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Working with clay reduces anxiety among college students

Melissa Lindquist
Washburn University

Cynthia Turk
Washburn University

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Melissa Linquist
&
Cynthia L. Turk

Washburn University

This study examined the efficacy of an art therapy intervention (working with clay) on reducing anxiety. Forty-eight college students participated in small groups. Participants underwent a brief anxiety induction and were then randomly assigned to work with either a Rubik's cube or clay for 15 minutes. The two anxiety subscales were administered at baseline, after the anxiety induction, and after the intervention. The individuals in the clay condition experienced a significantly greater reduction in anxiety at post-intervention on both measures relative to the control condition. Possible explanations, clinical implications, and suggestions for future research are discussed.

Anxiety represents the most common class of mental health problems in the United States (Kessler et al., 2005). Furthermore, anxiety problems affect a significant proportion of the college student population (Zivin, Eisenberg, Gollust, & Golberstein, 2009). Consequently, identifying efficacious interventions for decreasing anxiety among college students is important. This study proposed that an art therapy intervention (i.e., working with clay) could be an effective tool for reducing anxiety among college students.

In a study with undergraduates, Curry and Kasser (2005) examined reductions in anxiety after an unstructured, free-form coloring task in comparison to structured coloring tasks with geometric patterns. The structured coloring tasks led to a greater decrease in anxiety than the unstructured task. The authors speculated that the structured tasks produced a meditative state conducive to relaxation.

Research suggests that an assortment of art therapy mediums may be helpful for anxiety in a variety of populations (e.g., Nainis et al., 2006; Miller, 1993; Tibbetts & Stone, 1990). However, the Curry and Kasser (2005) study represents one of the few studies in the art therapy literature that examines anxiety as the outcome of interest and employs random assignment to experimental and control groups, allowing for causal inference.

Additionally, clay has been shown to be an effective medium that reduces anxiety in case studies (e.g., Sholt & Gavron, 2006) and in a study utilizing a quasi-experimental design (Doric-Henry, 1997). However, more controlled research utilizing an experimental design is needed that examines the efficacy of working with clay with regard to reducing anxiety.

The current study compared the short-term anxiolytic effects of a spatial task that is artistic in nature (working with clay) to a tactile spatial task that is not artistic in nature (working with a Rubik's cube). The Rubik's cube makes a good comparison condition because it is an analytical spatial task that has been used in previous psychology experiments (e.g., Hartley, Boultwood, & Dunne, 1987). It was hypothesized that participants who interacted with clay for fifteen minutes would experience less anxiety than

those who interact with a Rubik's cube for fifteen minutes following a stressor.

Method

Participants

Participants were 48 students (34 women) from a small Midwestern university. The racial composition of the sample was 90% Caucasian, 2% African American, 4% Latino/Latina, 2% Native American, and 2% mixed ethnicity. The age range of the participants was 18-23, with the average age of participants being 19.3 ($SD = 1.5$). Students were enrolled in an introductory psychology course and received course credit for their participation.

Materials

Lumps of stoneware clay about the size of a Rubik's cube were used in the clay condition. Standard 3 x 3 Rubik's cubes were used in the Rubik's cube condition.

Measures

A demographic and information survey contained questions regarding gender, age, ethnicity, and experience with a Rubik's cube and clay. Underneath the questions concerning experience with the Rubik's cube and the clay, there was a Likert-type scale ranging from 1 (no experience) to 5 (expert).

The Short Form of the Mood and Anxiety Symptoms Questionnaire (MASQ-SF; Watson & Clark, 1991) was used to evaluate the participants' anxiety. The original MASQ (Watson & Clark, 1991) is a self-report measure of anxiety and depression which contains five subscales with 77 questions rated on a Likert-type scale (1= not at all, 5 = extremely). To assess anxiety, only two of the MASQ-SF's subscales were used in the current study: the Anxious Arousal scale and the General Distress: Anxious Symptoms scale. The Anxious Arousal scale consisted of 17 items, and the General Distress: Anxious Symptoms scale consisted of 11 items (Watson et al., 1995a). The Anxious Arousal scale measures the autonomic arousal symptoms of anxiety (e.g., "hands were shaky"). The General Distress: Anxious Symptoms scale measures the negative affect symptoms (e.g., "felt uneasy"). Therefore, both the physical and subjective aspects of anxiety were assessed. An alteration was made to the instructions on the MASQ. The instructions originally stated: "Use the choice that best describes how much you feel or experience these things during the past week including today." The phrase "during the past week including today" was changed to "right now" to fit the current study. The MASQ has been shown to have good psychometric properties (Watson et al., 1995a). Its scales were derived through factor analysis. (Watson et al, 1995b). It has shown a strong level of construct validity through convergence with several well known tests such as the Beck Anxiety Inventory (Beck & Steer, 1990) and the Profile of Mood States anxiety scales (McNair, Lorr, & Droppleman, 1971) across students, adults, and substance abuse patients (Watson et al, 1995a).

