Effects of choice during an art project with adults who have developmental disabilities

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This scholarly project reflects individualized, original research conducted in partial fulfillment of the requirements for the Occupational Therapy Doctorate Program, The University of Toledo.
Abstract

Objective. The purpose of this study was to determine the effects of choice and no-choice in an art project with adults who have developmental disabilities. It was hypothesized that when given a choice, adults with developmental disabilities would dip the paintbrush in the paint more and would spend more time participating in the art project compared to those who had no-choice.

Method. Twenty-eight adults with developmental disabilities who resided in Lenawee County Michigan were recruited to participate in the research project. Participants were randomly yoked into either the choice or no-choice group. In the choice group, the participants were given the choice to select one out of the five ceramic figures. All figures were similar in size and weight. In the no-choice group, the participant was instructed to paint the ceramic figure that was selected by the member in the choice condition of the same dyad. Approximately 2 days to 28 days later the members from the dyad switched conditions. Dependent variables measured the number of times the paintbrush was dipped in the paint and applied to the ceramic figure and the amount of time spent painting the ceramic figure. All data collection sessions were videotaped.

Results. Data analysis revealed no statistically significant difference in the number of times the paintbrush was dipped in the paint and the total amount of time spent painting between adults who had a choice in the art project compared to adults who did not have a choice.

Conclusions. Although the results found no significant difference between choice and no choice in an art project, engaging individuals with developmental disabilities in the choice making process is an essential component to life. Occupational therapists should continue to encourage freedom of choice among individuals with developmental disabilities.
Effects of Choice during an Art Project with Adults who have Developmental Disabilities

Choice is a necessary component to occupational therapy. All clients should be given the opportunity to make choices in therapy, including those with developmental disabilities. Choice has been proven to encourage autonomy, self-esteem, self-efficacy (Kearney & McKnight, 1997) and enhanced sense of self and well-being (Legault & Rebeir, 2001). Existing literature supports the research on choice and no-choice during occupations. The present study examines the effect of choice and no-choice in an art project with adults who have developmental disabilities. A brief description of developmental disabilities and the denied opportunities to make choices will be discussed followed by the therapeutic benefits of choice. A brief summary of past literature will be summarized first in order to support the present study.

The Effects of Choice on People with Developmental Disabilities

For most people the opportunity to make choices and decisions is an important and cherished element of their lives (Guess, Benson & Siegel-Causey, 1985). However, for some individuals, the opportunity to make choices is not a privilege they have received. Individuals with developmental and intellectual disabilities have been denied the chance to make decisions for many years (Kearney & McKnight, 1997).

The diagnosis for developmental disabilities is a classification for an individual having chronic or a lack in the process of human development (Brown, 2007). The Developmental Disabilities Assistance and Bill of Rights Act Amendments of 2000 have defined developmental disabilities as a disability occurring at 5 years of age and up to 22 years with indefinable physical and/or mental impairments, limitations in major life activities, and required assistance for their lifetime or for an extended duration of time (Brown, 2007).

The National Association of Councils on Developmental Disabilities identifies these
developmental disabilities that occur in any family, ethnicity, religion, economic status, or political background (National Association, 2011). According to the National Association of Councils on Developmental Disabilities, approximately 5.4 million Americans have developmental disabilities (National Association, 2011). Intellectual disabilities were the most common type of developmental disability along with cerebral palsy, vision impairment, hearing loss, and autism spectrum disorders (United States Department, n.d.). The Annual Report in 2010 from the Lenawee County Community Mental Health in Michigan, the county where the present study was being conducted, reported serving a total of 268 persons with developmental disabilities (Lenawee Community Mental Health Authority, 2010).

Individuals with developmental disabilities have shown an increase in life expectancy. For example, institutionalized individuals living to 50 years of age have increased from 10% in 1930 to 50% in 1980 (Bigby, 2007). Currently, many individuals with a diagnosis of an intellectual disability in the mild to moderate range have a similar life expectancy as the general population (Bigby, 2007). The increase in life expectancy is evidence that individuals with developmental disabilities are living much longer than they did in the past. This gives reason to conclude that occupational therapists will be working with this population more often as they provide therapy across the lifespan. Occupational therapists must understand and appreciate those who have developmental disabilities and provide services that are meaningful and promote choice making.

