, in order to perform the task at the level required by the standards. The researcher or job coach/data collector then performed the task for 10 min to determine the standard against which each participant's performance was compared.

**Work sessions**

Each day that sessions were scheduled, participants worked at both jobs for 30 min each. The researcher ensured that, for at least 25 of the 30 min, the participant was engaged in the assigned task. The schedule for sessions was randomly selected for a participant for the first week by toss of a coin. In the second week, the schedule was counterbalanced to reduce potential reactivity. Table 1 presents the schedule. The researcher completed the schedules prior to the beginning of the study in order to provide a schedule for each job site and for the job coach/data collector. With the exception of Conner, participants and their families were given pick up times, but were not provided with daily work schedules. Due to work site needs, Conner's schedule varied by about one hour. In order to facilitate Conner being ready on time, the researcher provided a work schedule to his parents.

Prior to beginning the job sites, and again just prior to the first session, the researcher informed participants that they would have a job coach to check their work

Table 1

*Randomized Schedule of Low versus High-preference Job Conditions*

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| Week 1 | (1) Low<br>(2) High | (1) High<br>(2) Low | (1) High<br>(2) Low | (1) Low<br>(2) High | (1) High<br>(2) Low |
| Week 2 | (1) High<br>(2) Low | (1) Low<br>(2) High | (1) Low<br>(2) High | (1) High<br>(2) Low | (1) Low<br>(2) High |
| Additional (as needed) | (1) High<br>(2) Low | (1) Low<br>(2) High | (1) Low<br>(2) High | (1) High<br>(2) Low | |

*Note*. Sequence of conditions for Week 1 determined by tossing a coin: heads = low-preference, tails = high-preference. Sequence of conditions for Week 2 counterbalanced with Week 1. Additional sessions determined by tossing a coin as described for Week 1.

and to answer any questions they may have, but the job coach could not talk to them about anything not work-related while at the job. If they made a mistake, their job coach would prompt them to complete the task correctly. If they had questions, they were told to ask the job coach rather than the job site employees.

The researcher explained to the individual participants they could request a break at any time. If they requested a break, they would be given a 1-min break, then asked to resume work. They were told they could have as many breaks as they wanted. They were told they would have an assigned area during the break and would not be able to do other activities (e.g., make phone calls, draw pictures, look at other items), but they would not have to work. After working at least 10 min, the participants were told they could request to stop work altogether. Requesting breaks or to stop work would not result in negative consequences.

Before beginning work each day, the researcher and / or job coach/data collector picked up the participant at his or her home, repeated the information regarding breaks and discontinuing work to the participant, and proceeded to the scheduled work sites. The job coach/data collector refrained from speaking about job performance or other job-site related topics in the car or outside of the job site. Upon arrival at each job site, the job coach and participant worked together to gather materials and to prepare the area. Once the participants began their job task, the job coach/data collector replenished materials as needed.

If the participant began a conversation or asked non-work-related questions during work time, the job coach/data collector told the participant, "I can't talk about that. It's time to work now." If the participant requested a break, the job coach/data collector began timing for 1 min. After 1 min, the job coach/data collector asked, "Are you ready to work now?" If the participant said no, or refused to answer or to work, the job coach/data collector began timing again. If the participant refused to answer or work for more than 3 min, and if the participant had been at that work site for more than 10 min, the job coach/data collector asked the participant if he or she would like to stop working. If the participant said yes, or otherwise requested to stop working, the job coach/data collector provided a sorting or filing task in the car.

**Teaching tasks**

Job coaches taught job tasks to the participants in an effort to reach the criteria specified by employers or the industry standard. If the participant did not complete a task to specifications as indicated by the task analysis, or if the participant required help to

successfully complete a task, the job coach/data collector used verbal, gestural or partial physical prompts as well as modeling to teach job tasks. The job coach/data collector remained in close enough proximity to the participant to visually determine if the participant was performing the job correctly. As the participants were able to complete tasks or portions of tasks independently, the job coach/data collector increased the distance from the participant.

**Productivity probes**

Productivity probes were conducted either at the beginning or the end of the session. Scheduling and timing of the probes remained consistent between job sites. During the probes, the job coach/data collector instructed the participant to "work on your own. I will not be able to help you." If the participant was unable to correctly complete a task or had a question, he or she was told to do his or her best or to move on to the next task, if possible. Both the job coach/data collector and the researcher recorded the number of tasks or subtasks completed independently and to specified criteria during the probe.

**Job preference and match**

At the end of each work day, after having left the second job site, the job coach/data collector asked the participant "Which job did you like best today?" For one participant who had significant language delays (Kristin), the researcher provided pictures of each of the job sites to aid in her response. Similarly, each day, the job coach/data collector asked the participant, "Which job did you work best at today?" For both measures, a choice was scored if the participant pointed to a picture of one job site

or verbally stated the name of one job. If a participant stated or indicated both jobs, neither job, or responded with an unclear answer, the question was repeated and he or she was asked to choose one.

At the end of the study, the researcher asked the job coach/data collector to identify which job she felt was the better match for each participant. The job coach/data collector had been experimentally naïve to the better matched job for participants.

## Interobserver Agreement (IOA)

The researcher trained the job coach/data collector by providing and discussing behavior definitions and recording student behaviors in community-based work settings. When differences occurred during IOA collections, the differences were discussed and training provided as needed prior to the next session. The researcher and job coach/data collector conducted observations of on-task behavior, productivity, and percent accuracy until they achieved 90% IOA on each behavior.

IOA was collected on on-task behavior for 36% of sessions. IOA ranged from 88.89% to 100% with a mean of 97.23%. Both the researcher and the job coach/data collector carried synchronized signal devices and recorded whether the participant was on or off task at the end of 20-s fixed intervals. The researcher computed IOA by taking the number of agreements divided by agreements plus disagreements multiplied by 100 to yield a percentage score.

IOA was collected on 98% of productivity probes. Total count IOA was calculated by dividing the agreements on task steps completed to specifications by agreements plus disagreements and multiplying by 100 to yield a percentage score.

Productivity IOA ranged from 73.68% to 100% with a mean of 97.35%. On the first productivity probe at the electronics lab with Conner, IOA was 73.68%. The researcher and job coach/data collector disagreed on Conner's accuracy in the amount of shield removed and solder applied. The researcher provided further clarification and training prior to the next productivity probe. With the exception of one probe at 86.21%, all other productivity probes remained above 90%.

## Treatment Integrity

An independent observer recorded data based on a checklist of job-preference assessment procedures as shown in Appendix A. Independent observers included three transition assistants and one teacher employed at the researcher's transition program. All independent observers were familiar with the web-based job-preference assessment. Observers collected data in 43% of sessions for purposes of assessing treatment integrity. A percentage score was calculated by dividing the number of items marked correctly administered on the checklist by the total number of items and multiplying by 100. Observer data indicated that the researcher completed 100% of steps correctly.

The researcher recorded data based on a checklist of job coach activities (see Appendix B) to ensure job coaches followed procedures as outlined on the checklist. The researcher calculated a percentage score by dividing the number of items marked correctly administered on the checklist by total number of items observed and multiplying that ratio by 100. Items indicated as not observed (for example, timing a break if the participant did not ask for a break) were not included in the calculation. Data

were recorded for 29% of sessions across all conditions. Job coach fidelity ranged from 87.5% to 100% with a mean of 98.70%.

# RESULTS

Data from the job preference and matching assessments are shown in Tables 2 through 5. Performance on high-preference, high-match jobs and low-preference, low-match jobs are shown for each participant. Trend lines are shown for productivity and percent accuracy. Asterisks indicate selected job sites for each participant.

