Concordance between Choice Presentation Modes and Discrimination Skills of People with Developmental Disabilities

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Abstract

Choices are commonly presented to persons with developmental disabilities using one of three modes: actual objects, pictures of the objects, or by describing them vocally. Research has suggested that the ability to indicate preferences in each mode is related to the discrimination skills the person is able to perform. Twenty direct care staff members, working in a community agency serving individuals with developmental disabilities, completed a survey to indicate the types and proportions of presentation modes they used for clients. We examined the concordance between the presentation modes and the clients' discrimination skills measured by the Assessment of Basic Learning Abilities. For clients who could perform simple visual discriminations, object presentation mode was scored as concordant and this group showed high concordance (80%). For clients who could perform visual matching-to-sample, either object or picture mode was scored as concordant and this group also showed high concordance (81%), although object mode accounted for 70% of the concordance. For clients who could perform auditory-visual conditional discriminations, there was a large increase in vocal presentations relative to the other groups. The findings suggest that staff presented choices predominantly in modes that often matched their clients' discrimination skills. The apparent overuse of object mode and underuse of picture mode with clients who could perform visual matching-to-sample discriminations was surprising. Possible reasons for these findings are discussed and suggestions are made for facilitating the use of pictures in decision making for staff working with clients with developmental disabilities.

Improving the quality of life of persons with developmental disabilities is a major role for disability service providers. An important dimension of quality of life for persons with developmental disabilities is self-determination (Hughes, Hwang, Kim, Eisenman, & Killian, 1995; Stancliffe, 2001; Wehmeyer & Schwartz, 1998). One way to implement and promote self-determination is to provide choice opportunities (Tullis et al., 2011), which are commonly presented using objects (e.g., presenting a can of soda and a glass of milk), pictures of the objects (e.g., presenting a picture of a can of soda and a picture of a glass of milk), and/or a vocal description of the objects (e.g., "would you like a can of soda or a glass of milk?"). The three modes of providing choice opportunities represent increasing practicality from the staff member's perspective. However, practicality is not the only determinant in considering which mode is best for presenting choices to individuals

with developmental disabilities; discrimination abilities of the individual can also be a factor.

Research has suggested that an individual's ability to make consistent choices in each mode of providing choice opportunities is related to his or her discrimination abilities. Several studies have examined the relation between discrimination skills and the ability to make choices based on objects, pictures, or in response to vocal cues (Conyers et al., 2002; de Vries et al., 2005; Reyer & Sturmey, 2006). In these studies, participants' discrimination skills were assessed using the Assessment of Basic Learning Abilities (ABLA). The ABLA is a learning-to-learn assessment with a well-specified protocol, and it has demonstrated high test-retest, inter-rater reliabilities, and high predictive validity (Martin, Yu, & Vause, 2004; Martin & Yu, 2000; Vause, Yu, & Martin, 2007; Seniuk, Greenwald, Williams, & Jackson, 2011; Williams, 2015; Yu, Martin, Vause, & Martin, 2015). It assesses an individual's ability to learn a simple imitation and five 2-choice discrimination tasks. Furthermore, this test has been found to be a practical and valuable tool for direct-care staff working with individuals with developmental disabilities to match the learning abilities of an individual to the difficulty level of a variety of training tasks and to determine their ability level prior to the introduction of various interventions in order to maximize performance and minimize aberrant behavior (see review by Martin & Yu, 2000, for more details on the utility of the ABLA).

During an ABLA assessment, a tester attempts to teach each task or level to a testee using prompting and reinforcement procedures. An individual is said to pass a level when they have performed eight consecutive trials correctly at that level. Individuals are said to fail a level when they have made eight cumulative errors at that level (Martin, Yu, & Vause, 2004). For example, on each Level 3 trial (a simple visual discrimination), a red box and a yellow can are presented in left and right positions randomly and the testee is required to place a piece of foam in the yellow can, regardless of the position of the can when the tester says, "where does it go?" On each Level 4 trial (a quasi-identity visual-visual match-to-sample discrimination), the yellow can and the red box are randomly placed in left and right positions and the testee is randomly presented with a yellow cylinder or a red cube.