People with disabilities have not had the chance to make choices in components of their lives, particularly in occupations of daily living (Kearney & McKnight, 1997) and leisure (Wuerch & Voeltz, 1982, as cited in Dattilo & Rusch, 1985). Wehmeyer and Metzler (1995, as cited in Dattilo & Guerin, 2001) stated that individuals with developmental disabilities identify
themselves as having fewer choices and less variety in choices compared to others. Perceived limitations in opportunities for choice-making puts individuals with developmental disabilities at risk for experiencing learned helplessness (Guess et al., 1985). In addition to learned helplessness, a lack of choice may also result in, “loss of self-esteem, decreased ambition, emotional disturbance, chronic reactive depression, and even psychogenic death” (Guess et al., 1985, p. 83).

As previously mentioned, individuals with developmental disabilities have been denied the opportunity to participate in the choice-making process. This lack in opportunity is due to the fear that the decisions an individual with developmental disabilities makes could be inappropriate and dangerous (Kearney & McKnight, 1997). There is concern that the individual is simply not aware of the potential choices to make or that the choices will inhibit growth in necessary skills (Kearney & McKnight, 1997). The general public continues to remain hesitant in engaging individuals who have developmental disabilities in the choice making process. There is a decreased awareness on the ability for an individual with a developmental disability to effectively make a safe choice. Health professions, such as occupational therapy, can facilitate the growth of safe decision making by providing freedom of choice in therapy sessions.

**Therapeutic Benefits of Choice and its Relationship to Occupational Therapy**

Allowing one to make choices in therapy is a specialized component in the practice of occupational therapy. Guess, Benton and Siegel-Causey (1985) identified choice as an expression of personal autonomy. Choice making gives the individual the opportunity for self-identification and establish values. They continue to state that in order to make a decision the individual must express preferences. The individual must be able to select a preference when given an opportunity for choices (Shevin & Klein, as cited in Kearney et al., 1997).
Providing the freedom of choice is very rewarding and beneficial for an individual. Dattilo and Guerin (2001) stated that freedom of choice is an essential experience to promote enjoyment, satisfaction and meaningfulness. Giving an individual the opportunity to make choices in meaningful occupations can have positive effects on the individual. An individual may experience a stronger sense of self and well-being, feelings of personal accomplishment, and a decline in perceived limitations to participate in occupations (Legault & Rebeiro, 2001). Kearney and McKnight (1997) identified benefits in freedom of choice as an increase in; autonomy, self-esteem, self-efficacy, self-satisfaction, self-initiated behaviors, empowerment and success in the community.

Allowing the freedom of choice can increase participation in certain tasks. Kearney et al. (1997) identified connections with choice making and participating. They found that choice increases participation in leisure, work, feeding, self-care, and safety activities. They also found that individuals demonstrate greater positive self-reports of satisfaction, adaptive responses to aversion stimuli, and improved task performance and reduced maladaptive behaviors when given a choice. It is necessary for occupational therapists to include the patients in the treatment process to increase participation. Occupational therapist can help promote therapeutic choice making and clarify the misinterpretation of freedom of choice among the developmental disability population.

**Choice in Occupational Therapy**

Occupational therapy is a profession dedicated to assisting an individual to perform tasks at his/her best quality. This is a unique profession focusing on the choice of self initiation in meaningful occupations (Yerxa, 1967). Yerxa (1967) explained that occupational therapy considers the disability, but also the individual’s opportunity to make choices and discover self-
actualization through participation in meaningful choices. When making a choice about therapy, the individual is given the chance to have control over his/her life and express personal autonomy (Guess et al, 1985). The field of occupational therapy thrives on individualization through the opportunity to make choices during a treatment session.

Past literature supports the necessity of choice-making opportunities especially during meaningful occupations. Leibacher (2006) studied 36 healthy right-hand-dominate adult women between the ages of 40 and 55 years of age who were physically able to grasp a bottle of nail polish independently. The hypothesis was that when given a choice of nail polish to keep, healthy adult woman would demonstrate greater movement quality than when not given a choice of which bottle of nail polish to keep. The participants were yoked into dyads. One member from each dyad was given the choice of five different nail polish colors. The second member of the dyad was assigned to the same color selected by the first member of the dyad. On the same day the roles of choice were reversed. Movement time, peak velocity, percentage of movement time to peak velocity, displacement and movement units were measured while reaching for the nail polish and returning the polish back to the original hand starting point. The researcher reported a significant difference in movement time, displacement, and movement units during the return portion of the reach for the preferred nail polish color. The researcher indicated that having a choice may influence the quality of movement after the preferred object is in the participant’s hand. The researcher concluded that having choices in occupational therapy sessions could increase a patient’s overall occupational performance.

