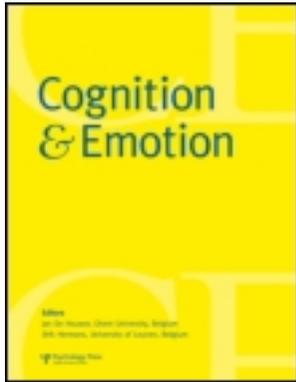


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BRIEF REPORT

How children use drawing to regulate their emotions

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We examined two ways in which drawing may function to elevate mood in children—venting (expressing negative feelings) and distraction (expressing something unrelated to the negative feelings). We examined the effectiveness of drawing as an emotion regulator when drawing is used to vent versus distract (Study 1) and tested whether the effects found are specific to the activity of creating one's own drawing or generalisable to a drawing activity in which children had to copy another's drawing (Study 2). To induce a negative mood, we asked children to think of a disappointing event. Mood was assessed before and after the assigned activity. In both studies, mood improved significantly more in the distract than in the vent or copy condition. Study 1 demonstrates that drawing improves mood in children via distraction and not via venting. Study 2 demonstrates that this effect is specific to a drawing task in which an image is freely constructed. When a copying task is used, the effect disappears.

Keywords: Short-term mood repair; Emotion regulation; Drawing; Distraction.

Learning how to regulate and express emotions is a key component of children's development (Denham et al., 2003; Eisenberg, Spinard, & Morris, 2002; Saarni, 1999). Children who are able to express and regulate their emotions respond to their environment with emotionally competent behaviour that promotes self-efficacy (Denham, 1998). An important aspect of emotion regulation is learning which strategies to use when confronted with an emotionally arousing, stressful situation. While adults may possess knowledge of the cognitive and behavioural strategies that are

most beneficial for a particular situation, children are much less likely to have such knowledge (Parkinson & Totterdell, 1999). Understanding what improves children's mood will allow parents and educators to help children cope with distressing situations.

Children regulate their emotions in a variety of ways: through problem solving, comfort seeking, distraction, escape, and information seeking (Zimmer-Gembeck & Skinner, 2011). These regulation strategies are present at birth and become more sophisticated with age: for example,

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infants may be distracted by another person, while adolescents may learn to distract themselves through meditation or guided relaxation. Based on a review of 44 studies conducted from infancy to adolescence, Skinner and Zimmer-Gembeck (2007) identified distraction as one of the four most common emotion-regulation strategies. They report that children regulate their emotions primarily through behavioural distraction (e.g., playing games) as well as through cognitive distraction (e.g., thinking about something fun). Behavioural distraction emerges during the pre-school years while cognitive distraction emerges during early childhood. It is not until early adolescence (ages 10–14), that children can plan their own distracting activity (Zimmer-Gembeck & Skinner, 2011). With development children also come to recognise that emotional intensity dampens with time and that a sad event will be less distressing when followed by a positive event (Harris, 1989), even though the sad event will not be eliminated from memory.

Distraction differs from emotional avoidance: when distracting themselves, children are not actively avoiding their feelings but rather temporarily shifting their thoughts and attention to a more pleasurable activity. According to Skinner and Zimmer-Gembeck (2007) distraction is considered a form of accommodation in which children use flexibility to focus on another topic and thereby adjust their emotions. Emotional avoidance is a form of withdrawal whereby children escape their emotions by removing themselves from the stressful or emotionally arousing environment.

One pleasurable activity that children may seek out to counteract negative mood may be drawing. Given how absorbed young children become in drawing when given the opportunity, it seems plausible that engaging in this activity should help them regulate their emotions. Many case studies of patients receiving art therapy report improvement (Briks, 2007; Pifalo, 2006), but such case studies cannot tell us if the art therapy was causally implicated in the improvement (because art therapy is typically coupled with other forms of therapy). However, experimental studies pro-

viding non-clinical adult participants with the opportunity to make art versus some other kind of activity show that art making serves as a form of mood repair, at least in the short term (Dalebroux, Goldstein, & Winner, 2008; DePetrillo & Winner, 2005; Drake, Coleman, & Winner, 2011; Pizarro, 2004).

