Personal Preference and Quality of Reach in Healthy Adult Women

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OBJECTIVE. A common practice in occupational therapy is to have clients choose an object that they prefer to be used during treatment. This practice assumes that a preference for chosen items will hold greater meaning and result in higher quality of movement. Little research has been conducted that specifically addresses the effect that preference has on quality of movement. Therefore, the purpose of this study was to contribute to the knowledge by determining whether preference affects quality of movement.

METHOD. Forty-three healthy right-hand-dominant adult women between the ages of 18 and 60 years in Northwest Ohio engaged in this study. Each participant rank-ordered 15 magazines from most preferred to least preferred. The participant then reached for her most preferred, neutrally preferred, and least preferred magazines.

RESULTS. When participants reached for the neutrally preferred magazines, movement time was significantly slower and movement units were significantly greater (less smooth) than when they reached for a magazine perceived as being the least preferred ($p < .017$). No differences were found between the three conditions in terms of displacement, peak velocity, or percentage of time to peak velocity, nor between the most preferred and the other two preferences.

CONCLUSION. This study has shown that preference may not be an influential factor when performing simple reaches for magazines. Although there was a difference between the neutrally preferred and least preferred conditions, the goal when reaching during the neutrally preferred condition may have been different (i.e., to glean more information from the magazine cover) than when reaching in the least preferred condition (e.g., to reach for and discard the magazine as quickly as possible). These results reflect the complexity involved in the formation of meaning, of which preference is a part. Further exploration of individual preferences as well as personal goal formation and their impact on success in occupations of daily living is needed.


O ccupational therapists are involved in the intricate process of adjusting aspects of the environment, based on the client’s experience of meaning, to attain the desired therapeutic result (Kielhofner & Barrett, 1998). A continual theme in occupational therapy involves the concept that the environment is an essential factor in human occupational performance (Dunn, Brown, & McGuigan, 1994). Occupational therapy was founded on values of choice, relevance, and active participation in meaningful occupations. A common practice is to make use of preferable occupational forms (i.e., objects within the environment), based on the assumption that items identified as being preferable elicit greater meaning. A central tenet of occupational therapy is that there is therapeutic value when engaged in occupations in which the associated objects are perceived as being meaningful. As such, it is important for occupational therapists to thoroughly understand the influence that personal preference has on the meaning that is ascribed to an object intended for use in a treatment session. Further, it is important to understand the effect that preference has on the quality of movement when interacting with meaningful objects.

Meaning is an essential component in most aspects of life and has a large influence on the choices we make as individuals. Using Luria’s (1966) model for the neuroanatomical process of perception, meaning is formed in a systematic way.
through primary, secondary, and tertiary areas of sensory processing. When considering the visual system, initially raw data are sent from the eyes to the primary visual sensory area (Brodmann’s area 17). Here, no substantive meaning is assigned to the perceived object. From the primary sensory area, the information is sent to visual association areas (e.g., Brodmann’s areas 18 to 21) where initial associations of meaning are applied to the visual data. From these association areas, the information is sent to other parts of the brain, including the limbic system and the hippocampus. As the visual information is sent to these and additional areas, the layers of meaning take on more depth and become more sophisticated with the application of past memories and any associated emotions reminiscently similar to the current object or situation. Therefore, meaning is an interpretive process encompassing the characteristics of the object, including memories as well as any associated sociocultural aspects (Nelson & Thomas, 2003). Purpose, on the other hand, is the desire to interact, react, choose, or otherwise generate a motor response to the object based on the meaning that is associated with the object (Nelson & Thomas, 2003). The actual physical motor interaction is the occupational performance (Nelson & Thomas, 2003).