The testee is then required to place the yellow cylinder in the yellow can or the red cube in the red box. On each Level 6 trial (an auditory-visual discrimination), the yellow can and the red box are placed in randomly alternated left and right positions. The testee is then required to place a piece of white foam in the appropriate container when the tester says "red box" or "yellow can." Level 5 (an auditory discrimination) was deleted from the self-instructional manual for direct-care staff as it had been found by numerous studies (DeWiele & Martin, 1996; Kerr, Meyerson, & Flora,1977; Lin, Martin, & Collo, 1995; Martin, Quinn, & Patterson, 1983; Stubbings & Martin, 1998; and Walker, Lin, & Martin, 1994) that almost all individuals who passed Level 5 also passed Level 6 and therefore Level 5 did not contribute unique information (Martin & Yu, 2000). The auditory discrimination assessed at Level 5 in the original ABLA has since been replaced by a nonidentity visual-visual match-to-sample discrimination in the ABLA-R (DeWiele, Martin, Martin, Yu, & Thomson, 2011). The ABLA-R manual can be downloaded for free from http://stamant.ca/research/abla/.

Conyers et al. (2002) found that participants who had met or surpassed ABLA Level 3 (a two-choice simple visual discrimination) were better able to select their preferred food consistently during paired-choice preference assessments when the choice items were the actual objects but were less able to when the items were pictures or spoken words. Participants who had met or surpassed ABLA Level 4 (a two-choice visual quasi-identity matching-to-sample discrimination) selected their preferred food items consistently when the stimuli were objects or pictures but not when the stimuli were spoken words. Participants who had passed ABLA Level 6 (a two-choice auditory-visual conditional discrimination) selected their preferred food items consistently in all three presentation modes. These relations were found with both food and nonfood items (Conyers et al.). de Vries et al. (2005) observed similar findings using leisure activities regarding choices with adults with moderate to profound developmental disabilities. In addition, Reyer and Sturmey (2006) partially replicated the procedures of Conyers et al. using work tasks with adults with mild to profound intellectual disabilities. In other words, the above research suggests that if choices are to be meaningful to a client, the

mode of choice presentation should be within the client's discrimination abilities. That is, we need to increase not only choice opportunities, but also ensure that the mode of presentation is matched to the client's discrimination skills. This study examined the extent to which presentation modes (i.e., object, pictures, or vocal description) used by direct care staff working in a community agency serving individuals with developmental disabilities matched the discrimination abilities of individuals with developmental disabilities who were given choices in a variety of daily living situations.

Method

Participants and Setting

Twenty direct care staff members who were working with persons with developmental disabilities were recruited from a community agency, in Manitoba, that provides residential and educational services for individuals with developmental disabilities. The agency had adopted the ABLA as a programming tool prior to the study, and the assessment results were available from the clients' health records. The agency provides 24-hour care and support for approximately 73 community living arrangements (e.g., homes, apartments, foster placements) and a residential program for approximately 200 clients of all ages and with a range of diagnoses and disabilities. For the purpose of this study, the agency was asked to identify clients based on their different discrimination abilities as per their ABLA assessments in their health records, replaced the clients' identities with a code, and shared their ABLA assessment results with the researchers. All ABLA assessments were conducted by either a master's or doctoral level student during previous research studies or by a trained clinician during clinical assessments. For inclusion in the current study, clients' ABLA assessments were required to have been conducted within 12 months of the present study. The agency was asked to help recruit direct care staff members who were working with these identified clients. In this study, direct care staff members were the participants.

Each recruited staff member completed a survey (described below) for each client they worked with and therefore, some staff completed more than one survey because of the number of clients they served. In total, 20 staff members completed surveys for 43 clients of whom 16 were at ABLA Level 3, 8 at ABLA Level 4, and 19 at ABLA Level 6 according to the clients' health records. In terms of staff characteristics, 16 of the 20 staff members were female, and all 20 staff had worked in the same position for an average of 14 years (range 0.6–34 years) and worked with their identified client(s) for an average of 10 years (range 0.3–31 years). This study was approved by our institutional research ethics board before it began.

Procedure

Part 1 of the staff survey consisted of 5 items to gather demographics and background information about the client (name, gender, area of work, position, and how long the staff member had worked with the client being rated). Part 2 asked each staff member to estimate the proportion (percentage) of choices that were presented (a) vocally (i.e., by describing the options and asking the client to choose) without showing any objects or pictures, (b) vocally plus showing pictures of the options, and (c) vocally plus showing objects representing the options, based on the choices they provided their identified client(s) in everyday situations. First, staff taking part were given examples such as whether the client has a choice of what to wear, what time to go to bed, types of food at meals, and types of leisure activities. Then participating staff were asked to indicate the percentage of times they used the following three methods to present choices to the clients:

(a) When I give this client a choice, I show him/her the actual items/choices while describing them verbally and ask him/her to choose.