Procedure

The study was conducted in small groups of one to six participants in a classroom setting. The informed consent forms were placed around the room with one empty seat between each form. When the participants entered the room, they were instructed to sit at a desk with an informed consent form. They were then asked to read and sign the consent form; all questions were answered.

The participants then filled out the demographic survey and the MASQ anxiety subscales to assess baseline anxiety. Next, similar to the procedures used by Curry and Kasser (2005), the participants went through an anxiety induction. The participants received blank notebook paper and were verbally instructed to write for five minutes about a something stressful that they were dealing with right now. When the allotted time had passed, the participants were asked to come up to the front of the room and shred their writings in a shredder. As the participants returned to their seats, they were given their second MASQ anxiety subscales to assess the efficacy of the anxiety induction.

Each group was then randomly assigned to the Rubik's cube condition or the clay condition. They were instructed to work with the object for 15 minutes after hearing verbal instructions. While giving the verbal instructions, the researcher showed the participants an example of what to do with the corresponding object. All questions were answered before they worked with the objects.

For clay, the verbal instructions were: "Pinch pots made out of clay have been made for thousands of years. Begin by making your lump of clay into a ball. Push your thumb into the center and begin to pinch the walls with the fingers on the outside of the clay ball. Turn the piece as you pinch. You do not have to make a pinch pot, but this may be a good starting point."

For the Rubik's cube, the verbal instructions were: "The Rubik cube is the number one selling puzzle in America. There are 36 squares on the cube and you can twist it vertically and horizontally. The goal of the puzzle is to have solid colors on each side. A common starting point to solving the Rubik cube is to make a cross at the top with one color."

All objects were collected and a final set of MASQ anxiety subscales was given to evaluate post-intervention anxiety. Participants were debriefed, had any questions answered, and were thanked for their participation.

Results

Preliminary Analyses

Participants had more experience with clay ($M = 2.6$, $SD = .86$) than they had with the Rubik's cube ($M = 1.8$, $SD = .71$), $t(47) = -4.86$, $p < .001$. However, the individuals in the clay condition and the individuals in the Rubik's cube condition has a similar level of experience with the clay, $t(46) = .84$, $p = .40$, and the Rubik's cube, $t(46) = -.20$, $p = .84$. Therefore, randomization proved to be effective in creating equivalency between groups with regard to experience with materials.

See Table 1 for the means and standard deviations of both groups on the MASQ scales at all time points. There was no statistical difference between the two conditions' means for the MASQ General Distress: Anxiety scale or the MASQ Anxious Arousal scale at baseline. Randomization created equivalent groups at baseline with regard to anxiety.

The anxiety induction significantly increased anxiety according to the MASQ General Distress: Anxiety scale $t(47) = -3.26$, $p < .002$. The anxiety induction also significantly increased anxiety according to the MASQ Anxious Arousal scale $t(47) = -2.12$, $p < .039$. After the induction, both groups continued to have similar levels of anxiety, as evidenced by the lack of mean differences on the post anxiety induction MASQ General Distress: Anxiety, $t(46) = .00$, $p = 1$, and MASQ Anxious Arousal scale, $t(46) = -.83$, $p = .41$.

Tests of Hypotheses

As hypothesized, at post-intervention, working with clay resulted in significantly less anxiety than working with the Rubik's cube for the MASQ Anxious Arousal scale $t(46) = -3.05$, $p < .005$ and for the General Distress: Anxiety scale $t(46) = -3.33$, $p < .003$.

