American Psychological Association

Psychological Assessment

1040-3590/19/$12.00

2019, Vol. 31, No. 8, 1040–1051
http://dx.doi.org/10.1037/pas0000726

Development and Validation of a Battery of Emotionally Evocative Film Clips for Use With Young Children

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Investigating normative and maladaptive emotional development requires the ability to elicit children's reactivity to a range of affective stimuli. However, the field lacks a validated battery of stimuli tapping a broad range of childhood emotions. We therefore sought to validate a developmentally appropriate battery of emotionally evocative film stimuli, covering a range of affective responses, for use with children. During pilot work, clips were verified as age appropriate by parents of young children. Next, during a laboratory visit, 39 children (22 girls; M_{age} = 7.19 years, SD = .76) viewed 20 film clips thought likely to elicit either positive affect, dysphoria (i.e., sadness/anger), or fear, and provided self-reported emotional responses to clips. Children's facial expressions during clips were also rated by trained coders blind to the intended purpose of the clips. We identified clips that successfully elicited the target emotion more so than nontarget emotions according to both coder ratings and child self-report. Implications for the use of these film clips in future research on child emotion are discussed.

Public Significance Statement
This study identifies several age-appropriate film clips that effectively elicit positive emotion, sadness, or fear in children aged 6 to 8. These film clips may be useful tools for studying children's emotional experience and regulation.

Keywords: mood induction, middle childhood, film clips, emotion

Supplemental materials: http://dx.doi.org/10.1037/pas0000726.supp

The expression and regulation of emotion play a significant role in both successful and maladaptive development (Gross, 2013). Negative emotions, for instance, allow one to survive and thrive in the face of environmental threat by signaling the need to escape, attack, or expel (Fredrickson, 2004). Positive emotions are adaptive in that they broaden one's repertoires of thoughts and behaviors in ways that foster creativity, learning, and social connection, thereby building enduring psychological and social resources upon which one can draw in times of struggle (Fredrickson, 2004; Meehl, 1975/1987). Indeed, the experience of both positive and negative emotion is essential for psychological resiliency and well-being (Fredrickson, 2004; Meehl, 1975/1987). Conversely, extreme emotional reactivity and difficulties in regulating emotion have been linked to risk for various psychopathologies across the life span (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Compas et al., 2017; Eisenberg, Spinrad, & Eggum, 2010; Nolen-Hoeksema, 2012; Schäfer, Naumann, Holmes, Tuschen-Caffier, & Samson, 2017). For these reasons, researchers focused on both normative emotional development and psychopathology have a longstanding interest in understanding early emotion.

Childhood in particular provides an important window for understanding the emergence and maturation of emotion processes. Examining emotional phenomena early in development may speak to the developmental pathways that link these phenomena with later psychological outcomes (Zeman, Klimes-Dougan, Cassano, & Adrian, 2007). There is thus a pressing need for effective

This article was published Online First May 2, 2019.

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Data from this article were presented as a poster at the 2018 Annual Meeting of the Society for Research in Psychopathology. The authors acknowledge the support of the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Children's Health Research Institute and wish to thank the participants and their families.

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paradigms that elicit emotion in children to facilitate studies of normative and maladaptive emotional development. While the "affect revolution" (Fischer & Tangney, 1995) of the past two decades has seen considerable research on child emotion (Adrian, Zeman, & Veits, 2011), the enthusiasm with which emotion and its regulation are invoked as mechanisms for key developmental outcomes has outpaced the availability of validated and developmentally sensitive methodological tools for investigating these phenomena across a broad range of emotions. Advances in the measurement of child emotion are therefore critical for the continued progression of the field.

With respect to past work, paradigms designed to induce emotions in the laboratory (i.e., mood induction paradigms; MIPs) have been widely used by the field for some time (Gilman et al., 2017). However, this research, particularly that focused on early childhood, has often proceeded in a piecemeal fashion; specifically, a wide range of stimuli, including images, stories, music, experimenter behavior, manipulations of feedback on performance, self-generated mental imagery, and autobiographical recall, have been used to induce mood (Brenner, 2000). Overall, evidence suggests that video clips are an especially effective approach to inducing both positive and negative emotional states (Westermann, Spies, Stahl, & Hesse, 1996; Zupan & Babbage, 2017). Indeed, several advantages, including high potency, ecological validity, and ease of standardization both within and across studies (Hewig et al., 2005; Rottenberg, Ray, & Gross, 2007), support the notion that video clips are ideal stimuli for eliciting emotions in the laboratory.