There is an assumption in occupational therapy that when given a choice of multiple objects, people choose the object(s) for which they have a preference. Presumably, there are several steps between the time when the array of objects are first perceived and the person acts on his or her preferred choice. As such, movement performance is the resultant expression of a complex algorithm that we as humans compile through conscious and unconscious processes. Integrally involved in these processes are concepts germane to occupational therapy’s central tenets, namely, perception, meaning, affinity, preference, purpose, and movement performance. Figure 1 illustrates the relationship between these specific concepts. For example, initially the array of objects is presented for the person to perceive. Once the objects are perceived, layers of meaning for each object begin to form. As stated earlier, meaning is an interpretive process and is based on the physical as well as the sociocultural characteristics associated with the objects. During this interpretive process, the person forms an opinion about the object that is influenced by the person’s level of affinity (like or dislike). This opinion for each object may be formed quickly (perhaps because of previous experience) or it may require a greater amount of information from spending more time perceiving the object or by invoking other cognitive processes (e.g., comparing the perceived information with memories) in order to more fully process the information. This iterative process, denoted by the double-headed arrow between the “perception” and “meaning” boxes, is particularly important when a choice is required based on one’s level of preference. A comparison between all of the objects is made based on the level of affinity ascribed to each object. Once a hierarchy is established among the array of objects based on the affinity, preference for an object or objects emerges. Preference can change as additional information is gleaned from the array of objects as denoted by the double-arrow-headed line between the boxes associated with “meaning” and “preference” in Figure 1. Once a decision of preference is made, then purpose is formed, which involves a decision to act in response to a specific object. Movement performance commences, resulting in an interaction with the object (e.g., reaching for and grasping the object).

A handful of studies have addressed the concept of preference, either directly or indirectly; the summative conclusion of which is not totally homogeneous (Bakshi, Bhambhani, & Madill, 1991; LaMore & Nelson, 1993; Rice & Nelson, 1988; Schroder Oxer & Kopp Miller, 2001; Wu, Wong, Lin, & Chen, 2001; Zimmerer-Branum & Nelson, 1995).

Rice and Nelson (1988) recruited 24 adolescent males with developmental delay who participated in a T-shirt ironing task to study the effect of choice on quality of performance. Participants were individually presented an array of five wrinkled T-shirts. In the choice condition, participants were asked to choose which T-shirt they would like to keep after ironing it. On a different day, the participants

![Figure 1. Relationship between perception, meaning, affinity, preference, purpose, and movement performance.](http://ajot.aota.org/pdfaccess.ashx?url=/data/journals/ajot/930160/10142016TermsOfUse=http://AOTA.org/terms)
were also presented with an array of five wrinkled T-shirts and were simply given one to keep after ironing. This was the no-choice condition. The order of presentation for the conditions was counterbalanced. The dependent variable involved the amount of water evaporation from the shirt due to the ironing process. It was found that when participants were given a choice, they ironed longer and more water was evaporated (the researchers measured water evaporation) than when they were not given a choice. These results support the concept that when given a choice, the desire to more thoroughly engage and care for the chosen object is greater than when no choice is given.

LaMore and Nelson (1993) examined the effect of choice on persistence of engagement in activity. Twenty-two healthy participants (13 male and 9 female) were either given a choice or given no-choice in a ceramic object painting task. Lamore and Nelson found that when given a choice of ceramic object, the participants tended to dip their paintbrush significantly more times than when they were not given a choice of object to paint.

In a similar design and task to the LaMore and Nelson (1993) study, Schroder Oxer and Kopp Miller (2001) recruited 32 adolescents from residential treatment facilities to participate in a ceramic object painting occupation. Participants experienced both the choice and the no-choice conditions separated by 1 week in a counterbalanced manner. Dependent variables analyzed in this study included the number of times paint was applied to the objects. Schroder Oxer and Kopp Miller found that when given a choice, the adolescents applied paint a greater number of times than when they were not given a choice. The results of this study illustrated that when given a choice, participants tended to be more actively involved in the occupation compared to when not given a choice.

Zimmerer-Branum and Nelson (1995) recruited 52 elderly participants who lived in a nursing home and asked them to choose participation in either an occupationally embedded task or a rote exercise task. The occupationally embedded task involved using a sponge ball to shoot a “basket” as in the game of basketball; the rote exercise task involved the same type of arm motions as in the occupationally embedded condition, except that no ball or basket was provided. These researchers found that when given a choice between the two types of tasks, significantly more participants chose to perform the occupationally embedded task over the rote exercise task. An important note is that although more participants chose the condition the researchers assumed to be more occupationally embedded, not all participants chose that condition. Some subjects preferred to participate in the condition the researchers assumed to be less occupationally embedded; the point being, that preference is individually founded and cannot be categorically assumed for all the members of a defined group of people.