Participants worked from 10 to 14 days. Table 6 summarizes data showing mean accuracy and quantity of job tasks completed by each participant. Participant accuracy on high-match jobs ranged from a mean of 68.75% to 100% and on low-preference, low-match jobs from a mean of 0.00% to 20.83%. Data showing percent of job tasks completed evidenced relatively high variability, ranging from a mean of 30.00% to 69.61% of standard on high-match jobs and from a mean of 18.86% to 56.25% of standard on low-preference, low-match jobs. Conner, Mark, and Natalie completed a higher percentage of tasks on the high-preference, high-match jobs than on the low-preference, low-match jobs. Kristin's percentages were higher on the low-preference, low-match job. Performance of individual participants is described below.

## Kristin

Kristin chose six preferred and eight nonpreferred jobs. Job preference and matching assessment results for Kristin showed restaurant cook, with a proportion score of 0.52, as the best-matched of her preferred jobs, with (a) preparing, seasoning, and cooking food; (b) following food orders; and (c) cleaning food prep area as her preferred tasks. The lowest match of non-preferred jobs, with a proportion score of 0.36, was

Table 2

*Job Preference and Matching Assessment Results for Kristin*

| High-preference Jobs | Proportion Score | Low-preference Jobs | Proportion Score |
|---|---|---|---|
| Baker | 0.40 | Grain Farmer | 0.34 |
| Display (package) baked goods | | Operate Plow | |
| Make pastries / pies | | Prepare ground for planting | |
| Operate hot ovens | | Operate equipment to harvest crops | |
| *Restaurant Cook | 0.52 | Hair Stylist | 0.41 |
| Prepare, season, cook food | | Bleach, dye, tint hair | |
| Follow food orders | | Use scissors | |
| Clean food prep area | | Shampoo, condition hair | |
| Theater Worker | 0.41 | *Carpenter | 0.36 |
| Fill food and drink orders | | Sand surfaces | |
| Sell admission tickets | | Measure and mark locations | |
| Clean floors | | Measure and cut material | |
| Mail Carrier | 0.40 | House Painter | 0.38 |
| Sort mail for delivery | | Paint with a roller | |
| Deliver mail to residences/businesses | | Remove old paint | |
| Pick up outgoing mail | | Use a spray gun | |
| Graphic Artist | 0.38 | Human Service Worker | 0.38 |
| Draw sample layouts | | Help clients with forms | |
| Prepare layout for final copy | | Establish client eligibility for benefits/sv. | |
| Use computers to draw | | Provide emotional support | |
| Pet Care Worker | 0.40 | HVAC Mechanic | 0.36 |
| Transfer animals | | Adjust system controls | |
| Feed and water animals | | Disassemble systems | |
| Remove and replace animal bedding | | Use hand tools to repair parts | |
| | | Janitor | 0.40 |
| | | Vacuum floors | |
| | | Mop floors | |
| | | Sweep floors | |
| | | Floral Designer | 0.38 |
| | | Trim flower with hand tools | |
| | | Arrange cut / dried flowers | |
| | | Load flowers for delivery | |

*Note.* An "*" denotes job sites on which participants were placed.

Table 3

*Job Preference and Matching Assessment Results for Mark*

| High-preference Job | Proportion Score | Low-preference Jobs | Proportion Score |
|---|---|---|---|
| Auto Body Repairer | 0.41 | Hair Stylist (touching hair creeps him out) | 0.41 |
| Repair vehicles | | Apply solutions to hair | |
| Check for damaged parts | | Bleach, dye, tint hair | |
| Prepare body parts for painting | | Shampoo, condition hair | |
| | | Clean work area (an afterthought) | |
| Dairy Farmer | 0.44 | Electrician | 0.41 |
| Care for animals | | Climb ladders | |
| Feed animals | | Install electrical equipment | |
| Clean pens | | Install wire and covers | |
| *Restaurant Cook | 0.54 | Chemical Plant Worker | 0.42 |
| Prepare, season, cook food | | Adjust valves, controls | |
| Follow food orders | | Prepare finished product | |
| Cut vegetables, meats, etc. | | Sample mixtures | |
| | | Equipment Operator | 0.46 |
| | | Adjust hand wheels | |
| | | Operate equipment | |
| | | Use hand controls to operate machinery | |
| | | *Electronics Assembler | 0.39 |
| | | Check functions of electrical parts | |
| | | Connect wires | |
| | | Dry parts with an air hose | |
| | | LPN (hospital settings creep him out) | 0.35 |
| | | Administer prescribed treatments | |
| | | Collect patient samples for testing | |
| | | Provide health care | |

*Note.* An "*" denotes job sites on which participants were placed.

Table 4

*Job Preference and Matching Assessment Results for Natalie*

| High-preference Job | Proportion Score | Low-preference Jobs | Proportion Score |
|---|---|---|---|
| Child Care Worker | 0.42 | Auto Mechanic | 0.39 |
| Care for children | | Repair brake parts | |
| Read to children | | Repair and replace transmission | |
| Participate in activities | | Repair and replace electrical system parts | |
| *Library Worker | 0.43 | Service Station Attendant | 0.39 |
| Check out books | | Add oil and other fluids to engine | |
| Scan books | | Check engine oils and other fluid levels | |
| Use barcode scanners | | Put gasoline in automobiles | |
| Grocery Clerk/Bagger | 0.38 | Welder | 0.41 |
| Sort and bag items | | Use electric arc, acetylene welding equip. | |
| Place bags in carts | | Cut pieces of metal | |
| Place food in bags | | Add metal to build up parts | |
| | | *Carpenter | 0.39 |
| | | Install door framework | |
| | | Measure and cut material | |
| | | Sand surfaces | |
| | | Carpet Cleaner | 0.43 |
| | | Disconnect and clean hoses | |
| | | Move furniture | |
| | | Operate machinery | |
| | | Greenhouse Worker | 0.43 |
| | | Collect plants to fill orders | |
| | | Move plants to different size pots | |
| | | Plant bushes and trees | |

*Note.* An "*" denotes job sites on which participants were placed.

Table 5

*Job Preference and Matching Assessment Results for Conner*

| High-preference Job | Proportion Score | Low-preference Jobs | Proportion Score |
|---|---|---|---|
| Theater Worker | 0.49 | Auto Mechanic | 0.49 |
| Collect tickets | | Use hand tools to install parts | |
| Sell tickets | | Change engine oil | |
| Fill food and drink orders | | Repair fuel system | |
| Amusement Park Worker | 0.50 | Forest Worker | 0.45 |
| Announce safety rules | | Use power saw to cut trees | |
| Serve food | | Clear brush around trees | |
| Hand out prizes | | Operate equipment to plant large trees | |
| *Dining Room Attendant | 0.58 | *Electronics Assembler | 0.47 |
| Serve food and drink | | Connect wires | |
| Replenish food at tables | | Check functions of electrical parts | |
| Set tables | | Dry parts with air hose | |

*Note.* An "*" denotes job sites on which participants were placed.

Table 6

*Mean Percent Accuracy and Quantity of Tasks Completed Across All Job Conditions*

| | Percent accuracy | | Percent quantity | |
|---|---|---|---|---|
| Participant | High-preference, high-match | Low-preference, low-match | High-preference, High-match | Low-preference, low-match |
| Kristin | 78.17 | 0 (1/32 inch)<br>20.83 (1/4 inch) | 41.96 | 56.25 |
| Mark | 68.75 | 0.00 | 50.00 | 17.86 |
| Natalie | 100.00 | 19.44 | 66.34 | 46.67 |
| Conner | 74.50 | 12.50 | 30.00 | 18.57 |

*Note.* Percent accuracy calculated by dividing tasks completed correctly by total tasks completed by participant in 10-min productivity probe and multiplying by 100. Percent quantity calculated by dividing number of tasks completed by participant, regardless of accuracy, by tasks completed by typically developed adult in 10-min productivity probe and multiplying by 100.

carpenter, with (a) sanding surfaces, (b) measuring and marking locations, and (c) measuring and cutting material as Kristin's three non-preferred tasks. Based on those results, the researcher placed Kristin in a deli preparing mini-sandwiches and in a carpentry shop measuring and marking wood for garden trellises.