Henry, Nelson, and Duncombe (1984) looked at the effect of choice and no-choice among individual and group activities. The authors hypothesized that participants in a group activity without choice would respond significantly lower in feelings toward their level of power
of affective meaning compared to participants with a choice. Participants were 40 healthy undergraduate and graduate females assigned to one of four groups; a) individual-choice, b) individual- no choice, c) group-choice, and d) group-no choice. Each group was provided with the necessary materials, written instructions, and directions for five origami designs. Participants were given the option to do as many or as few origami designs as desired. Once the origami occupation was completed the participants were asked to rate how they felt about themselves during the origami occupation. The researchers reported a significant difference between participants in the group-choice condition and group-no choice condition. The participants in the group- no choice condition rated having less power than those in the choice conditions. The authors concluded that a lack of choice can have negative effects on the individual’s self-perception resulting in a feeling of powerlessness. Giving patients the opportunity to make choices can prevent individuals from feeling a lack of power in certain environments, especially group settings.

LaMore and Nelson (1992) hypothesized that participants with a choice would apply more paint to a ceramic figure and paint longer than when not given a choice. Participants were 22 adults (13 men and 9 women) with developmental disabilities ranging from severe to mild. The participants were randomly yoked in pairs with one assigned to each of the choice and no-choice groups. Participants from the first dyad were given the choice between five ceramic figures to paint. The members in the second dyad were assigned to paint the same object selected from the member in the first group. After both members painted a ceramic figure, the members switched roles in choice making. The overall amount of time spent engaged in the occupation and amount of times the paintbrush was dipped in the paint and applied to the ceramic figure were measured. Results found that participants painted the ceramic figures for a longer period of
time and dipped the brush in the paint more when given a choice compared to those who did not have a choice. This study is indicative to the field of occupational therapy, revealing than when providing opportunities for choice, participants will have increased engagement in the task.

Schroeder Oxer and Kopp Miller (2001) explored the effects of choice and no-choice in an art project with 25 adolescents from four residential treatment facilities. Participants had a diagnosis of a psychiatric condition including disruptive behavior disorders, oppositional defiant disorder, depression and conduct disorder. The hypothesis focused on when given the option, the adolescents would apply more paint and spend more time on the object then when not given a choice. Participants were randomly assigned into the choice and no-choice groups. The choice group was given the choice of a ceramic figure to paint while the no-choice group was required to paint the same figure selected from the choice group. Measurements were taken on the amount of time the individual dipped the paintbrush in the paint and applied the paint on the ceramic figure and the amount of time spent painting. Approximately one week later the roles of choice and no-choice were reversed. The authors concluded that when given a choice participants dipped the paintbrush in the paint more often and painted for a longer period of time. Evidence from this study reveals the effectiveness of choice making and the opportunities for therapeutic participation within occupational therapy practice.

Another study was performed comparing the effects of choice and no-choice with individuals who had intellectual impairments. The study measured the amount of participation between choice and no-choice in a T-shirt ironing occupation (Rice & Nelson, 1988). Participants were 24 males with intellectual impairments ranging in age from 15 to 26 years old. The participants were randomly assigned to either the choice or no-choice groups. The first individual was given the choice to select a wrinkled T-shirt covered with a sports team logo. The
second individual was given a T-shirt of the same style selected by the first person. Once the T-shirts were selected and assigned they were dampened with water and weighed. When the individuals were done ironing their T-shirt the T-shirt was once again weighed in order to measure the amount of water evaporated. The roles within the dyad were reversed after both participants ironed one T-shirt. The researchers reported a significant difference in water evaporation in the choice group compared to the no-choice group. The authors concluded that when an individual is given the opportunity to participate in choice making, the choice can become a motivator and increase overall level of participation.

Barnes (2003) hypothesized that participants given a choice will have a greater number of paint dips and will spend more time painting a ceramic figure than the individuals in the no-choice condition. This study included 30 adults with a diagnosis of mental retardation. Participants were randomly paired and assigned to one of two conditions; choice or no-choice. The participants in the choice group selected their ceramic figure to paint while their partner in the no-choice group was given that same ceramic figure that was chosen by the choice member. One week later the roles were reversed. The amount of time spent in the occupation and the amount of times the paintbrush was dipped in the paint and applied to the ceramic figure were measured. Results found a positive correlation in the amount of time engaged in the occupation and the amount of times the paintbrush was dipped in paint between the choice and no-choice groups. There was no significant difference in the amount of time engaged and the number of paint dips between the choice and no-choice groups. This was one of the first studies that did not find a significant difference between having a choice or no-choice.