Bakshi et al. (1991) studied the effect of preference on the number of repetitions, heart rate, blood pressure, and perceived exertion in 20 healthy women. Participants identified their preferences among tasks that therapists designated as purposeful and non-purposeful. The tasks classified as being purposeful involved an end product, whereas the non-purposeful condition involved no end product. Tasks included block printing, nail and thread art, drill pressing, rug hooking, leather work, weaving, and painting. The researchers found a significant increase in heart rate and perceived exertion when the women performed the non-purposeful tasks, regardless of preference. The results of this study demonstrated that “purposeful” tasks can elicit a beneficial physiological response (e.g., lower heart rate) in comparison to non-purposeful tasks, whereas the influence of personal preference was not influential.

Wu et al. (2001) investigated personal preference along with functionality in a reaching task with 27 persons who survived a stroke. Higher level of functionality involved reaching for a can of beverage and taking a drink, whereas lower level of functionality involved reaching for a can bringing it to the mouth but not drinking from it. Personal preference of beverage was determined by interview. These researchers found that when participants reached for their preference during the higher functionality condition, they had more efficient movement and reaction times compared to the lower functionality condition. The response of the participants did vary, somewhat, depending on visual spatial neglect and hemisphere of lesion. Therefore, the generalizability of these combined effects (preference and high functionality) may be limited to persons with stroke who do not experience neglect.

These studies suggest that when participants were given a choice, they tended to demonstrate greater movement efficiency in comparison to when no choice was given. As mentioned previously, the assumption is that when participants make a choice, it is based on their preference at that time. When possible, incorporating personal preferences into therapy may increase the performance response based on the enhanced meaning ascribed because personal preference is acknowledged and woven into the therapeutic occupation. This seemingly simple concept, however, is not well supported with a large body of research. It is important to generate sufficient evidence to support and validate the profession’s fundamental tenets. Although there is a growing body of research supporting the benefits of using occupationally embedded occupation-al forms, much of this research was done with the prior
assumption that the participant has an affinity for the occupationally embedded object or occupation more so than in the non-occupationally embedded condition. This assumption has largely been reflected in designing the condition of the independent variable (e.g., Gasser-Wieland, & Rice, 2002; Kircher, 1984; Mathiowetz & Wade, 1995; Riccio, Nelson, & Bush, 1990; Rice, Alaimo, & Cook, 1999; Trombly, 1995; Wu, Trombly, & Lin, 1994). There has been a dearth of research that has specifically investigated the effects of preference on motor performance. Such information will help occupational therapists understand the influence that preference may have on organizing motor performance.

The purpose of this study was to contribute to the knowledge by determining whether preference affects quality of movement. Specifically, we studied whether there was a difference across the continuum of preference (e.g., most preferred, neutrally preferred, and least preferred) on quality of reaching, quantified by movement time, movement units, displacement, peak velocity, and percentage of movement time to peak velocity. Hundreds of magazines are potentially meaningful in some way to a specific target population. For a given individual, a particular magazine may have an inherent level of meaning, which in turn gives rise to a specified level (e.g., high, neutral, or low) of personal preference.

The majority of the occupational therapy literature has used occupational forms that were assumed to have at least a relatively high level of meaning for their selected population. Although personal preference has been a foundational tenet to occupational therapy, the influences of personal preference have never been examined across the continuum of affinity. This exploratory study was designed to investigate whether there would be a difference in the quality of subjects’ movement when reaching for most preferred, neutrally preferred, and least preferred magazines. Therefore, the hypothesis for this study was that there would be a significant difference in kinematics of reach according to conditions of affinity: most preferred, neutrally preferred, and least preferred.