Figures 1 and 2 present percentage of time on task and number of minutes requested on break or off work for Kristin. For the first seven sessions, Kristin did not request to stop work or take a break at either job site. She exhibited high on-task behavior at both job sites with only slight differentiation, ranging from 95.56% to 100% for the

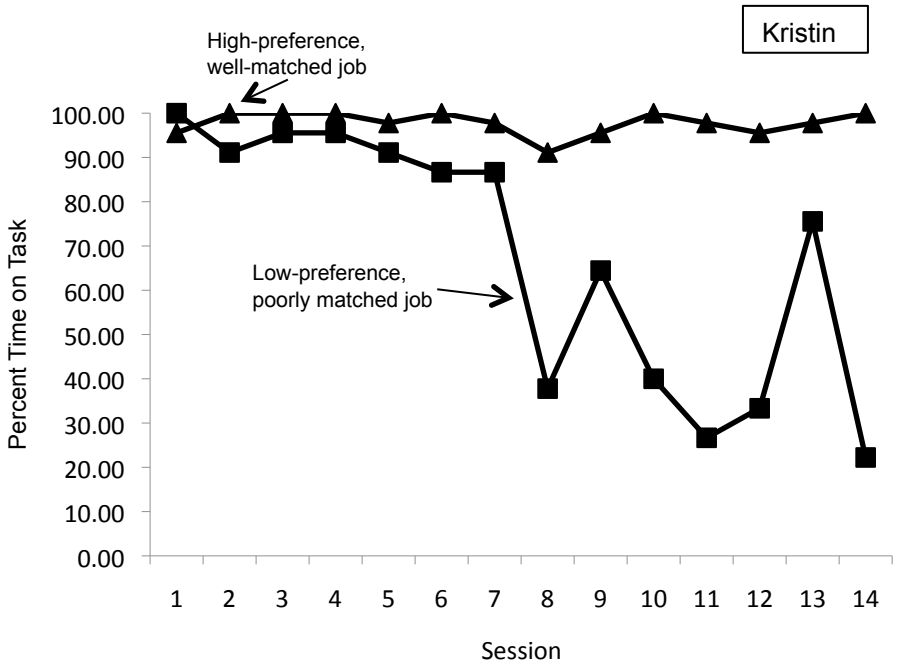


*Figure 1.* Percentage of time on task at high-preference, high-match vs. low-preference, low-match job.

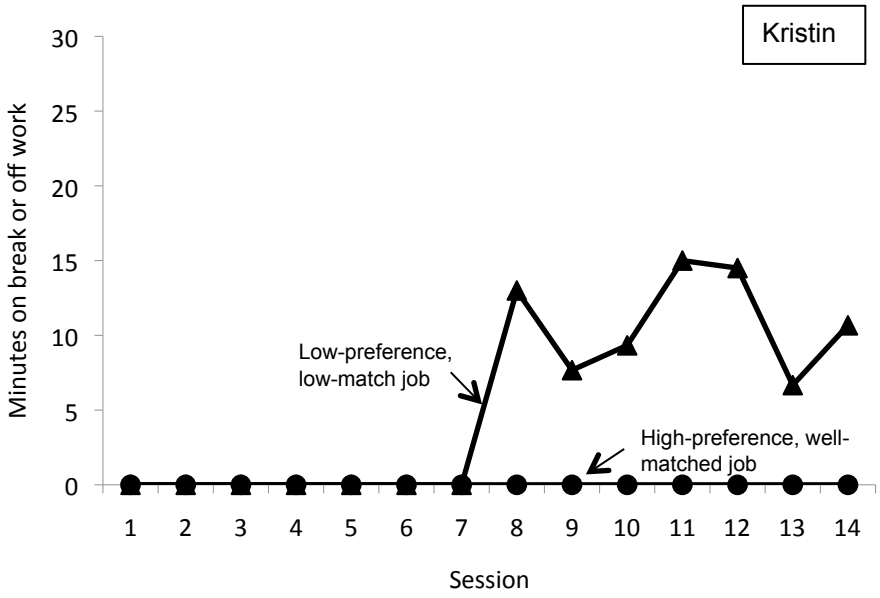


*Figure 2.* Number of minutes out of each 30-min session on break or requested off work on high-preference, high-match job vs. low-preference, low-match job.

high-preference, high-match job and 86.67% to100% for the low-preference, low-match. After Session 7, Kristin's on task performance dropped dramatically on the low-preference, low-match job to range from 22.22% to 75.56% with a mean of 43.17% time on task. Beginning with Session 8, Kristin stopped working several minutes into each session, although she did not formally ask for a break. After 3 min of refusal to work or answer regarding a desire for a break, the job coach offered the option of discontinuing work and completing a filing task in the car. In the car, Kristin refused the filing and was allowed to sit in the car without any other activities.

On the high-preference, high-match job, Kristin maintained high rates of on task performance throughout the study, ranging from 91.11% to 100%, with a mean of 96.83% time on task. She did not request breaks or to stop work at any time on the high-preference, high-match job, even when given additional work materials. Kristin's mean for time on task for the entire study was 97.78% at the deli compared to 67.78% at the carpentry shop.

Productivity data for Kristin are presented in Figure 3. Kristin began with 28.57% productivity at the deli (high-preference, high-match). Her productivity dropped slightly on the second probe, then increased to 35.71% on the fourth and final probe. At the carpentry site (low-preference, low-match), Kristin began with 0% productivity for both measurement standards on Session 1, remaining at 0% for the 1/32 in (0.79 mm) standard. Productivity increased to 25% over the next two sessions for the 1/4 in (6.35 mm) standard before decreasing to 0% on the last probe. Prior to the last productivity probe at the carpentry shop, Kristin commented, "I just want to get my work done so I can just get out of here and not come back."

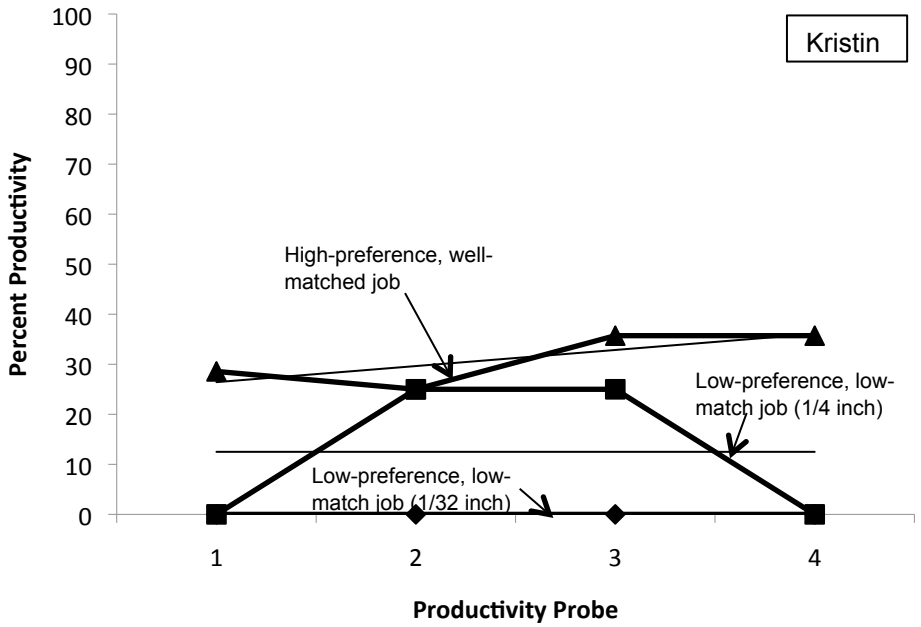


*Figure 3.* Percentage of whole tasks completed correctly as compared to typically developing adult in the same setting over a 10-min period. Trendlines were calculated on each set of data.