From post anxiety induction to post intervention, the clay condition experienced a significant reduction in anxiety as measured by the Anxious Arousal scale, $t(23) = 5.57$, $p < .018$, and the General Distress: Anxiety scale, $t(23) = 5.41$, $p < .001$. Surprisingly, the Rubik's cube condition also experienced a significant reduction in anxiety according to the Anxious Arousal scale $t(23) = 2.11$, $p < .05$ but not the General Distress: Anxiety scale $t(23) = 2.06$, $p = .09$.

Exploratory Analyses

The clay condition's anxiety was significantly decreased from baseline to post-intervention according to the Anxious Arousal scale $t(23) = 3.32$, $p < .003$ and the General Distress: Anxiety scale $t(23) = 3.28$, $p < .003$. In contrast, for the Rubik's cube condition, anxiety at baseline did not differ from anxiety at post-intervention for the Anxious Arousal scale $t(23) = -9.91$, $p = .34$ and the General Distress: Anxiety scale $t(23) = -.83$, $p = .42$.

Discussion

The hypothesis that working with clay would reduce anxiety more than working with a Rubik's cube was supported. In fact, working with clay significantly resulted in a reduction in both the induced anxiety and the baseline anxiety. These results are consistent with the findings of previous studies that demonstrated that working with clay is anxiety reducing (Doric-Henry, 1997; Sholt & Gavron, 2006).

As expected, the Rubik's cube did not decrease the induced anxiety according the MASQ General Distress: Anxiety scale, either after the induction or from baseline levels. Contrary to expectations, however, in the Rubik's cube condition, there was some evidence of anxiety reduction from after the anxiety induction to post intervention

according to the MASQ Anxious Arousal scale. Even if not as effective as the clay intervention, working with a Rubik's cube could have decreased anxiety as a function of time or as a means of distraction.

There are a variety of mechanisms through which working with clay might reduce anxiety. It could give participants a sense of control by bringing them out of their minds, away from their worries, into the environment, and into the present moment (David & Ilusorio, 1995; Grossman, 1981). On the other hand, the act of creating something aesthetically pleasing may create a sense of self-awareness, self efficacy, and self-accomplishment (Dalley, 1980).

Art therapy that utilizes clay could have a potential application for self-help with regard to anxiety among college students. Art therapy programs could become incorporated into college classrooms or workshops to help students more effectively deal with their anxiety during stressful times.

The current research had some limitations. Specifically, people were more experienced with clay than they were with the Rubik's cube. The participants' level of experience could have been a confounding variable that affected the participants' anxiety. Future research could look for an analytical spatial task that people have comparable experience with as clay before the experiment starts. Future research could also include a condition where the participants do nothing but sit quietly for 15 minutes to control for the effects of the passage of time on anxiety.

Future studies may also examine the best way to provide an art therapy intervention to college students. The current study utilized small groups and involved providing specific instructions regarding what to do with the clay. Future research may examine issues such as different therapeutic mediums (e.g. paint versus clay), the level of instruction provided, the number of sessions, and the size of the groups. Future research would also benefit from employing additional outcome measure that do not rely exclusively on self-report, such a physiological measures of anxiety.

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Author Notes

Melissa Linquist, BA, completed this project as her undergraduate honors thesis in psychology at Washburn University. She is now a graduate student at the University of Akron. Cynthia L. Turk, PhD, was her mentor and is an associate professor of psychology at Washburn University.

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Correspondence concerning this article should be addressed to Cynthia L. Turk, PhD, Department of Psychology, Washburn University, 1700 SW College Ave., Topeka, KS 66621 or via email at cindy.turk@washburn.edu.

Table 1

Means and standard deviations for the MASQ subscales for the experimental and control conditions at each time point

	Clay Condition Mean (SD)	Rubik's Cube Condition Mean (SD)
MASQ- General Distress Anxiety		
Baseline	15.1 (6.5)	15.1 (5.1)
Post Anxiety-Induction	17.7 (6.5)	17.7 (5.8)
Post Intervention	11.8 (1.6)*	16.2 (6.3)*
MASQ- Anxiety Arousal		
Baseline	21.4 (6.5)	20.7 (5.9)
Post Anxiety-Induction	22.3 (4.5)	23.8 (7.9)
Post Intervention	17.6 (1.2)*	22.1 (7.1)*

Note. MASQ = Mood and Anxiety Symptom Questionnaire. *$p < .05$