Method
Participants
Forty-three healthy right-hand-dominant adult women between the ages of 22 and 62 years in Northwest Ohio were recruited to participate in this counterbalanced repeated-measures experiment. Only women were recruited to keep the population as homogenous as possible in order to increase the internal validity of the study. The mean age of the participants was 31.6 years (SD = 12.3 years). Participants included college students, faculty members, and volunteers from the community. Participants were recruited through flyers detailing the study, which were posted on local bulletin boards and through word of mouth. The sample size was calculated from pilot data on the parameters of beta = .8 and alpha = .05 for each of the dependent variables. The root mean square of the calculated sample sizes for the 6 dependent variables equaled 42.1 participants, thereby providing a rationale for our participant recruitment sample size.

Instruments and Materials
An electric goniometer (model #SG110, Biometrics, Cwmfelinfach, Gwent, NP17HZ, United Kingdom) sampled at 100 Hz integrated to a computer was used to capture upper-extremity movement through a Biometrics Datalink system (Biometrics, Cwmfelinfach, Gwent, NP17HZ, United Kingdom). The manufacturer reports accuracy to be within 2° across a 90° range with repeatability within ±1°. Data collection took place in a motion analysis laboratory. The participants were seated in a height-adjustable chair and table, which positioned them at approximately 90° at the hips, knees, ankles and elbows. Each participant’s back rested on the back of the chair. A Big Red Switch® (Ablenet, Minneapolis, Minnesota) was used to signal the computer and to mark when the participant began the reach. The switch marked when each participant’s hand was lifted from the starting position. An additional Biometrics finger goniometer (model #F35, Biometrics, Cwmfelinfach, Gwent, NP17HZ, United Kingdom) marked when the participant had completed the reach. The finger goniometer was not attached to the participant, but rather was placed against the back of the magazine and was not visible to the participant. Fifteen magazines were supplied for participants to rank order. The magazines were updated with the most current issue (see Appendix for the complete list of magazines).

Dependent Variables
To assess the quality of reach, five dependent variables—movement time, displacement, movement units, peak velocity, and percentage of movement time to peak velocity—were calculated. These dependent variables were derived from the angular positional time series and were reduced using a custom software program. Data were smoothed using a second-order dual-pass Butterworth filter using a 5 Hz cutoff frequency. This type of low-pass filter removes extraneous artifacts from the data profile, thereby increasing the signal-to-noise ratio (Winter, 1990). Movement time was the elapsed time from the initiation of
Data were collected from September to November 2003. Participants began by rank-ordering 15 magazines by placing laminated cards numbered from 1 to 15 onto the magazines, in which 1 was “most preferred” and 15 was “least preferred.” After the participant rank-ordered all 15 magazines, the investigator removed all magazines except rank-order #1 (most preferred), rank order #8 (neutrally preferred), and rank order #15 (least preferred). The investigator adjusted all three magazines so they were 30.5 cm away from the table edge and 20 cm between each other, and so the magazine in the middle was directly in front of the participant. A customized computer program generated a random order of presentation for the three reaches for each participant. One possible order was most preferred to the left, neutrally preferred in the center, and least preferred to the right; a second possible order was neutrally preferred to the left, least preferred in the center, and most preferred to the right; and the third possible order was least preferred to the left, most preferred in the center, and neutrally preferred to the right. In each order, all three preferences were within view in order to emphasize the differences in preference between the three magazines.

The investigator affixed the goniometer across the participant’s right elbow, ensuring that the proximal end of the goniometers was parallel with the humerus and with the distal end parallel to the radius and ulna as per the manufacturer’s protocol. For chair placement, the investigator measured 15 cm between the bottom of the participant’s sternum and the table edge. The participant’s trunk was not restrained to the back of the chair, but the front part of the trunk was touching the edge of the table in order to reduce ancillary trunk movements. Participants began the task with their right hand on a Big Red Switch located at the table edge; when released, it marked the initiation of the reach. Each participant’s left hand rested on her lap. A finger goniometer that acted like a switch was placed behind the magazine in such a fashion that when the magazine was moved, the goniometer was activated and thereby marked when the reach was terminated. The participants reached for each magazine in the middle that was selected by random order. The investigator stated, “Please place your right hand on the Big Red Switch located at the table edge and when I say go, reach for the bottom right corner of the magazine placed in the middle of the three magazines and place it off to the right side of the table. You may place your hand back on the table edge when you are finished.” The participants were not allowed to flip through the magazines to ensure that the appeal would remain constant from the time they initially rank-ordered the magazines. The investigator then moved the next randomly ordered magazine in the middle and placed the other magazine 20 cm to the right or left of