Compared to the high-preference, high-match job, the percent productivity on the low-preference, low-match job started lower and remained lower throughout probes. Productivity data on the low-preference, low-match job remained flat, but trended upward on the high-preference, high-match job.

Mean accuracy data for Kristin are presented in Figure 4. She completed a mean of 78.17% tasks correctly on the high-preference, high-match job, with 85.71% accuracy on her final probe. Kristin's mean accuracy for the 1/4 in (6.35 mm) measurements was 20.83% and for the 1/32 in (0.79 mm) measurements was 0%. On her final probe, she completed 0% of tasks correctly for both measurements at the low-preference, low-match job. Compared to the high-preference, high-match job, percent of tasks completed

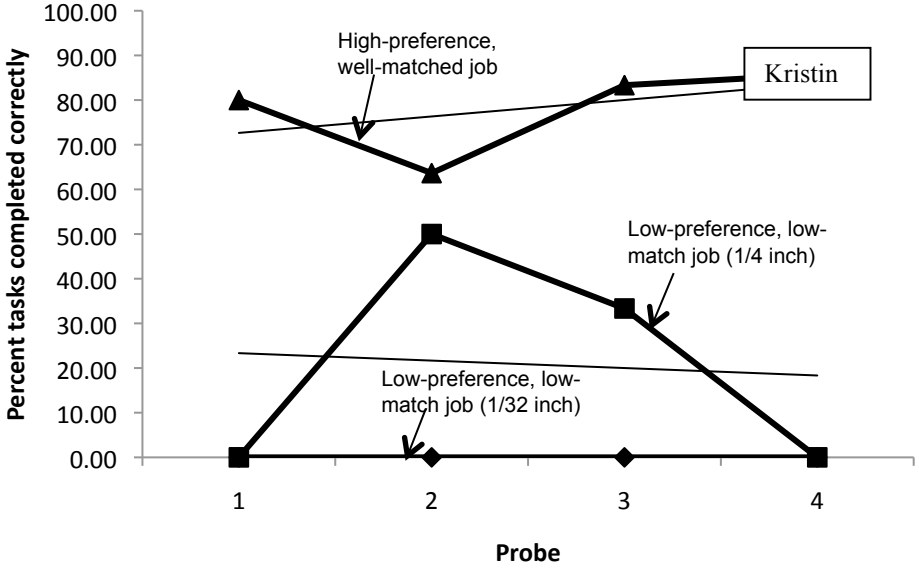


*Figure 4.* Percent tasks completed correctly by participant during 10-min productivity probe (participant tasks completed correctly divided by total tasks completed by participant). Trendlines were calculated on each set of data.

correctly on the low-preference, low-match job was much lower throughout probes. Accuracy data for 1/32 in measurements remained flat at 0% and for 1/4 in measurements declined. In contrast, accuracy for the high-preference, high-match job remained elevated and trended upward throughout probes.

Kristin selected the high-preference, high-match job as her preferred and better matched job on 100% of opportunities. When questioned at the conclusion of the study, Kristin indicated she preferred and worked better at the deli because she likes working with food and “sandwiches are delicious.” Consistent with results of the job-matching assessment and Kristin’s perception, the job coach/data collector concurred that the deli was Kristin’s better matched job, citing her refusal to work at the carpentry shop as the primary reason for her selection.

**Mark**

Based on the job preference and matching assessment, Mark's best matched of his preferred jobs was restaurant cook, with a proportion score of 0.54. Mark chose (a) preparing, seasoning and cooking food; (b) following food orders; and (c) cutting vegetables, meats, etc. as his preferred tasks. Due to special training or licensure required for Mark's low-preference jobs, the researcher asked Mark to select additional jobs. Of the six low-preference jobs, LPN was the lowest match; however, Mark indicated that hospital or similar settings "creep him out." The researcher therefore selected the next lowest-match, electronics assembler, with a proportion score of 0.39, as the second job site. Mark selected (a) checking functions of electrical parts, (b) connecting wires, and (c) drying parts with an air hose as his three least-preferred tasks. From these results, the researcher placed Mark at a Mexican restaurant preparing fried ice cream balls and in an electronics lab at a technical college soldering wires to posts.

Mark's choice of his preferred and better matched job varied throughout the study. Mark chose the high-preference, high-match job on 61.54% of opportunities. On 76.92% of opportunities, he preferred the last job site visited. At the conclusion of the study, Mark indicated he sometimes chose electronics assembly because it was "new" and "fun." He indicated he sometimes chose the restaurant because it was "more fun" and he "loved making fried ice cream."

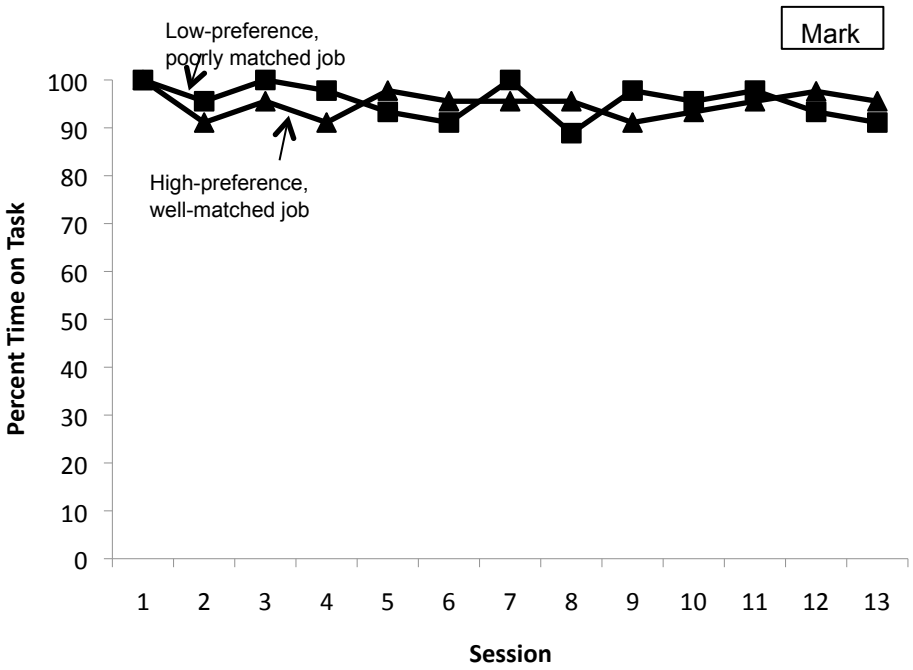


*Figure 5.* Percentage time on task at high-preference, high-match vs. low-preference, low-match job.

As seen in Figure 5, data showing time on task for Mark remained high throughout the study and showed no separation. Percentage time on task for the restaurant (high-preference, high-match) ranged from 91.11% to 100% with a mean of 95.03% and for the electronics lab (low-preference, low-match) from 88.89% to 100% with a mean of 95.56%. Mark did not request a break or to stop work on either job site.