Video stimuli may be particularly useful for mood induction with children because they transcend certain methodological challenges associated with eliciting emotion in this population. For instance, peripheral data collection procedures involved in MIP studies, such as interacting with an unfamiliar experimenter in a novel setting, may inadvertently influence children's emotional states (Henderson & Fox, 2007) and introduce variation related to differences in experimenters' behavior. In contrast, MIPs that use video stimuli reduce experimenter involvement and can therefore likely be administered with greater consistency across participants. Additionally, watching videos is a familiar and engaging activity for most children (von Leupoldt et al., 2007). Further, individual differences in children's developmental status or cognitive ability may introduce unwanted variability in MIPs when stimuli that place significant cognitive demands on children are used, such as those in which children must recall memories or generate mental imagery (Stegge, Terwogt, & Koops, 1995). In contrast, MIPs that use video clips place few demands on children's cognitive resources, minimizing the influence of these factors.

Despite clear methodological advantages of using video stimuli to elicit emotions in young children, research validating developmentally sensitive video clips for this population is scarce. While there have been exhaustive efforts to develop and validate emotionally evocative video stimuli for use with adults (Carvalho, Leite, Galdo-Álvarez, & Gonçalves, 2012; Gilman et al., 2017; Gross & Levenson, 1995; Hewig et al., 2005; Schaefer, Nils, Sanchez, & Philippot, 2010), these stimuli do not translate well to younger populations due to the unique phenomenological and ethical issues associated with eliciting emotion in children (Zeman et al., 2007). For instance, video clips that are effective in evoking emotion in adults (such as those catalogued by Gilman et al., 2017) may be less engaging for children (e.g., stand-up comedy routines for adult audiences), rely on complex emotional material that may be developmentally incongruent (e.g., romantic love), or contain content parents would find objectionable (e.g., extremely violent or frightening scenes).

While many studies of child emotion have used emotionally evocative stimuli, including film clips (Brenner, 2000), many studies focus on a single emotion of interest (e.g., positive affect; Morrongiello, Stewart, Pope, Pogrebtsova, & Boulay, 2015) and thorough validation and standardization of such stimuli is often lacking. Without confirmation that stimuli reliably elicit the intended emotions, valid inferences about the emotional phenomena under study are limited. Second, most studies of children's emotion development and regulation have used only one method to index children's emotional expression and regulation (e.g., child self-report; Adrian et al., 2011). A multimethod approach to verifying emotional responses to stimuli is, however, critical for validating the efficacy of experimental manipulations (Brenner, 2000; Cole, Martin, & Dennis, 2004), especially considering the susceptibility of children's self-report to demand characteristics (Brenner, 2000; Zeman et al., 2007). Lastly, hedonic valence is often considered a sufficient measure of children's emotional responses to stimuli (e.g., von Leupoldt et al., 2007). However, given that video clips may elicit a range of emotional responses, including unanticipated or multiple emotions (Henderson & Fox, 2007; Rottenberg et al., 2007), assessing a range of emotions may yield a more fine-grained, nuanced picture of children's emotional experiences (Brenner, 2000).

With this literature in mind, we aimed to compile a validated, relatively broad battery of emotionally evocative film clips for examining children's emotional experience and regulation. In addition, we attempted to address the issues identified above by using multiple methods to assess the discrete emotions elicited by clips. To this end, we assessed children's positive affectivity, dysphoria (i.e., sadness/anger), and fear in response to a battery of film clips using children's self-report as well as coder ratings of children's video-recorded facial expressions.