**Procedure**

This project was approved by an Institutional Review Board and informed consent was obtained before data collection.
the middle magazine. This occurred for each of the three magazines. Reaching for objects like magazines is already a well-practiced movement, therefore, no practice reaches were provided before data collection. Only reach to the corner of the magazines was analyzed.

Data Analysis

A counterbalanced repeated measures design in which each participant experienced all levels of the independent variable was used in this study; therefore, each participant acted as her own control. There were three levels to the independent variable of affinity. A one-way ANOVA with repeated measures was performed for each of the dependent variables with alpha set at .05. Since significance was found, post-hoc analyses using paired t-tests were performed with an alpha set at .017 to account for the three analyses per dependent variable. Effect sizes (d) were calculated for each of the comparisons as well. Cohen (1988) defined small effects as being at least .2, medium effect sizes being at least .5, and large effect sizes being at least .8. A multiple analysis of variance was performed with the dependent variables on the factor of “order of presentation” to test for order effects (alpha = .05). As a secondary research question, it was of interest to determine whether any of the magazines were identified more often than others as being most preferred, neutrally preferred, or least preferred. Therefore, an a posteriori chi-square analysis was performed to determine the frequency the magazines were chosen as most preferable, neutrally preferable, and least preferable.

Results

Data from one subject during the most preferred condition was removed from data collection due to instrumentation failure. The mean movement time and movement units were greater for the neutrally preferred condition than the most and least preferred conditions. The same trend is seen with the displacement as well. Peak velocity and percentage of movement time to peak velocity, respectively, were relatively similar across the three levels of preference. The means and standard deviations of each dependent variable are shown in Table 1.

The repeated measures ANOVA revealed a significant difference, however, only in movement time and movement units among the three levels of preference (see Table 2). For the neutrally preferred versus the least preferred comparison, the post hoc analysis found a significantly greater movement time with a medium effect size and significantly greater movement units with a medium effect size (see Table 3). Differences between the most and least preferred conditions yielded small effect sizes and were not significantly different. Moreover, there were no significant differences and, at best, small effect sizes between the three levels of preference when displacement, peak velocity, and percentage of movement time to peak velocity were examined (see Table 3).

Regarding the incidence of preference for each magazine, chi-squared analyses revealed that there was no difference in the frequency of magazines chosen as the most preferred from those chosen as neutrally preferred, X² (2, N = 9) = 4.68, p = .10. Conversely, the magazines identified as the least preferable were significantly different from the most preferred, X² (2, N = 9) = 50.93, p < .00, and from the magazines identified as neutrally preferred, X² (2, N = 9) = 37.15, p < .00. See the Appendix for incidence of preference for each magazine.
The quality of movement when reaching for magazines with varying levels of personal preference was examined in this study. Specifically, the researchers in this study found that when participants reached for magazines associated with a neutral level of preference, movement time and movement units were significantly greater (i.e., less efficient) than when participants reached for a magazine perceived as being “least preferable.” In addition, there was no difference in any of the dependent variables when reaching for the magazines identified as being most preferable and those having a neutral level of preference.

Although there were no significant differences with displacement, the mean values for the dependent variables followed the same trend with movement time and movement units in that the means of most and least preferred conditions were relatively similar, with the neutral condition having the greatest value. There were no significant differences among the three conditions in regard to peak velocity and percentage of time to peak velocity, but both were representative of magnitudes indicative of stereotypically simple reaches (Georgopoulos, 1986). Nonetheless, displacement, peak velocity, and percentage of movement time to peak velocity did not support the hypothesis in that there was no statistical difference when participants reached for the most, the neutrally preferred, or the least preferred magazines.