Evidence that drawing has short-term affective benefits for adults comes from DePetrillo and Winner (2005), who showed that drawing improves mood more strongly than does copying geometric shapes, arguably because copying is a low cognitive load task that is less engaging than drawing. Other research has shown that drawing improves short-term mood more than does a control activity only when drawing was used as a means of distraction (Dalebroux et al., 2008). Participants who were told to draw something happy (distraction) improved in mood more than those who were told to draw something depicting their negative mood (venting).

Research by Pennebaker has demonstrated that expressive writing (a form of venting) is associated with many long-term positive outcomes for adults. Among other things, writing about a stressful event improves immune function (Pennebaker, Kiecolt-Glaser, & Glaser, 1988), raises academic performance (Pennebaker & Francis, 1996), and decreases the number of medical appointments (Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990). According to Pennebaker, expressive writing like other forms of therapy allows the individual to “label the problem and discuss its causes and consequences” (Pennebaker, 1997, p. 162). Perhaps expressive writing improves both physical and psychological health because it allows people to construct coherent narratives of their experiences. And the formation of a coherent narrative may assist people in regulating and understanding their emotions (Klein & Boals, 2001; Pennebaker, Mayne, & Francis, 1997).

The goal of the study reported here was to determine whether drawing functions in the same ways for children as for adults. We investigated the effects of drawing on emotion regulation in two age groups of children in order to test

between two hypotheses. On the one hand, younger children (ages 6–8) may show more pronounced effects in the predicted direction because younger children are typically more absorbed in the act of drawing than are older children (Davis, 1997; Gardner & Winner, 1982). On the other hand, the reverse may be demonstrated, with older children (ages 10–12) showing more pronounced effects. This could occur because older children play a more active role in regulating their emotions, relying less on parental support (Saarni, 1999), and thus may derive greater mood effects from drawing. Additionally, research has shown that children in these two age groups differ in their use of distraction as a form of emotion regulation. While younger children can use cognitive strategies to regulate their emotions, they tend to rely on behavioural strategies (Zimmer-Gembeck & Skinner, 2011). Older children, on the other hand, do rely on cognitive strategies to regulate their emotions. Thus, the current study investigated the use of a behavioural strategy to determine whether it was effective with both age groups.

We examined the effectiveness of drawing as an emotion regulator when drawing is used to vent versus distract (Study 1) and also tested whether the effects found are specific to the activity of creating one's own drawing or generalisable to a drawing activity in which children had to copy another's drawing (Study 2). We hypothesised that using drawing to distract should improve mood more than using drawing to vent. In addition, a drawing distraction task was predicted to be more effective in elevating mood than a copying distraction task because drawing not only distracts but also provides pleasure from creating something (White, 1959).

STUDY 1

Method

Participants

Participants were recruited from a children's exhibition at a local science museum. All children between 6 and 12 years of age who passed our

exhibit were invited to participate (approximately 100 children), and the majority accepted ($n = 83$). Most of the children were Caucasian and middle class. Data were analysed from two age groups: 43 children ages 6 to 8 ($M = 7.3$ years; $SD = 0.9$, 24 girls), and 40 children ages 10 to 12 ($M = 10.9$ years; $SD = 0.10$, 20 girls).

Materials and procedure

Children first completed a mood rating prior to the mood induction (Time 1). They were then asked to think of a time when they were disappointed, following which they again completed the mood rating (Time 2). They then carried out the activity in their assigned condition. After the activity, they were given the mood rating again and asked to indicate how they were feeling (Time 3). Finally, children were asked to rate how much they enjoyed the activity and how well they felt they had done.

Mood induction. To induce a negative mood, we instructed the children as follows: "I want you think of a time when you wanted something really good to happen to you and it didn't and you felt really upset and disappointed. I want you to close your eyes and think about how you were feeling when it didn't happen". Children were given a full minute to think about the event. They were then asked to recall the event to the experimenter.

Activity. Children were assigned to one of two conditions: vent or distract. There were no differences in gender distribution between conditions ($\chi^2 = 0.281$, $p = .596$) or age groups ($\chi^2 = 0.281$, $p = .596$). In the vent condition, children were given five minutes to draw the event they had thought of. In the distract condition, children were instructed to draw a house for five minutes. All children were given a 9" × 11" piece of paper and a set of coloured markers.