Method

Participants

Thirty-nine children aged 6 to 8 (M = 7.19 years, SD = .76; girls N = 22) were recruited from Southwestern Ontario through outreach to families participating in other studies and advertisements placed in the community. Based on initial screening done by a trained research assistant, children with any medical or psychological condition that would potentially impact their ability to participate were ineligible. The sample was predominantly White (87.2%), with the remainder of the sample identifying as multiracial (7.7%), Hispanic or Latino (2.6%), or Asian (2.6%), and middle class, with 30.8% reporting an annual family income of more than $100,000, 25.6% between $70,001 and $100,000, 15.4% between $40,001 and $70,000, and 7.7% between $20,000 and $40,000. Information on annual family income was not available for 20.5% of the sample. The study was approved by the institutional research ethics board and all parents and children were compensated for their participation.

Selection of Emotionally Evocative Film Clips

Emotionally evocative film clips were sourced from the childhood emotion expression and regulation literature as well as age-

appropriate films and TV programs identified by our research group. This process yielded 22 video clips selected based on their potential to elicit a strong emotional response and grouped according to three target emotional responses: positive affect, dysphoria (i.e., sadness and anger), and fear. We considered dysphoria and fear as separate target emotions when selecting clips based on evidence suggesting that fear represents a different neurobiological substrate (Vizueta, Patrick, Jiang, Thomas, & He, 2012) and temperament trait (Dyson, Olino, Durbin, Goldsmith, & Klein, 2012) from other negative affective states such as sadness and anger. In addition, given evidence that anger and sadness are not well differentiated in younger children (Dyson et al., 2012), we used the broader category of "dysphoria" to group clips intended to elicit sadness and/or anger; however, to allow for a more nuanced picture of children's dysphoric responses, we coded sadness and anger separately.

To confirm that film clips were acceptable for use with child participants, eight parents of children aged 6 to 8 who had participated in previous research studies conducted by our group were asked to view the initial pool of clips and provide feedback. Parents viewed the 22 clips, rated each clip's acceptability, and provided qualitative written feedback regarding the appropriateness of each clip. Based on this feedback, two of the clips selected to elicit fear were dropped from the pool as multiple parents felt these clips were overly frightening. The final battery of film clips consisted of 20 clips (Table 1); we anticipated that six of these would elicit positive affect, seven would elicit dysphoria (i.e., sadness or anger), and seven would elicit fear.

Measures

Both child self-report and objective emotion coding were used to verify whether the selected film clips elicited the intended emotional response. Coders were blind to the film clips that children were watching and the targeted emotion. Given the importance of using both discrete and dimensional approaches to emotion measurement (Schaefer et al., 2010), two quantitative indices of child-reported emotion were used: the Self-Assessment Manikin (SAM; Bradley & Lang, 1994) and a set of standardized emotion face icons, hereafter referred to as "child emotion self-rating scales."

SAM. The SAM (Bradley & Lang, 1994) is a widely used pictorial affective rating system that has been validated for use with young children (Greenbaum, Turner, Cook, & Melamed, 1990; Leventon & Bauer, 2016). In the SAM, children rate their emotional response to stimuli using two 9-point scales assessing

Table 1
Final Battery of 20 Film Clips Shown to Children During Laboratory Sessions