Although participants were asked to rank order an array of magazines based on their personal preference, the degree to which the personal preferences between the magazines differed among each of the participants is not known. It is possible that for a particular participant, all 15 magazines had a relatively high appeal; whereas for another participant, all 15 magazines may have had a relatively low appeal. Other participants may have had an intrinsic affinity for some of the magazines but not for the rest of the magazines. As a group, however, there was no difference between the magazines identified as the most preferred and the ones identified as neutrally preferred. In contrast, there was a difference between the magazines identified as being the least preferred and the magazines identified in the neutral and most preferred categories. This is consistent with the findings from the Zimmerer-Branum and Nelson (1995) study where there was variety in the choice made among the study participants when choosing the type of task in which to engage (e.g., occupationally embedded or rote exercise).

It is possible that participants in this study did not demonstrate a difference when reaching for most preferred magazine and the neutrally preferred magazine due to a relatively small difference in personal preference. With regard to the frequency of most preferred and neutrally preferred, the spread of the frequency was relatively wide, whereas the array of magazines identified as being least preferred were limited to a select few. Magazine covers contain a relatively large amount of information. It appeared that the meaning ascribed to each of the magazines occurred in a systematic manner. We surmise that the initial associations ascribed to the magazines came from either reading the title of the magazine, or perceiving the information in the overall picture or photograph located on the cover. Once the initial association was made from one or both of these sources, we suggest that the participant ascribed additional meaning to the magazine in terms of relative preference. That is, she decided rather quickly whether she liked the magazine or not, hence no statistical significance was found between the most preferred and the least preferred conditions. If the participant decided she had a positive preference for the magazine, she more than likely continued gleaning information from the cover of the magazine during her reach for the magazine. It is our opinion that when this was the case, the

### Table 3. Multiple Comparison of Most, Neutral, and Least Preferred Magazines

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Preference Comparison</th>
<th>dF</th>
<th>t</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement Time</td>
<td>Most–Neutral</td>
<td>42</td>
<td>–1.28</td>
<td>.209</td>
<td>–.24</td>
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<tr>
<td></td>
<td>Most–Least</td>
<td>42</td>
<td>1.39</td>
<td>.173</td>
<td>.24</td>
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<tr>
<td></td>
<td>Neutral–Least</td>
<td>43</td>
<td>2.57</td>
<td>.014*</td>
<td>.52</td>
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<tr>
<td>Displacement</td>
<td>Most–Neutral</td>
<td>42</td>
<td>–.81</td>
<td>.423</td>
<td>–.15</td>
</tr>
<tr>
<td></td>
<td>Most–Least</td>
<td>42</td>
<td>1.86</td>
<td>.069</td>
<td>.27</td>
</tr>
<tr>
<td></td>
<td>Neutral–Least</td>
<td>43</td>
<td>1.55</td>
<td>.130</td>
<td>.32</td>
</tr>
<tr>
<td>Movement Units</td>
<td>Most–Neutral</td>
<td>42</td>
<td>–1.35</td>
<td>.186</td>
<td>–.23</td>
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<tr>
<td></td>
<td>Most–Least</td>
<td>42</td>
<td>2.14</td>
<td>.035*</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>Neutral–Least</td>
<td>43</td>
<td>2.78</td>
<td>.008*</td>
<td>.52</td>
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<tr>
<td>Peak Velocity</td>
<td>Most–Neutral</td>
<td>42</td>
<td>–.64</td>
<td>.526</td>
<td>.09</td>
</tr>
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<td>1.79</td>
<td>.081</td>
<td>.20</td>
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<td>43</td>
<td>1.02</td>
<td>.315</td>
<td>.09</td>
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<tr>
<td>% of MT to PV</td>
<td>Most–Neutral</td>
<td>42</td>
<td>.40</td>
<td>.692</td>
<td>.09</td>
</tr>
<tr>
<td></td>
<td>Most–Least</td>
<td>42</td>
<td>.55</td>
<td>.586</td>
<td>.13</td>
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<td></td>
<td>Neutral–Least</td>
<td>43</td>
<td>.035</td>
<td>.972</td>
<td>.01</td>
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</tbody>
</table>