Present Study

Past studies support the effects of choice during an art project (Schroeder Oxer & Kopp
Miller, 2001; LaMore & Nelson, 1992). LaMore and Nelson (1992) and Rice and Nelson (1992) were able to conclude that giving a choice to individuals with intellectual impairments can become a motivator and increase occupational performance. Contrary to the above studies, Barnes (2003) found no difference between the choice and no-choice groups among individuals with developmental disabilities. The existing literature available investigating the effect of choice for individuals with developmental disabilities in the field of occupational therapy provides varying results. Due to the increase in life expectancy among individuals with developmental disabilities, occupational therapists will be providing treatment for these individuals more often as they are living longer. Occupational therapists must be familiar and knowledgeable about this diagnosis in order to provide the opportunity to make choice within the parameters of the individual’s potential. The therapy sessions must intrigue the individual in order to keep him/her motivated and interested. The therapist should learn what is important to the individual and provide the opportunity to make choices in therapy. More studies are needed to provide significant conclusions that choice in therapy is beneficial for adults with developmental disabilities. Therefore, the purpose of this study is to determine the effects of choice and no-choice in an art project with adults who have developmental disabilities. It was hypothesized that when given a choice, adults with developmental disabilities would dip the paintbrush in the paint and would spend more time participating in the art project compared to those who have no-choice.

Methods

Participants

Adults with developmental disabilities were recruited from The Hope Community Center and the Lenawee Intermediate School District in Adrian, Michigan. A total of 28 participants
completed the data collection process. The participants included 15 males and 13 females with ages ranging from 20 to 71 years old. Inclusion criteria for this study required that participants have the hand dexterity to hold and manipulate the paintbrush as well as adequate vision to see the ceramic figure and supplies. Participants were also required to be able to comprehend and follow verbal directions given by the researcher. The study was conducted at The Hope Community Center during regular operating hours and did not require participants to invest time outside the facility.

Materials

Participants painted ceramic figures. All ceramic figures were similar in size and weight. The ceramic figures were painted with different colors of paint. Colors include: blue, red, yellow, purple, and green. Each color was placed inside a compartment of an egg carton. Participants were provided an egg carton with paint, one standardized small paintbrush, a cup of water for cleaning the paintbrush and a paper towel for cleaning the paintbrush and hands. Newspaper was placed underneath the ceramic figure during the painting session. The investigator used a stopwatch to measure the total amount of time each participant spends painting. The investigator also tallied on a pad of paper the total amount of times the participant dipped the paintbrush in the paint and applied it to the ceramic figure. The entire session was videotaped and later reviewed in order to ensure reliability.

Procedure

Recruitment was done by the researcher visiting the facility and talking with the Hope members. The executive director and additional staff assisted with informing Hope members and family about the research project. The researcher collected the names of individuals who were potential participants. Informed consent papers were sent home with the participants for their
legal guardian to review and sign. Individuals who were their own legal guardian signed their own informed consent papers. The participants were informed of the research project and allotted the opportunity to ask questions. During the day of testing, participants were asked to provide verbal assent by agreeing to take part in the research.

Testing began after informed consent forms were returned and signed. The participants who returned consent forms and provided verbal assent were randomly yoked into dyads for either the choice group or no-choice group. Half the participants were placed in the choice group and half in the no-choice group. One member of the dyad was placed in the choice group while the other member was part of the no-choice group. Members of the dyad switched groups after completing the first art session. Approximately 2 days to 28 days later the roles were switched and the same members were retested in their new group. The member in the choice group was given the choice of which ceramic figure to paint while the member in the no-choice group was assigned to paint the same ceramic figure selected by the member in the choice group.

Testing was performed in a designated private room. The windows were covered up with paper and the door was closed to prevent distractions in the hallway. The participants sat with their back to the door to further the prevention of distractions.

Participants in the choice group were greeted by name from the researcher. The researcher pointed to the ceramic figures on the table, named them, and instructed the participant to choose one figure to paint. After the selection was made all other ceramic figures were removed. The participant was given all materials needed to complete the painting. If a participant refused to choose a ceramic figure to paint, the research records 0 minutes of time painting and 0 dips in the paint for that participant. Before the painting session began the participant was given the following instructions:
Here are ceramic figures to choose from (names the specific figurines). You can choose one to paint and bring it to the painting area. Here are the colors you may paint with. You can use them all, or use just a few colors. It is up to you. The water and towels are there for you to clean your brush and hands if you would like. If you need help or would like me to show you how to use the brush, let me know. You will have at least 30 minutes to paint. Once you are finished, you may keep the ceramic figure for yourself or give it to someone, if you would like. Let me know when you feel that you are done painting.