Mood ratings. We presented children with five schematic faces ranging from very sad to very happy (Rader & Hughes, 2005). Children were asked to select the face that represented how they were feeling.

Enjoyment and competence. After the activity, children were asked to rate on a 5-point scale ranging from 1 (*Really didn't like it*) to 5 (*Really liked it*): "How much did you enjoy doing this?" Children were also asked to rate a 5-point scale ranging from 1 (*Very bad*) to 5 (*Very good*): "How well did you think you did on this?"

Results

Preliminary results. Table 1 presents the means and standard deviations for the mood ratings by condition and age group for Time 1, Time 2, and Time 3. A series of one-way analyses of variance (ANOVAs) were performed by Condition (2) on Time 1 and Time 2 mood ratings. There was no difference between Conditions for Time 1 mood, $F(1, 81) = 0.003, p = .956, d = 0.01$, or Time 2 mood, $F(1, 81) = 0.122, p = .728, d = 0.08$. The effectiveness of the mood induction was evaluated using a paired-sample t -test to compare mood ratings from Time 1 to Time 2. Mood decreased after the mood induction, $t(82) = 17.809, p < .001$.

Mood ratings. Change scores were calculated by subtracting mood ratings at Time 2 from mood ratings at Time 3. Figure 1 presents the mood change scores by condition and age group. A univariate ANOVA by Condition (2), Age Group (2), and Gender (2) was performed on the mood change score. There was an effect of Condition, $F(1, 75) = 6.222, p = .015, \eta_p^2 = .08$: children in the distract condition ($M = 1.85$) showed greater mood improvement than children in the vent condition ($M = 1.30$). There was also an effect of

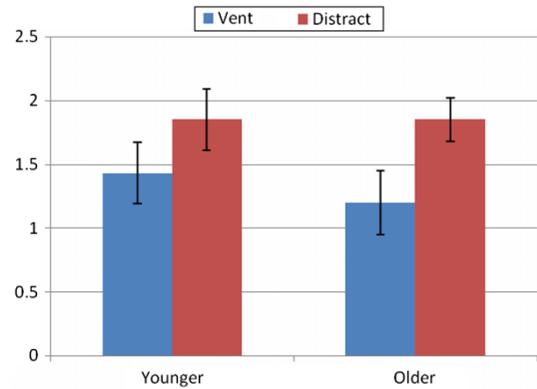


Figure 1. Mood change score by condition and age group.

Gender, $F(1, 75) = 4.856, p = .031, \eta_p^2 = .061$: girls ($M = 1.82$) showed a greater mood improvement than boys ($M = 1.33$). There was no effect of Age Group, $F(1, 75) = 0.198, p = .658, \eta_p^2 = .003$, and there were no interactions.

Enjoyment and competence. A multivariate ANOVA by Condition (2) and Age Group (2) was performed on enjoyment and competence ratings. There was an effect of Condition on enjoyment, $F(1, 79) = 5.624, p = .022, \eta_p^2 = .07$: children in the distract condition ($M = 4.28$) enjoyed their activity more than those in the vent condition ($M = 3.84$). There was an effect of Age Group on enjoyment, $F(1, 79) = 9.504, p = .003, \eta_p^2 = .11$: younger children ($M = 4.34$) enjoyed their activity more than did older children ($M = 3.75$). There was no interaction of condition by Age Group, $F(1, 79) = 0.086, p = .770, \eta_p^2 = .001$.

There was no effect of Condition on competence, $F(1, 79) = 0.256, p = .614, \eta_p^2 = .003$. There was an effect of Age Group on competence, $F(1, 79) = 27.663, p < .001, \eta_p^2 = .26$: younger children ($M = 4.12$) rated themselves as more competent than older children ($M = 2.98$). There was no interaction between Condition and Age Group, $F(1, 79) = 0.418, p = .520, \eta_p^2 = .005$.