Target emotion	Film	Description of clip	Clip length (min:s)
Positive affect	*E.T. the Extra-Terrestrial* (Kennedy & Spielberg, 1982)	E.T. the alien revives himself	2:04
	Harry Potter and the Sorcerer's Stone (Heyman & Columbus, 2001)	A boy makes a game-winning play for his sports team	2:02
	Hoosiers (De Haven, Pizzo, & Anspaugh, 1986)	A basketball player wins a game for the team	2:08
	The Incredibles (Walker & Bird, 2004)	A girl interacts with her crush; a boy wins a track meet	1:42
	The Jungle Book (Disney & Reitherman, 1967)	Mowgli meets Baloo the friendly bear	2:51
	Unaccompanied Minors (Donner, Aguilar, & Feig, 2006)	A child plays music and dances	2:10
Dysphoria (sadness/anger)	*The Cure* (Burg, Eisner, & Horton, 1995)	A boy dies in hospital; his friend and the boy's mother cry in a car	3:56
	Flash (Birnbaum & Wincer, 1997)	A boy's grandmother falls ill and dies at home	4:14
	Fly Away Home (Baum & Ballard, 1996)	A girl and her mother are in a car accident; the girl wakes up in hospital and discovers her mother has died	3:40
	Little Women (Di Novi & Armstrong, 1994)	A girl talks with her ill sister who then dies	3:45
	The Neverending Story (Eichinger, Geissler, & Petersen, 1984)	A boy tries to save his horse, which sinks in a swamp	3:23
	Stepmom (Barnathan et al., 1998)	An ill mother comforts her children about her impending death	2:59
	What's Eating Gilbert Grape (Ohlsson, Matalon, Teper, & Hallström, 1993)	A boy with autism gets beaten up; a boy finds his mother dead in her bed	3:14
Fear	*Are You Afraid of the Dark?*: "The Tale of the Lonely Ghost" (Janzen & MacHale, 1992)	A girl discovers a message drawn on a wall and sees a ghost in a mirror	2:10
	The Fox and the Hound (Miller et al., 1981) [Animated]	A man and his dog are attacked by a bear	1:15
	Goosebumps: "Night of the Living Dummy III" (Shusterman & Bond, 1997)	A girl enters an attic and discovers a ventriloquist's dummy that comes alive	1:24
	Harry Potter and the Chamber of Secrets (Heyman & Columbus, 2002)	A boy is chased by a giant snake	1:10
	Honey, I Shrunk the Kids (Cox & Johnston, 1989)	A giant scorpion chases children	2:18
	Jumanji (Kroopf, Teitler, & Johnston, 1995)	A boy is sucked into a board game; bats come out of a fireplace	1:10
	Monster House (Rapke, Starkey, & Kenan, 2006) [Animated]	An elderly man yells at a little girl to get off his lawn	1:16

valence (1 = *very positive*, 9 = *very negative*) and arousal (1 = *high arousal*, 9 = *low arousal*). Illustrations of a humanlike figure (introduced to children as "Sam") showing the range of emotional states accompany the numerical anchors for both scales. A third SAM scale assessing dominance was not of interest in the present study and was not used.

Child emotion self-rating scales. We developed a set of visual analog scales based on measures used in previous work (Christodoulou & Burke, 2016; Davis, Quiñones-Camacho, & Buss, 2016; Goldschmidt, Tanofsky-Kraff, & Wilfley, 2011; Gotlib, Traill, Montoya, Joormann, & Chang, 2005; Wong & Baker, 1988). The inclusion of this second rating system, which assessed the intensity of specific emotions, allowed for more fine-grained distinctions in emotional response than the SAM scales. While the SAM and other previously used scales are bipolar in nature (e.g., sadness and happiness at opposing ends), the child emotion self-rating scales were separate unipolar scales for various emotions. Specifically, children self-rated their positive affect, sadness, fear, and anger to each clip using four separate 4-point scales (1 = *no emotion*, 4 = *highest level of a given emotion*). Illustrations of facial icons as well as text indicating the emotion (e.g., "sad") in increasing font size accompanied the numerical anchors for each scale to show the different levels of emotional intensity (Figure 1).

Procedure

Each child and a parent were invited to lab sessions in which the child viewed the battery of selected film clips. Parents were informed of the film clips that would be shown to children prior to their lab visit. The order in which the 20 clips were presented was randomized for each child to address order and carryover effects. Sessions took approximately 70 min to complete and were conducted one-on-one with a graduate-level or postbaccalaureate research assistant. Children were seated in the same designated spot in a room with minimal stimuli, facing a large TV screen mounted on a wall. Research assistants informed children that they would be watching a series of movie clips and asked how each clip made them feel.