(b) When I give this client a choice, I show him/her the pictures of the items/choices while describing them verbally and ask him/her to choose.

(c) When I give this client a choice, I only describe the items/choices verbally and ask him/her to choose.

Staff participants also had the opportunity to describe other methods they have used to present choices, although no other methods were

indicated in the survey. Upon completion, staff members were asked to return the completed survey to the agency. The agency then removed any information that might identify the client prior to forwarding the surveys to the researchers. Each survey received by the researchers contained the client's code with an indication of his or her discrimination ability on the ABLA assessment.

The primary research objective was to examine how well the choice presentation methods used by direct-care staff members matched the discrimination abilities of clients with developmental disabilities. For each client, we compared the proportion and modes of choices indicated by staff in the survey to the ABLA discrimination abilities of that client as reported in their health records. Based on the previous findings between choice presentation modes and discrimination abilities (Conyers et al., 2002; de Vries et al., 2005; Ryer & Sturmey, 2006) for a client who had passed ABLA Level 3 (two-choice simple visual discrimination) and failed higher levels, choice presentations that included objects were defined as concordant with the client's ability, whereas choice presentations that did not include objects were discordant. For a client who had passed ABLA Level 4 (two-choice visual quasi-identity matching-to-sample) and failed Level 6, choice presentations that included objects or pictures were defined as concordant and choice presentations in vocal only mode were discordant. Concordance was not examined for clients who passed ABLA Level 6 (auditory-visual conditional discrimination) as it has been demonstrated in previous research, that individuals who are able to make choices in verbal mode are also able to indicate their preferences using objects or pictures (Martin & Yu, 2000).

Results

Survey responses were entered into an excel spreadsheet created by the researcher. A research assistant (second author) checked all entries to assess accuracy. The accuracy of data entry was calculated for each survey by dividing the number of questions that were entered correctly by the total number of questions in the survey, and multiplying by 100%. Mean accuracy was 99.8% across all surveys. Each detected error was corrected before data analysis.

Table 1 shows the percentages for each presentation mode used by the staff for clients with different discrimination abilities. Concordance for clients at ABLA Level 3 (simple visual discrimination) was 79.9% and this was signifi-

Table 1. Mean Percentage of Choice Presentation Modes Used by Staff Members for Clients at Different Discrimination Levels on the Assessment of Basic Learning Abilities (ABLA)

	ABLA Level 3[a] (n = 16[b])	ABLA Level 4 (n = 8[b])	ABLA Level 6 (n = 19[b])
Choice Presentation Mode			
Vocal plus Objects	79.9[c]	70.0	28.9
Vocal plus Pictures	0.4	11.3	7.8
Vocal Only	13.0	18.8	63.3
Concordance[d]	79.9	81.3	–[e]

Note:

a *Discrimination levels of clients available from their health care records (see text for details). ABLA Level 3: two-choice simple visual discrimination; ABLA Level 4: two-choice visual match-to-sample discrimination; ABLA Level 6: two choice auditory-visual discrimination.*

b *n = number of clients at each ABLA Level*

c *The total percentage of presentation modes for individuals at Level 3 was not equal to 100 because one respondent never provided choices to his/her client.*

d *For ABLA Level 3, concordance = (number of choices involving objects divided by the total number of choices) × 100%;.*
   For ABLA Level 4, concordance = (number of choices involving objects or pictures divided by the total number of choices) × 100%.

e *Proportion of concordance was not calculated for individuals at the auditory-visual level because all three modes were considered concordant.*

cantly higher than if the respondent had selected one of the three modes randomly, $t(14) = 6.12$, $p < .001$. Pictures were used rarely (less than 1%) for choice presentation and vocal-only presentation was also used infrequently (13%).

Concordance for clients at ABLA Level 4 was 81.3% (concordant presentations included objects or pictures) and it was not significantly different from ($p > .05$) if the respondent had selected two of three modes randomly. Similar to the Level 3 group, presentation mode using objects was the most common, followed by vocal description only, and the inclusion of pictures, respectively. Compared to the Level 3 group, there was a shift from using mainly objects to pictures, with a small increase in vocal description only.

All three modes were considered concordant for clients at ABLA Level 6. However, unlike the other two groups, the most common presentation mode was vocal description, followed by objects and pictures, respectively. The inclusion of pictures in choice presentations appeared to be used infrequently, regardless of the client's discrimination ability.