Figures 6 and 7 present productivity and accuracy data for Mark at both work sites. Productivity for whole tasks completed correctly began at 0% for both high- and low-match jobs and remained at 0% for connecting wires (low-preference, low-match) while increasing to 57.14% at the restaurant (high-preference, high-match). Mark completed an average of 68.75% tasks correctly on the high-preference, high-match job,

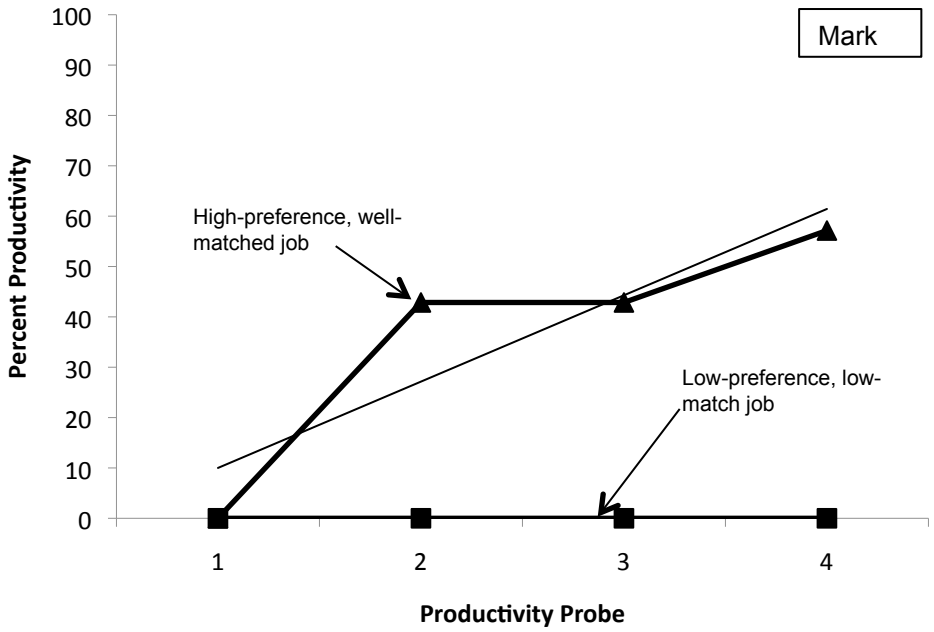


*Figure 6.* Percentage of whole tasks completed correctly as compared to typically developing adult in the same setting over a 10-min period. Trendlines were calculated on each set of data.

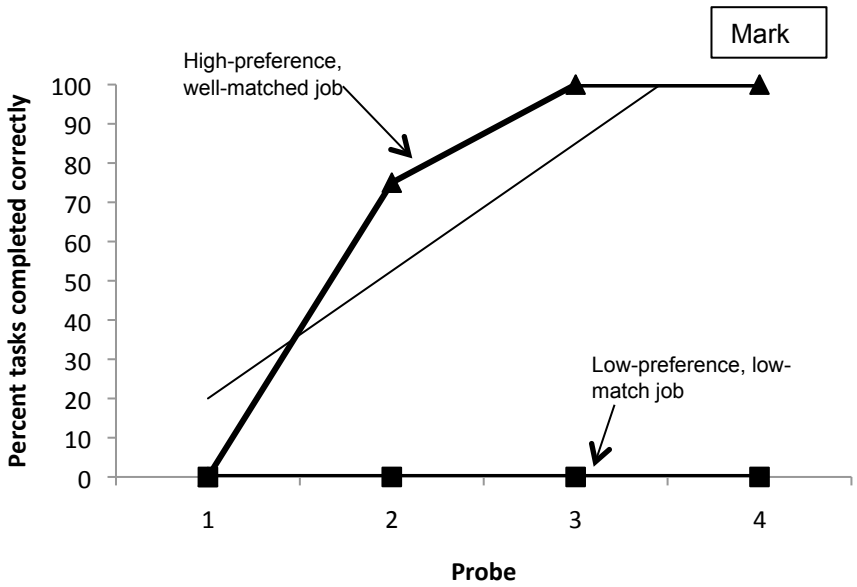


*Figure 7.* Percent tasks completed correctly by participant during 10-min productivity probe (participant tasks completed correctly divided by total tasks completed by participant). Trendlines were calculated on each set of data.

ending with 100% accuracy on his last two probes. He completed 0% of tasks accurately on all four probes at the low-preference, low-match job. For Mark, on the high-preference, high-match job, both productivity and accuracy were higher than on the low-preference, low-match job and trended upward. Productivity and accuracy were lower and remained flat at 0% on the low-preference, low-match job.

At the end of the study, the job coach/data collector selected restaurant cook as Mark's better matched job, consistent with data from the web-based job-matching assessment.

## Natalie

According to results from the job-preference and job-matching assessment, Natalie's best matched of her preferred jobs was library worker, with a proportion score of 0.43. As her preferred tasks, she chose (a) checking out books, (b) scanning books, and (c) using barcode scanners. Due to potential difficulty in procuring training sites from among her three nonpreferred jobs, the researcher asked Natalie to choose additional jobs. From among the six jobs selected, carpenter tied for low-preference, low-match with a proportion score of 0.39. Natalie's nonpreferred tasks included (a) installing door framework, (b) measuring and cutting material, and (c) sanding surfaces. Based on these results, the researcher placed Natalie in an elementary school library, scanning in books for end-of-year inventory and in a carpentry shop sanding boards for garden trellises.

Figure 8 presents Natalie's on task data. Although data indicate a slight separation between the high- and low-match jobs, she maintained high levels of on task behavior on both jobs. On the high-preference, high-match job, Natalie was on task in 100% of

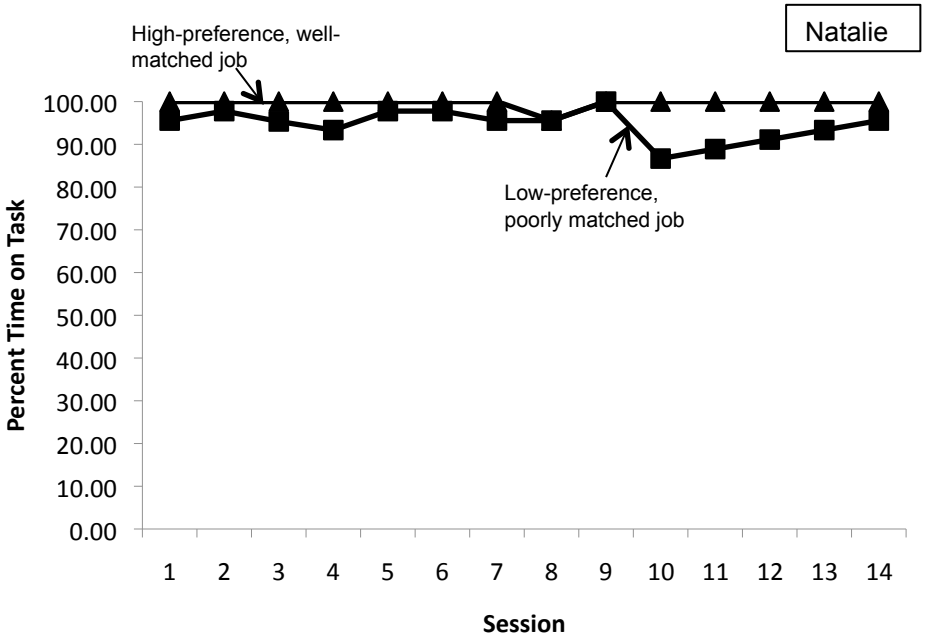


*Figure 8.* Percentage time on task on high-preference, high-match job vs. low-preference, low-match job.

observations for every session with one exception, where she remained on task for 95.56% of probes. On the low-preference, low-match job, Natalie's on task data ranged from 86.67% to 100%, with a mean of 94.59%. . Natalie made comments such as "I hope that it (the carpentry shop) burns down before we get there" or "Maybe [the shop] will be locked" throughout the study. She chose the library (high-preference, high-match) as her preferred and better matched job on 100% of opportunities. At the conclusion of the study, Natalie indicated she chose the library because she likes "to read and to handle books." She also indicated she is familiar with libraries and that carpentry is "not her thing."