Conclusion

Study 1 demonstrated that drawing improves mood in both 6- to 8-year-old and 10- to

Table 1. Means and standard deviations for Time 1, Time 2, and Time 3 mood ratings by condition and age group for Study 1

	<i>n</i>	Time 1 <i>M</i> (<i>SD</i>)	Time 2 <i>M</i> (<i>SD</i>)	Time 3 <i>M</i> (<i>SD</i>)
Younger	43			
Vent	23	4.48 (0.67)	2.13 (0.82)	3.57 (0.99)
Distract	20	4.30 (0.87)	2.35 (1.04)	4.30 (0.77)
Older	40			
Vent	20	3.90 (0.72)	2.10 (0.91)	3.30 (0.80)
Distract	20	4.10 (0.72)	1.75 (0.55)	3.60 (0.68)

12-year-old children when the activity is used to distract rather than vent (with no effect of age). This finding is consistent with previously reported findings with adults (Dalebroux et al., 2008; Drake et al., 2011). Children in the distract condition also experienced more enjoyment, and this could explain why distraction is more effective than venting for short-term mood repair. In the next study, we examined whether the effect of drawing on mood is due to the opportunity to create one's own drawing to distract oneself, or whether the same effect could be replicated using a drawing task that only allowed copying.

STUDY 2

Method

Participants

Participants were recruited from a children's exhibition at a local science museum. All children between 6 and 12 years of age who passed our exhibit were invited to participate (approximately 150 children), and the majority accepted ($n = 123$). These children had not participated in Study 1. Most of the children were Caucasian and middle class. Data were analysed from two age groups: 58 children ages 6 to 8 ($M = 7;9$ years; $SD = 1;6$, 20 girls), and 65 children ages 10 to 12 ($M = 10;6$ years; $SD = 1;7$, 45 girls).

Materials and procedure

Children first completed a mood rating prior to the mood induction (Time 1). They were then asked to think of a time when they were disappointed, following which they again completed the mood rating (Time 2). They then carried out the activity in their assigned condition. After the activity, they were given the mood rating again and asked to indicate how they were feeling (Time 3). Finally, children were asked to rate how much they enjoyed the activity and how well they felt they had done.

Mood induction. As in Study 1, children were instructed to think of a time when they were disappointed.

Activity. Children were assigned to one of three conditions: vent, distract, copy. There was no difference in gender distribution across conditions ($\chi^2 = 0.483$, $p = .785$). There was a difference in gender distribution between the age groups ($\chi^2 = 9.654$, $p = .002$): there were more girls than boys in the older group. In the vent condition, children were given five minutes to draw the event they had thought of. In the distract condition, children were instructed to draw a house for five minutes. In the copy condition, children were instructed to copy drawings of common objects (e.g., tea pot, toaster) for five minutes. In each condition, children were given a 9" × 11" piece of paper and a set of coloured markers.

Mood ratings. To assess mood, we presented children with the same schematic faces used in Study 1.

Enjoyment and competence. After the activity, children rated how much they liked the activity and how well they thought they did.

Results

Preliminary results. Table 2 presents the means and standard deviations for the mood ratings by condition and age group for Time 1, Time 2, and Time 3. A series of one-way ANOVAs were performed by Condition (3) on Time 1 and Time 2 mood ratings. There was no difference between Conditions for Time 1 mood, $F(2, 120) = 1.108$, $p = .334$. There was a difference between Conditions for Time 2 mood $F(2, 120) = 3.981$, $p = .021$: children in the distract condition reported a less positive mood than did children in the copy condition ($p = .007$, $d = -0.59$) and a marginally less positive mood than did those in the vent condition ($p = .061$, $d = -0.42$). There was no difference in Time 2 mood for those in the vent and copy conditions, $p = .370$, $d = -0.20$. The effectiveness of the mood induction was evaluated using a paired-sample t -test to compare mood ratings from Time 1 to Time 2. Mood decreased after the mood induction, $t(122) = 20.835$, $p < .001$.

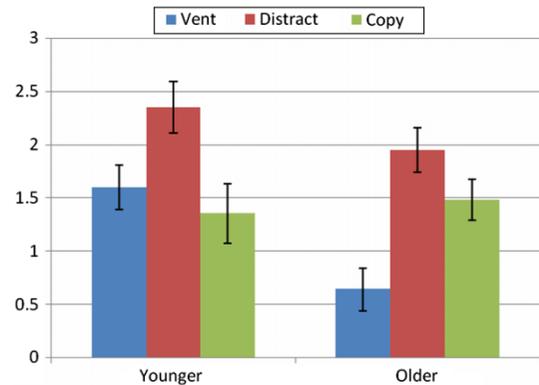
Table 2. Means and standard deviations for Time 1, Time 2, and Time 3 mood ratings by condition and age group for Study 2