Discussion

Previous research (Conyers et al., 2002; de Vries et al., 2005; Reyer & Sturmey, 2006) suggests that clients at ABLA Level 3 need to rely on objects to indicate their preferences. In the present study, almost 80% of the choice presentations for this group included objects and were concordant with their discrimination ability. The above research also suggests that clients at ABLA Level 4 should be able to indicate their preferences with either objects or pictures. Although we found that 81% of the presentations were concordant (included either objects or pictures) for this group, use of objects accounted for 70% of the presentations. The reason for this finding is not entirely clear. A possible explanation may include the fact that objects were more readily available when presenting choice opportunities than pictures and therefore the mode of choice presentation to clients was limited. Alternatively, the clients in our sample may have found communication easier when using objects versus pictures. In either case, having a large number of objects available on-hand for presentation might be impractical in some settings and may limit

the choices presented to the client. In addition, it may also be difficult to collect and retain materials needed to use picture presentation modes and as a result direct-care staff members may not always have access to pictures for this purpose. Limitations to availability of pictures can be overcome by either carrying a book of pictures if participants communicate primarily using a Picture Exchange Communication System (PECS) or using portable computing devices such as tablets and iPads®. The overreliance on using objects for choice presentation may be due to the fact that direct care staff members were not aware of their client's discrimination abilities. That is, even though the results of the ABLA discrimination assessment are reported in the client's health record, the information may not have been conveyed to all staff members. Another possible explanation is that staff members were aware of their client's discrimination skills but were unaware of the relation between those skills and the ability to respond to pictures in a choice situation. Another possibility is that staff members had varied training and that may have influenced the methods they used to communicate with clients. Unfortunately, we did not collect this information in our survey. Future research is needed to examine these possibilities, and evaluate strategies to increase the knowledge of staff members to promote concordance. Lastly, the above research suggests that clients at ABLA Level 6 are likely able to indicate their preferences in all three presentation modes and therefore, all three modes would be considered concordant for the purpose of this study. In the present study, a large shift from object mode to vocal only mode was observed, while the use of the picture mode remained low similar to the other two client groups. The shift from object to vocal-only mode suggests that staff were sensitive to the client's discrimination ability by using the more efficient presentation mode. The fact that a shift from object to picture mode did not occur for the ABLA Level 4 clients might suggest that the gains in discrimination skills between Levels 3 and 4 were not readily discernible by staff, whereas gains in discrimination skills at Level 6, compared to Levels 3 and 4, were readily noticeable by staff. Indeed, previous research has shown that clients who have passed Level 6 usually demonstrate higher language skills (see review by Martin and Yu, 2000). This may account for the observed shift to predominantly vocal only presentation for clients at Level 6 in the present study. Unfortunately, information

on the communication skills of the clients in this study was not collected.

The results of this study should be interpreted with caution due to several limitations. First, the sample size for the ABLA Level 4 group was relatively small compared to the Level 3 and Level 6 groups. Therefore, the results may not be representative of this population of persons and future research should utilize a larger sample size. Second, the study population was restricted to direct care staff and clients from one agency, and therefore, the results may not be generalizable to staff and clients in other settings. This could be addressed through future replications with participants from different community agencies. Third, this survey was developed for this research project and it had not been validated by previous research. Although the survey may be considered to have face validity, a more systematic study of its reliability and validity could be undertaken in future research. Fourth, the results of this study were based on self-reported estimates provided by direct care staff members and participants may have misremembered instances of presenting choice opportunities. Future research should consider adding direct observation as a supplement to the survey data to provide corroboration. Fifth, the Research Ethics Board required that written consent be obtained from direct-care staff, and as a result, the survey was not anonymous. This in combination with the fact that the participants were recruited from the agency they work for, may have increased the potential for a social desirability bias in the staff's responses. Lastly, some staff in this study completed surveys for several clients. Whether this represents a bias and in which direction is unknown. This may have improved the accuracy of the staff's estimates because of practice effects or it may have decreased accuracy because of the additional effort. Future research is needed to examine these possibilities.

Overall, the concordance between choice presentation modes and client discrimination abilities was quite high. It should be noted, however, that the respondents in this study had considerable work experience in their positions and they had known the identified clients for an average of 10 years. Staff members with less experience in their positions or familiarity with the clients may yield lower concordance. Further examination of these variables is warranted.

Key Messages From This Article

People with disabilities: You deserve to be presented with choices in ways that you are best able to indicate your preferences.

Professionals: Strive to present choices in ways that match your clients' discrimination skills.

Policymakers: Policies to promote training for primary care staff members on how to present choices to individuals with developmental disabilities will improve the quality of life for these individuals.

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