Participants in the no-choice group were greeted by name from the researcher. The researcher showed the participant the ceramic figure and named them. The participant was then instructed to paint the ceramic figure his or her dyad partner in the choice group previously chose. If the participant requested to paint a different figure, the researcher replied by telling the participant that he or she was to paint the assigned figure. If the participant refused to paint the assigned ceramic figure, the researcher recorded participation time as 0 minutes and 0 dips in the paint.

Participants were told the following instructions:

Here are ceramic figures to choose from (names the specific figurines). You may bring this to your painting area. Here are the colors you may paint with. You can use them all, or use just a few colors. It is up to you. The water and towels are there for you to clean your brush and hands if you would like. If you need help or would like me to show you how to use the brush, let me know. You will have at least 30 minutes to paint. Once you are finished, you may keep the ceramic figure for yourself or give it to someone, if you would like. Let me know when you feel that you are done painting.

The sessions were performed in a room within the facility. The researcher sat across the table from the participant. The researcher videotaped the session to prevent recording biases and errors in recording. The camera was set up next to the researcher across from the participant. The researcher tallied on a pad of paper the amount of times the participant dipped the brush into the paint and applied the brush to the ceramic figure. If the participant dipped the brush in the paint and did not apply the brush to the figure that dip was not counted. The researcher also used a stop watch to time the overall amount of time the participant spent in the art session. The
stopwatch started when the participant initially dipped the brush in the paint and ended when the participant claimed to be done painting or refused to paint anymore. If the participant stopped painting before the figure was completely painted, the researcher asked the participant if he or she wanted to continue painting. If the participant did not continue to paint, the researcher suggested for the participant to use more colors and paint the unpainted areas. The researcher gave the participant a total of two prompts to continue to paint. After the two prompts, if the participant continued to refuse to paint the researcher stopped the stopwatch and recorded the time. The data collection protocol for this study was replicated from the Barnes (2003), Schroeder-Oxer and Kopp Miller (2001), and LaMore and Nelson (1993) studies.

**Results**

It was hypothesized that when given a choice, adults with developmental disabilities would dip the paintbrush in the paint and would spend more time participating in the art project compared to those who have no-choice. The interrater reliability compared the total number of dips in the paint for both the choice and no-choice group. The interrater reliability for choice was $r = .997$ and $r = .990$ for no-choice. The mean number of dips in the paint for the choice group was 25.5 ($SD = 13.48$). The mean number of dips in the paint for the no-choice group was 24.53 ($SD = 13.66$). The mean amount of time spent painting in the choice group was 9 minutes and 41 seconds ($SD = 302.68$). The mean amount of time spent painting in the no-choice group was 9 minutes and 2 seconds ($SD = 327.22$).

A Spearman’s statistics test was conducted to determine if the dependent variables were correlated. A positive correlation was found between amount of time and dips in paint for the choice group ($r = .418$, $p < .027$) and for the amount of time and dips in paint for the no-choice group ($r = .570$, $p < .002$).
An alpha level of 0.05 was used for all statistical tests. A test for skewedness was conducted to determine if the results were normally distributed. The test indicated that the overall time spent painting and the amount of dips in the paint were skewed. Due to the skewed data, a Wilcoxon Signed Ranks Test was conducted and revealed no statistically significant difference between the overall time \( z = -0.797, p = 0.425 \) and dips in the paint \( z = -0.673, p = 0.501 \) between the choice and no-choice groups.

**Discussion**

The effect of choice in an art project with individuals who have developmental disabilities was examined in this study. The results in this study did not support the hypothesis that when given a choice, adults with developmental disabilities would dip the paintbrush in the paint and spend more time painting in the art project compared to those who had no-choice.

Past studies have verified the effect of choice in occupational performance with individuals who have disabilities. LaMore and Nelson (1992) who studied individuals with developmental disabilities and Schroeder Oxer and Kopp Miller (2001) who studied individuals with psychiatric disorders, found that when given a choice, the participants dipped the paintbrush into the paint more and painted longer compared to those without a choice. Rice and Nelson (1988) also found that males with developmental disabilities engaged in T-shirt ironing longer when given the choice to select the T-shirt. These studies provide strong evidence and support that individuals with disabilities are capable of making choices and have increased participation compared to peers with no choice.