*alpha = .017. Note. % of MT to PV = Percentage of Movement Time to Peak Velocity.
reach for the magazine was less efficient because the attention was not focused on the corner of the magazine, but rather on the information located on the cover. The purpose in this instance was to glean information while reaching for the magazine, which resulted in greater movement time and a less smooth movement. The increased movement time and less smooth movement may have been a response that afforded a better chance to accomplish a purpose; namely to discern the information from the magazine and ascribe meaning to the magazine. However, if the participant perceived the magazine as being least preferred, the purpose developed for the reach movement was to simply reach for the magazine with no intention or desire to glean additional information from the cover. In this instance, the participant focused her attention directly on the corner of the magazine as a target in order to perform the task as efficiently as possible. Further research is needed to examine whether information processing and the subsequent formation of meaning is based on the information available on the cover of the magazine.

Apart from Bakshi et al. (1991), in which personal preference did not elicit any physiological responses, the results of this current study are surprisingly different from previous studies that have either considered preference (e.g., Wu et al 2001) or where preference via choice was an inherent component of the study (e.g. LaMore & Nelson, 1993; Rice & Nelson, 1988; Schroder Oxer & Kopp Miller, 2001; Zimmerer-Branum & Nelson, 1995). In all of these aforementioned studies in which kinematics were measured, interactions with the preferred object resulted in movement dynamics that were more efficient. This is contrary to our results. Several of the previous studies used occupational forms involving beverages, ceramic objects, soup cans, and masses of clay. The information afforded by these occupational forms were relatively meager compared to the amount of information afforded on a magazine cover, which can be of considerable depth. Because the information available for perception from a magazine cover can elicit a greater amount of cognitive processing, a direct comparison of this current study’s result with those of previous studies may not be appropriate. Indeed, in this study, an increased movement time and decreased movement smoothness may be a reflection of the process of ascribing meaning to the “neutral” magazine.

Additionally, the difference found in this study may be related to the amount of cognitive processing required by the occupational form due to the inherent level of meaning ascribed to that object. For example, greater cognitive processing involving additional perception and the integration of this increased information with one’s memories, mood, and inclinations may have culminated into a decision regarding the level of affinity to associate with the magazine. When reaching for the neutrally preferred magazine, participants spent more time and used more movement units. While participants processed the information on the magazine cover, their adopted reaching-movement profile demonstrated a pattern as though they were relying on visual guidance through feedback. For example, the participants modified the goal of their reach because they exercised an ongoing guidance of the movement while their attention was focused on the content of the magazine cover. In contrast, the reach movement profile demonstrated during the most preferred and least preferred reach conditions were stereotypical of a preplanned reach movement strategy with a goal to pick up the magazine as quickly as possible.

This study had several limitations. The first limitation was the different mass and size across the selection of the magazines. Not all the magazines were similar in mass (e.g., O, The Oprah Magazine weighed 705 grams as opposed to People magazine, which weighed only 176 grams). These differences in thickness could have altered the participants’ reach motor plans when they were trying to pick up the magazine off the table. In addition, the magazines did not have similar measurements in relation to length and width (e.g., Rolling Stone was 30.2 cm × 25.5 cm and Us Weekly was only 26.6 cm × 20.2 cm). Although the protocol for reaching for the magazines required participants to reach toward the same location for each magazine, the differences in length and width may have altered the reach motor plan when initially picking up the magazine. However, the sizes and masses of the magazines identified as being the least preferred were well within the range (e.g., minimum to maximum) of size and mass of the other magazines identified as being most and neutrally preferred. A second limitation was that the selection of magazines was limited to 15. The selection presented to all participants may not have had any appeal or participants may have had an affinity for several magazines. The degree of personal preference for the magazines within the selection may not have been equal for all participants. Lastly, it was not ascertained whether the participants had any prior experience with any of the magazines. It is possible that prior experience could have been a confounding variable.