As seen in Figure 9, Natalie's productivity at the library (high-preference, high-match) increased slightly over six probes from 61.76% to 68.73%, with a high of 69.61% on the fifth probe. She maintained 100% accuracy every session, as shown in Figure 10.

At the carpentry shop, her productivity on whole tasks fluctuated between 0% and 20%, beginning and ending on 0%. Her accuracy fluctuated with a range of 0% to 50% accuracy and a mean of 19.44%. She ended with 0% accuracy for whole tasks on the last probe. Natalie struggled with consistency in sanding, such as not completing a full stroke when sanding a side of wood, as well as with sanding the routed portion by hand. She refused to consistently use a block of wood to aid in sanding the ridge in spite of sanding much more efficiently with it. She also struggled to consistently sand the rounded portion of the same edge. For Natalie, both productivity and accuracy were higher for the high-preference, high-match job throughout probes in comparison to the low-preference, low-match job. Productivity increased slightly on the high-preference, high-match job and decreased slightly on the low-preference, low-match. Natalie's accuracy remained

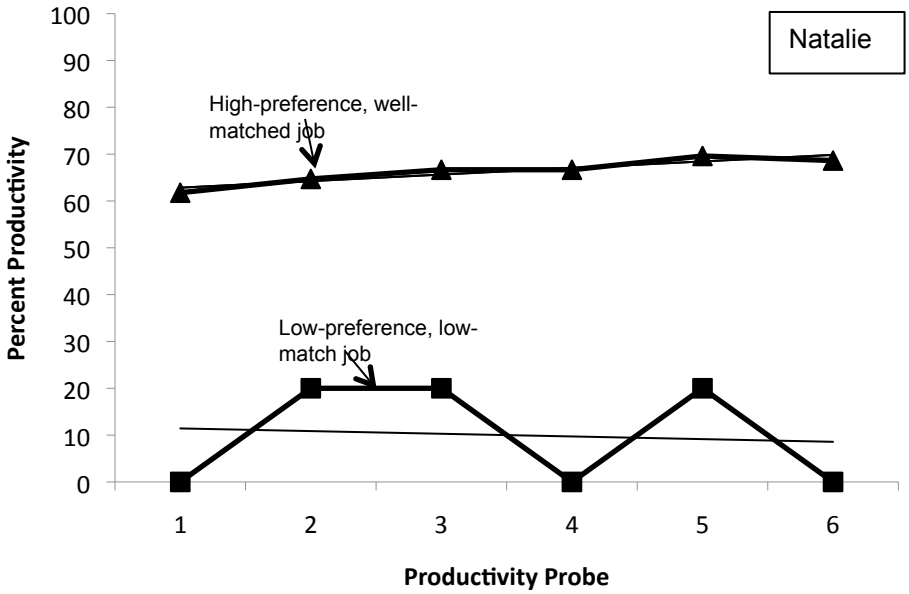


*Figure 9.* Percentage of tasks completed correctly as compared to typically developing adult in the same setting over a 10-min period. Trendlines were calculated on each set of data.

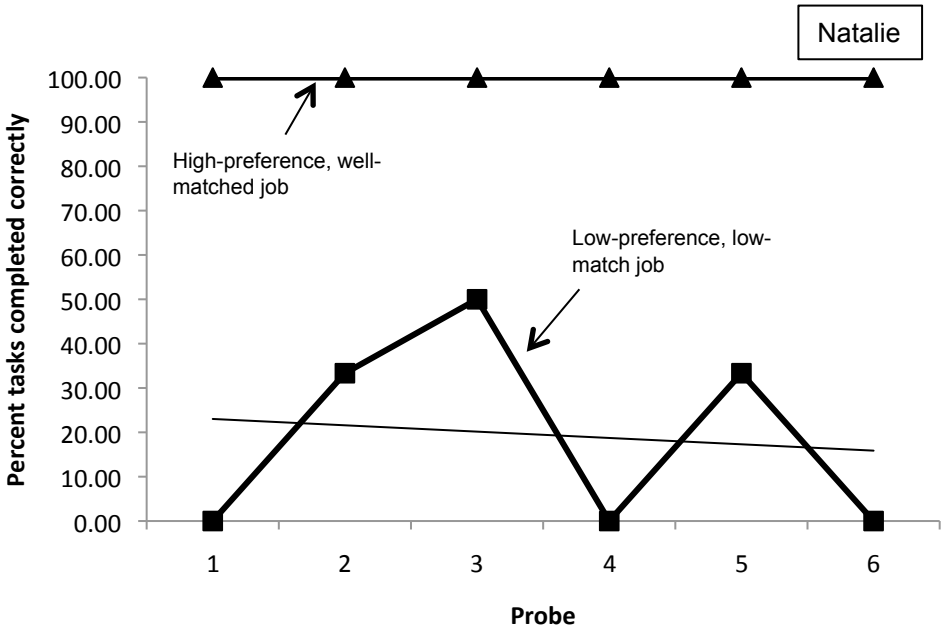


*Figure 10.* Percent tasks completed correctly by participant during 10-min productivity probe (participant tasks completed correctly divided by total tasks completed by participant). Trendlines were calculated on each set of data.

consistent at 100% on the high-preference, high-match job, but decreased on the low-preference, low-match job.

At the end of the study, the job coach/data collector selected the library as Natalie's better matched job, consistent with findings from the job-matching assessment and Natalie's perception.

## Conner

According to Conner's job-preference and matching assessment, Conner's best matched preferred job was dining room attendant with a proportion score of 0.58. Preferred tasks included (a) serving food and drink, (b) replenishing food at tables, and (c) setting tables. From among Conner's low-preference, low-match jobs, the researcher

selected electronics assembler with a proportion score of 0.47. Conner's nonpreferred tasks included (a) connecting wires, (b) checking functions of electrical parts, and (c) drying parts with an air hose. Based on these results, Conner wiped down and set up tables in an assisted living center's dining room and attached electrical wires to posts in an electronics lab.

Conner chose the dining room (high-preference, high-match) as his preferred and better matched job on 100% of opportunities. At the conclusion of the study, Conner indicated he chose the dining room because he preferred the tasks and he was "a professional at setting up the dining room." As seen in Figure 11, on task data for both job sites ranged from 93.33% to 100% with a mean of 97.55% at the electronics lab and 97.56% at the dining room. Conner did not request breaks or to stop work on either job site.