The outcomes of this study are similar to the results from Barnes (2003). Barnes (2003) also examined the effects of choice in an art project among individuals who had intellectual disabilities. Barnes (2003) did not find statistically significant difference in performance between
the choice and no-choice groups. Barnes (2003) attributed the lack of significant results to the possibility that participants in the no-choice group were assigned the ceramic figure that he or she desired. Therefore, the participant’s paining time and total dips would match the choice condition (Barnes, 2003). She also stated that the participants may have felt anxious with the researcher watching during the painting, and painted similarly in both the choice and no-choice condition due to the unique situation (Barnes, 2003). Also, the varying levels of enjoyment during the painting activity could contribute to the results (Barnes, 2003). The level of enjoyment during the art project could have positive or negative effect on the participant’s motivation to paint (Barnes, 2003).

There are some possible explanations for the lack of significant results in this study. First, the participants had a choice to engage in the art projects. Some potential participants expressed limited interest in painting and did not wish to participate. Many of the participants in the study articulated high interest in art projects. These participants may have painted equally in the choice and no-choice group due to the opportunity to engage in a special art project. As previously mentioned from Barnes (2003) the participant in the no-choice could have possibly been assigned the ceramic figure he/she wanted to paint. Being assigned the desired ceramic figure would result in a similar painting performance between the choice and no-choice group. Multiple participants in the no-choice condition mentioned his or her desire to paint the assigned ceramic figure. These participants could have dipped the paintbrush in the paint and painted equal amount of time in both the choice and no-choice groups due to the opportunity to paint the desired figure. Lastly, the researcher’s previous employment and connection with the participants could have altered the level of engagement. The familiarity of the researcher could have biased the study and influenced participants in both the choice and no-choice conditions to
engage longer in the art project than initially desired as an attempt to satisfy the researcher.

**Implications**

Although the current study did not find significant results on choice, the study is able to provide some implications to the field of occupational therapy. Both the choice and no-choice groups were highly engaged in the paint project. Both groups painted for approximately nine minutes in each session. This high level of engagement can signify the meaningfulness experienced during the art project. Based on the high remarks of satisfaction and pleasure from the participants during the art project, the researcher was able to infer enjoyment from painting. Occupational therapists can use these results as evidence that individuals with developmental disabilities can sustain engagement in a task when the task is enjoyable. Occupational therapists should continue to provide opportunities for freedom of choice to maintain the high levels of engagement in tasks.

**Limitations**

There were some limitations to this study. The participants were recruited from two local organizations providing services to people with disabilities. Therefore, the results of this study cannot be generalized to other adults with developmental disabilities.

Another limitation was the use of the video camera. Some participants were asked to pause their painting in order to replace a full CD with a blank CD. The change of CD may have caused a disruption for the participant painting. Being videotaped may have also influenced the participants to paint differently than when not videotaped.

The last limitation was the possible influence to participate from the researcher. The previously established relationship between the researcher and the participants might have increased overall participation in both the choice and no-choice conditions as a chance for the
participant to please or spend more time with the researcher. The researcher’s presence may have caused behaviors that are not true to each participant.

**Future Research**

Further research is needed to explore the effects of choice among adults who have developmental disabilities. The current study was limited by the small sample size. Future studies should examine the effects of choice using a larger sample size and gathering data from more than two organizations. Increasing the sample size will provide greater evidence of the true effect of choice.

Additional studies should use a video camera that is able to record for longer periods of time without having to replace a CD, or use a camera that does not require the use of a CD. Cameras that can record for a longer period of time will prevent disrupting the participant while painting. Preventing disruptions will allow for better judgment on painting performance.

Additionally, future studies should conduct this experiment in a neutral setting where the researcher has no prior interactions with the participants to reduce biased results. Continuing the research on effect of choice among adults who have developmental disabilities will provide evidence of the true relationship that choice can enhance occupational participation.

**Conclusions**

This study examined the effect of choice in an art project with adults who have developmental disabilities. Statistically significant difference between choice and no choice in the number of times the participant dipped the paintbrush into the paint and the overall duration of painting was not found. Although this study did not find significant results with the effect of choice, choice remains essential with this population. Often adults with developmental disabilities are not given the opportunity to participate in the decision process. Occupational
therapists should continue to provide choice in activities that are motivating and satisfying for adults with development disabilities. Further research is needed to emphasize the benefits of freedom of choice within the occupational therapy profession.

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