	<i>n</i>	Time 1 <i>M</i> (<i>SD</i>)	Time 2 <i>M</i> (<i>SD</i>)	Time 3 <i>M</i> (<i>SD</i>)
<i>Younger</i>	58			
Vent	20	4.10 (0.85)	2.25 (0.91)	3.85 (1.04)
Distract	20	4.35 (0.75)	1.90 (0.85)	4.25 (0.72)
Copy	18	4.11 (0.90)	2.61 (0.92)	3.94 (0.83)
<i>Older</i>	65			
Vent	20	4.18 (0.59)	2.55 (0.51)	3.18 (1.01)
Distract	22	4.30 (0.66)	2.25 (0.72)	4.20 (0.70)
Copy	23	4.57 (0.59)	2.52 (0.79)	4.00 (0.67)

Mood ratings. Change scores were calculated by subtracting mood ratings at Time 2 from mood ratings at Time 3. Figure 2 presents the mood change scores by condition and age group. A univariate ANOVA by Condition (3), Age Group (2), and Gender (2) was performed on the mood change score. There was an effect of Condition, $F(2, 113) = 9.949, p < .001, \eta_p^2 = .15$. LSD post hoc tests revealed that children in the distract condition ($M = 2.12$) had a greater mood improvement than both those in the vent condition ($M = 1.11, p < .001$) and copy condition ($M = 1.41, p = .001$). There was no difference between the vent and copy conditions in mood change ($p = .152$). There was also an effect of Age Group, $F(1, 113) = 8.478, p = .004, \eta_p^2 = .07$: younger children ($M = 1.83$) showed greater mood improvement than did older children ($M = 1.32$). There was no effect of Gender, $F(1, 113) = 1.709, p = .194, \eta_p^2 = .02$, and there were no interactions.

Enjoyment and competence. A multivariate ANOVA by Condition (3) and Age Group (2) on enjoyment and competence ratings was performed. There was no effect of Condition on enjoyment, $F(2, 117) = 1.078, p = .344, \eta_p^2 = .02$, no effect of Age Group on enjoyment, $F(1, 117) = 0.564, p = .454, \eta_p^2 = .005$, and no interaction of Condition by Age Group, $F(2, 117) = 2.104, p = .127, \eta_p^2 = .035$.

There was an effect of Condition on competence, $F(2, 117) = 8.465, p < .001, \eta_p^2 = .13$. LSD post hoc tests revealed that children in the

**Figure 2.** Mood change score by condition and age group.

distract ($M = 3.95, p < .001$) and copy ($M = 3.66, p = .004$) conditions rated themselves as more competent than those in the vent condition ($M = 3.11$). There was no difference between perceived competence for the distract and copy conditions, $p = .206$. There was an effect of Age Group on Competence, $F(1, 117) = 8.111, p = .005, \eta_p^2 = .07$: younger children ($M = 3.82$) rated themselves as more competent than older children ($M = 3.33$). There was also an interaction between Condition and Age Group, $F(2, 117) = 9.792, p < .001, \eta_p^2 = .14$. A one-way ANOVA revealed that there was no difference in competence ratings for younger and older children in the distract, $F(1, 38) = 0.877, p = .355, d = 0.30$, or copy conditions, $F(1, 39) = 1.317, p = .258, d = -0.35$. However, younger children ($M = 3.85$) rated themselves as more competent than older children ($M = 2.36$) in the vent condition, $F(1, 40) = 27.520, p < .001, d = 1.61$.

Conclusion

Study 2 replicated Study 1 by demonstrating that drawing improves mood in the short term in children when the activity is used to distract rather than vent. Study 2 showed that mood improved more for younger than older children and that younger children felt more competent than older children, especially in the vent condition. Study 2 also demonstrated that a drawing distraction task

in which children generate their own image of a house is more effective in immediately elevating mood than is a drawing task in which children copy drawings rather than create their own drawing. We speculate that the opportunity to render on paper one's own image is more mood elevating than copying because of the pleasure derived from creating something (White, 1959).