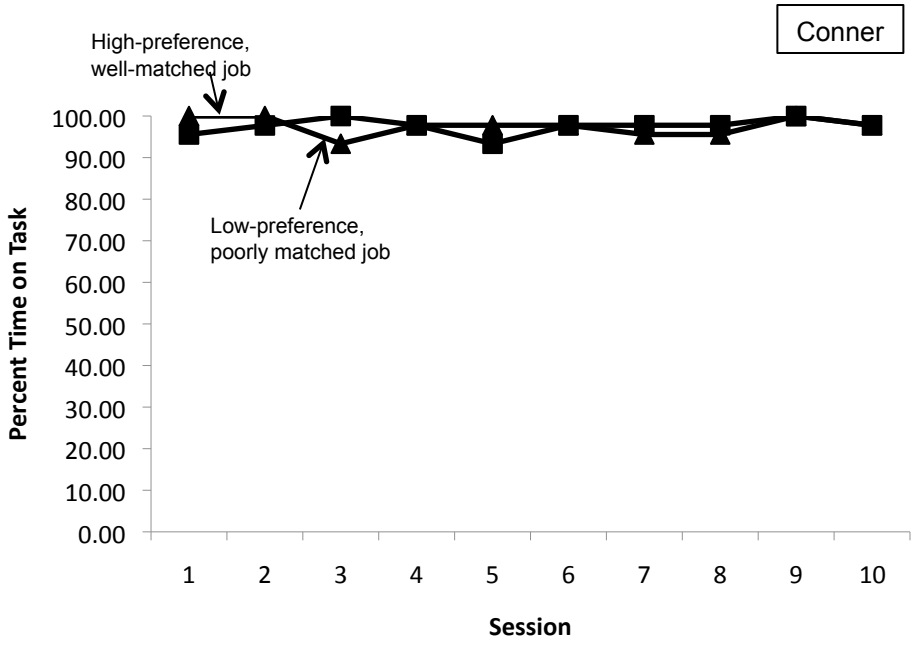


*Figure 11.* Percent time on task on high-preference, high-match job vs. low-preference, low-match job.

The researcher and job coach/data collector conducted productivity measures daily with Conner. Because Conner struggled to complete an entire table in 10 min, the researcher compared subtasks for productivity. Four subtasks for the dining room included (a) cleaning the table, (b) placing silverware, (c) placing glasses and napkins, and (d) finishing the set up (menus, condiments on the table, chairs pushed in). At the electronics lab, subtasks included completing individual connections (two per wire).

Figures 12 and 13 present productivity and accuracy data for Conner. Across probes, productivity at the dining room (high-preference, high-match) increased from 6.25% to 31.25%. Conner performed at a mean of 74.5% accuracy in the dining room, with a high of 100% and ending with 80% accuracy.

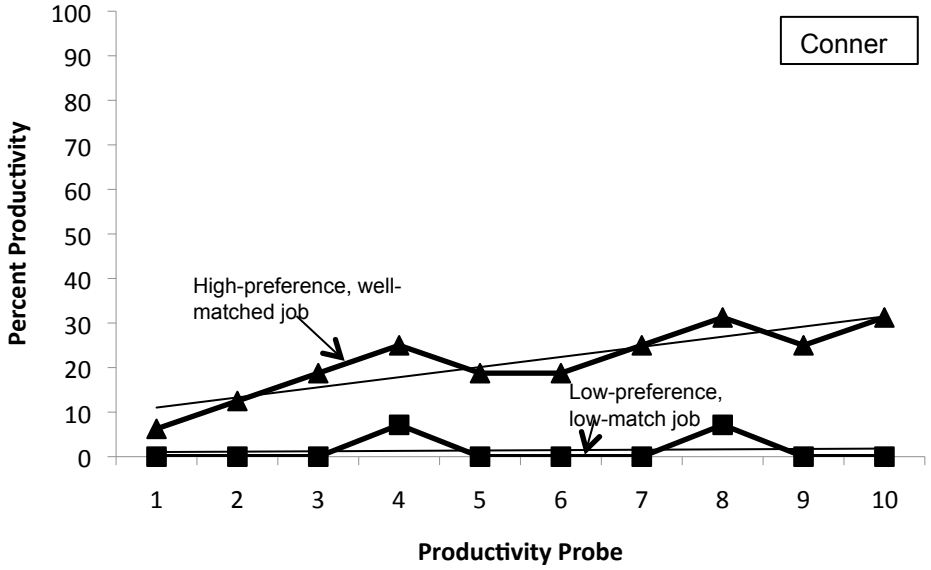


*Figure 12.* Percentage of subtasks completed correctly as compared to typically developing adult in the same setting over a 10-min period. Trendlines were calculated on each set of data.

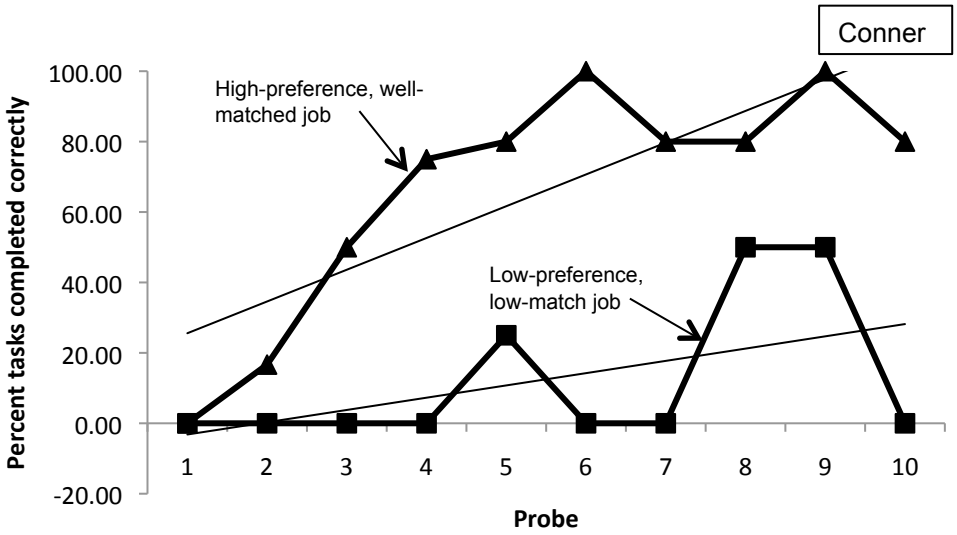


*Figure 13.* Percent tasks completed correctly by participant during 10-min productivity probe (participant tasks completed correctly divided by total tasks completed by participant). Trendlines were calculated on each set of data.

At the electronics lab (low-preference, low-match), productivity fluctuated between 0% and 7.14%, both beginning and ending at 0%. Conner performed at a mean of 12.5% accuracy with a high of 50% and ending with 0%. For Conner, both productivity and accuracy were higher for the high-preference, high-match job. Productivity trended upward on both job conditions, but with a steeper slope on the high-preference, high-match job. Conner's accuracy increased similarly on both jobs, with the steeper slope on the high-preference, high-match job.

At the end of the study, the job coach/data collector selected the low-preference, low-match job of connecting wires as Conner's better-matched job, citing slow work speed when setting up tables and faster work speed at the electronics lab as her rationale.

# DISCUSSION

Results of this study indicate that preference and degree of match are associated with variable performance and satisfaction among young adults with developmental disabilities. Contrary to data reported in earlier studies (Bambara et al., 1994; Morgan & Horrocks, in press), on task levels remained elevated on both job conditions throughout the study with minimal separation for three of the four participants. This may have occurred for three reasons. First, the job coach/data collector remained in relatively close proximity to the participants throughout the study in order to ensure participants were completing job tasks to criteria specified and to prompt as needed. In addition, although the job coach/data collector had not served as a job coach for any of the participants prior to this study, both she and the researcher were familiar to all the participants as staff members employed at their transition program. The researcher was the special education teacher for Mark, Kristin, and Natalie. The job coach/data collector worked with a variety of students as transportation and reading specialist. As such, the job coach/data collector and researcher may have served as discriminative stimuli for on task behavior.

Second, Mark, and to a lesser extent, Conner, indicated they enjoyed both jobs, which may have increased on task performance at the low-preference, low-match job site. Mark chose the low-preference, low-match job as his preferred and better-matched job on 38% of opportunities. On two occasions, Conner indicated that he “enjoyed” the electronics, but he “loved the dining room.”