The topic of degree of personal preference should be revisited in future research. Future research should include other reaching tasks in which the objects are similar in mass and size to determine whether the results of this study can be generalized to additional types of functional reaching tasks. Further studies investigating the degree of personal preference among different clinical populations should also be examined. By continuing the exploration in this area of research, further support can facilitate our understanding of
the influences that personal preference has on motor performance. In addition, further research may shed more light on the relationship between personal preference, meaning, purpose, and motivation, all important aspects of occupational therapy.

Conclusion

In an adult female sample, reaching was faster and smoother to magazines perceived as “least preferred” as compared to magazines that were of neutral preference. There was no difference in these parameters between magazines perceived as most preferred and least preferred; therefore, preference may not be the controlling variable in this study across all three levels of preference. An alternate explanation for the outcome is that when reaching for a magazine that was not previously identified as being either most preferred or least preferred, increased movement time and less smooth movements afforded the person with a greater opportunity to glean information from the magazine cover. Whereas the meaning ascribed to the most preferred or least preferred magazines has been clearly established, meaning of the neutrally preferred magazine has not yet been solidified and requires a different movement strategy involving greater movement time and greater movement units. Therefore, when an opinion is formed about an object, the degree of personal preference may play a part in the motor planning for control when reaching for the object, depending on whether the preference is relatively strong or weak. Future research should explore in greater depth the effects that varying levels of personal preference have on motor performance.

Appendix

List of Magazine Titles, Issue, Mass, Dimension, and Incidence of Preference

<table>
<thead>
<tr>
<th>Magazine Title</th>
<th>Issue (2003)</th>
<th>Mass (gm)</th>
<th>Dimension (cm)</th>
<th>Incidence of Incidence of Incidence of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Circle</td>
<td>September</td>
<td>614</td>
<td>27.1 × 21.0</td>
<td>1</td>
</tr>
<tr>
<td>Us Weekly</td>
<td>September 22</td>
<td>163</td>
<td>26.6 × 20.2</td>
<td>2</td>
</tr>
<tr>
<td>Shape</td>
<td>October</td>
<td>392.5</td>
<td>27.5 × 22.8</td>
<td>0</td>
</tr>
<tr>
<td>Fitness</td>
<td>October</td>
<td>247</td>
<td>26.5 × 20.1</td>
<td>3</td>
</tr>
<tr>
<td>Rolling Stone</td>
<td>October 16</td>
<td>258</td>
<td>30.2 × 25.5</td>
<td>1</td>
</tr>
<tr>
<td>Sports Illustrated</td>
<td>September 8</td>
<td>132</td>
<td>26.6 × 20.5</td>
<td>1</td>
</tr>
<tr>
<td>Golf Instruction Manual 2004</td>
<td>September</td>
<td>368</td>
<td>27.3 × 21.0</td>
<td>0</td>
</tr>
<tr>
<td>NASCAR Illustrated</td>
<td>September</td>
<td>305.5</td>
<td>27.5 × 20.5</td>
<td>1</td>
</tr>
<tr>
<td>Better Homes &amp; Gardens</td>
<td>September</td>
<td>451.5</td>
<td>26.5 × 20.0</td>
<td>4</td>
</tr>
<tr>
<td>Parents</td>
<td>September</td>
<td>488</td>
<td>26.5 × 20.0</td>
<td>2</td>
</tr>
<tr>
<td>Good Housekeeping</td>
<td>October</td>
<td>405.5</td>
<td>27.3 × 20.0</td>
<td>1</td>
</tr>
<tr>
<td>O, The Oprah Magazine</td>
<td>November</td>
<td>705</td>
<td>27.5 × 22.8</td>
<td>3</td>
</tr>
<tr>
<td>Cooking Light</td>
<td>September</td>
<td>330.5</td>
<td>27.5 × 21.4</td>
<td>2</td>
</tr>
<tr>
<td>People</td>
<td>October 27</td>
<td>176</td>
<td>26.5 × 20.2</td>
<td>14</td>
</tr>
<tr>
<td>Cosmopolitan</td>
<td>September</td>
<td>614</td>
<td>27.5 × 20.3</td>
<td>8</td>
</tr>
</tbody>
</table>

References


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