GENERAL DISCUSSION

Two studies were conducted to investigate the effects of drawing on emotion regulation in two age groups of children, examining the use of drawing as a means of venting versus distraction and examining whether the use of drawing to generate one's own image is a more effective distractor than is the use of drawing to copy images by others. In both studies, we induced a negative mood by asking children to think of a disappointing event. In Study 1, we instructed children to use drawing to vent negative feelings or to distract themselves from thinking about negative feelings. In Study 2, in addition to the conditions used in Study 1, we had children copy shapes—a condition that was distracting but did not call for generating one's own image.

Consistent with previous adult research (Drake et al., 2011; Drake & Winner, *in press*), distraction through art making proved a more effective means of short-term mood repair than venting. Also consistent with other previous research, drawing improved short-term mood more (when used as a means of distraction) than did copying (Dalebroux et al., 2008). And in Study 2, we found that mood improved (across conditions) more for younger than older children—which could be due to younger children being more absorbed in the act of drawing than are older children (Davis, 1997; Gardner & Winner, 1982).

Why did children's mood improve more in the distract than the vent condition in Study 1? One possibility is that the very act of distracting oneself leads to mood improvement as well as to increased pleasure from the activity. But it is also possible that the greater enjoyment in drawing the house is

what led to the mood improvement. However, in Study 2, we found no differences in enjoyment across conditions. This finding lends support to the first possibility: the mood improvement from drawing a house is due to distraction, not to task enjoyment. Future research should explore further the role of task enjoyment in mood regulation.

In Study 1, we found no difference in perceived competence between conditions. However, in Study 2 we found that children in both distract conditions (drawing a house and copying shapes) reported higher competence than did children in the vent condition. Thus it appears that perceived competence is unrelated to the mood-regulation benefits of drawing.

We asked children to draw a house—a topic selected because of its presumably neutral nature. Of course it is possible that drawing a house conjured up personal positive or negative memories. To determine what children are thinking about when distracting themselves by drawing a house, future research should ask children to recall what they were thinking of while drawing the house.

In Study 2, children may have preferred the copy task to the freehand distraction task. Activities that are self-selected may improve mood more than imposed activities because they are likely to lead to greater absorption (Harris, 1989). During imposed activities, children may lose concentration and return to their negative feelings. Adults who perceive an internal sense of control report being happier than those who do not (Verme, 2009). And when given autonomy to select a task rather than having one imposed on them, adults' performance on a subsequent cognitive task improved more (Nantais & Schellenberg, 1999). Future research should investigate the role of choice to determine its influence in children's mood repair. While we asked children about their perceived competence we did not ask children about their affect or thoughts about the topic of the drawing. Presumably this could have an influence on children's short-term mood repair. It is plausible that distraction may be the best intervention for both short- and long-term mood repair when the negative mood is based on a

non-traumatic event. However, it seems reasonable to expect that in the case of traumatic events, venting would be the healthiest mood-repair strategy for long-term health and recovery, even if venting leads to more negative mood in the short term. In the case of a traumatic event, art therapy may be used to “resolve conflicts and problems, reduce stress, and achieve insight” (American Art Therapy Association, 2010). For the child, drawing may be a way to initiate a dialogue and make sense of the trauma.

Future research would also benefit from exploring the short-term benefits of drawing on specific emotions. In this study, venting through drawing did improve a sad mood, but venting was not as effective as distraction. Future research would benefit from exploring the short-term mood benefits of drawing for repairing anger. Research with adults has shown that rumination when angry serves to increase anger (Bushman, 2002). Participants were asked to either hit a punching bag or sit quietly. Half of those in the punching bag condition were asked to think about the person who had angered them (rumination); the other half were asked to think about something positive (distraction). Those who ruminated as they hit the punching bag grew angrier and more aggressive than both the participants who distracted themselves as they hit the bag and the participants who sat quietly. Future research should explore whether venting one's anger through drawing also serves to intensify the anger. Additionally, future research would also benefit from investigating the benefits of drawing via distraction versus drawing via venting for positive events.

Taken together, the studies reported here demonstrate that drawing improves mood in children via distraction rather than venting. A copying task served as a control, revealing that the effect on mood was not due to the motor aspect of putting marks on paper but rather to the imaginative act of generating an image and then rendering it on paper. Improved understanding of the mechanisms by which drawing helps children regulate their emotions could have implications for therapeutic interventions for

children with poor emotion-regulation skills and for those with depression.

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