Third, Mark, Natalie, and Conner had participated in 2- to 3-hour job training sessions three times weekly over 2 years, including both preferred and non-preferred

jobs. Working for one-half hour without a break, even on a non-preferred task, may have posed little challenge to them, particularly with the proximity and familiarity of the job coach. Natalie, in particular, expressed just prior to Session 5 that she would "never take a break," in spite of a definitive dislike for the low-preference, low-match job as illustrated by verbal comments throughout the study. Even Kristin, who participated in similar job training experiences for 1 year, maintained high on-task levels at both job sites for the first seven sessions.

Although on task performance may be an important component to consider on any job, productivity and accuracy may be of even greater consequence to an employer (Morgan & Horrocks, in press). In the study by Morgan and Horrocks, preferred whole jobs were associated with higher productivity for two of the three participants; however, for the third participant, the preferred job was associated with lower rates of productivity. In the current study, all participants performed at higher levels of both productivity and accuracy on high-preference, high-match jobs than on low-preference, low-match jobs. Additionally, all participants increased in their performance level at a higher rate from beginning to end in comparison to the low-preference, low-match jobs, with the exception of Natalie, whose accuracy remained flat at 100% across all probes on the high-preference, high-match job. These results were achieved regardless of disability, IQ, on task performance, or variables encountered at the job sites. Kristin, notwithstanding considerable variability in the sandwich making materials at the high-preference, high-match deli, experienced increased productivity and accuracy on that job. In contrast, results for Kristin show flat or descending productivity and accuracy trends on the very predictable task of measuring wood on the low-preference, low-match job. To a lesser

extent, Mark and Conner also experienced more variables at the high-preference, high-match job than on the low-preference, low-match job.

Results from the current study suggest that preferred whole jobs that are also well-matched may prove to be better predictors of higher productivity and accuracy for young adults with developmental disabilities than preference alone. Further research will be needed to verify these results.

Results also suggest that the job-matching component of a web-based assessment (YES) may be a useful tool in predicting degree of match between skills and job requirements, extending the research conducted by Morgan (2008). Mark's results in particular suggest that job match, as predicted by the assessment, may have accounted for his increased productivity on the high-preference, high-match job more than job preference, as his preference fluctuated throughout the study.

Results regarding participant satisfaction were more variable, with the high-preference, high-match job identified as the one with which three participants were more satisfied in 100% of sessions. Mark identified the high-preference, high match job as the preferred and better-matched job on only 61.54% of opportunities. His fluctuating preference may reflect, however, not so much dissatisfaction with one of the jobs, but rather the difficulty of choosing between two similarly balanced alternatives.

The job coach/data collector selected the high-preference, high-match job as the better matched job for Kristin, Mark, and Natalie. In Conner's case, she selected the low-preference, low-match as his better matched job. She cited work speed as the major consideration. Data comparing Conner's work speed, without considering work quality, to that of a non-disabled adult actually showed Conner completing 37.50 % of standard at

the high-preference, high-match vs. 28.57% of standard at the low-preference, low-match job. Conner's work speed increased slightly more over time on the low-preference, low-match vs. the high-preference, high-match job which may have affected the job coach / data collector's judgment of job match. Also, the job coach/data collector's degree of familiarity with the different tasks may have influenced her perception of Conner's work speed.

There are several limitations to this study. First, with only four participants, generalizability of the results is limited. Future replication of the study will be needed to more fully establish any correlation between job match and job productivity, as well as the usefulness of a web-based job-matching program. Researchers may want to consider including participants with more or less severe cognitive disabilities and from varied cultural and ethnic backgrounds.

Second, the high-preference assessment was conducted prior to the low-preference assessment with every participant. When narrowing jobs and job tasks to three, Mark, Natalie, and Conner took great care when choosing preferred jobs and tasks, but cursorily selected non-preferred jobs and particularly tasks. Randomizing or counterbalancing the order of assessments may have yielded different results on the preference assessments.

Third, the proximity and familiarity of the job coach/data collector in this study may have affected the participants' on task performance or productivity. However, it may allow for better comparison of potential productivity as well as a more realistic view of job coaching on an actual job placement. Future research may want to examine on-task performance and productivity in high-preference, high-match versus low-preference, low-

match jobs over a more extensive time period and/or on longer job sessions. Research regarding the effects of familiar job coaches or staff on on task performance may be warranted. Researchers may also want to examine other aspects related to high- and low-match jobs such as time needed for job coaching or quantity and type of prompts required at each job.

Finally, although the researcher tried to develop multi-step job tasks, each participant performed only one job task, which could not realistically represent an actual job experience. The researcher was also limited as to the tasks participants could perform at the job sites, due to safety and training concerns. Connecting electrical wires to posts, or measuring, marking or sanding wood, although definitely part of an electronics assembler's or a carpenter's job description hardly represents the complexity of tasks required for the actual job. Future researchers may want to focus on including a variety of tasks in each job condition to better characterize a realistic working environment.

Future researchers may want to study the usefulness of the list of strengths and weaknesses generated by a web-based job-matching program in determining needed accommodations for a participant to be placed on a preferred job. Longitudinal research could determine if job satisfaction or performance remains high among young adults with disabilities placed on jobs deemed preferred and high-matched following several weeks or months on the job. Finally, future research may be useful in ascertaining if preferred, high-matched jobs provide more opportunity for advancement in pay or status in an organization.

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# APPENDICES

# Appendix A

## YES Program Facilitator Checklist - Job Preference Portion

YES Program Facilitator Checklist - Job Preference Portion

| Activity | Activity performed? | |
|---|---|---|
| Presents scripted instructions as written | Y | N |
| Explains buttons (thumbs up/down, play, fast forward, etc.) to participant | Y | N |
| Answers participants' procedural questions | Y | N |
| Redirects participant if asking for help in making job choices: "I can't help you with that. Do your best." or "Make your best choice." | Y | N |
| Combines selected job areas if greater than 10 job options | Y | N |
| Reads jobs from final list, if participant cannot | Y | N |
| Provides brief explanation of jobs on list as needed | Y | N |
| Reduces jobs to three with participant | Y | N |
| Reviews pictures of job tasks for top three jobs with participant; records (or has participant record) participant's three preferred (or non-preferred) tasks | Y | N |
| *For low preference job matching, add the following:* | | |
| Selects non-preferred categories as indicated by participant | Y | N |
| Selects thumbs up for jobs indicated by participant as less preferred | Y | N |

# Appendix B

## Job Coach Checklist

Job Coach Checklist

Job Site: Date:

| Activity | Activity performed? | | |
|---|---|---|---|
| Instructed participant as to job tasks | Y | N | NA |
| Refrained from talking about non-work related topics | Y | N | NA |
| Redirected participant if conversing about non-work related topic | Y | N | NA |
| Redirected off-task participant back to work after one min | Y | N | NA |
| If not back to work, asked if participant wanted break | Y | N | NA |
| Allowed breaks when participant requested | Y | N | NA |
| Timed break for 1 min | Y | N | NA |
| Asked "Are you ready to start work again?" after 1 min break | Y | N | NA |
| If student requested to stop work, gave option of break if under 10 min, or take a break or stop working altogether if over 10 min | Y | N | NA |
| Participant in assigned break area without extra stimuli | Y | N | NA |
| Checked for quality of task based on task analysis checklist | Y | N | NA |
| Instructed participant to complete task correctly | Y | N | NA |
| Modeled task or prompted student as needed | Y | N | NA |
| Remained where could see participant | Y | N | NA |
| During productivity probe, instructed the participant to work independently, do his or her best, and move on to new task if not able to complete task without help. | Y | N | NA |
| During productivity probe, marked "+" if participant completed assigned task or step to quality specified or "-" if not completed correctly | Y | N | NA |