Prior to presentation of the first clip, children completed questionnaires with a research assistant to acclimatize them to the laboratory setting and research assistant. The research assistant then explained the SAM and child emotion self-rating scales to the child using a standardized script (see Appendix A in the online supplemental materials). The research assistant verified the child's comprehension of both rating systems by asking the child to rate how he or she might feel after watching a movie that made him or her feel sad, using additional examples if necessary. Lastly, children were told that it was possible to feel more than one emotion in response to a clip and were encouraged to endorse multiple emotional responses if needed; thus, all four of the child emotion self-rating scales were administered for each film clip regardless of whether the clip was expected to elicit positive affect, sadness, anger, or fear. We did not collect a baseline mood rating from children, given that the order in which film clips were presented was randomized for each child, thus controlling for potential effects of children's baseline mood on their emotional responses to clips.

The first film clip was subsequently presented on the TV screen. Immediately following the clip, the research assistant, using a neutral tone, prompted the child to rate his or her emotional response using the SAM and child emotion self-rating scales. For the child emotion self-rating scales, the child was asked, "How [emotion; e.g., angry] did this movie clip make you feel? Not at all [emotion], a little [emotion], even more [emotion], or very [emotion]?", as the research assistant pointed to the respective anchors. For the SAM valence and arousal scales, the research assistant reminded the child of the anchors for each scale and asked, "Which SAM is most like how this movie clip made you feel?" (see Appendix A in the online supplemental materials for additional details). Ratings of children's attentiveness to each clip were made using a 4-point Likert scale (1 = *attentive to the clip less than 25% of the time*, 4 = *attentive to the clip 75–100% of the time*). The order in which the child emotion self-rating scales were presented was randomized across clips to control for order effects. This procedure was repeated for each of the 20 clips in the battery. The

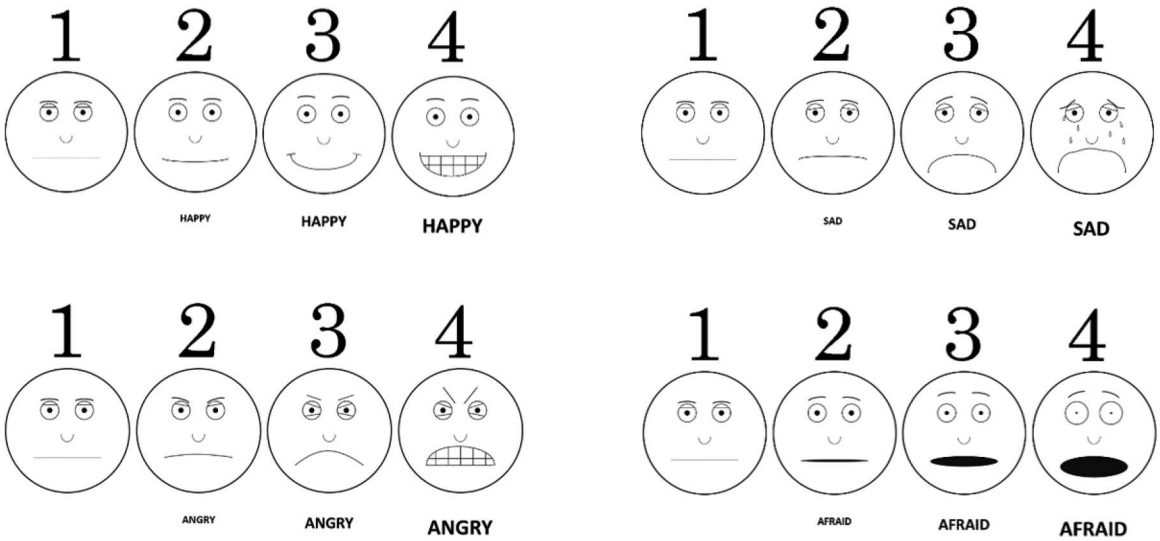

Figure 1. The child emotion self-rating scales for positive affect, sadness, fear, and anger.

research assistant informally assessed the child's mood at the end of the session (e.g., by asking the child what he or she thought about the clips overall, whether he or she had a favorite clip, etc.) to ensure that the child did not leave the session in a negative mood. Children and their parent each received gift cards at the end of the lab session. All sessions were video recorded for subsequent coding of children's emotional responses to each clip.

Child Emotion Coding

Trained coders rated children's emotion states at the end of each clip to provide an objective measure of elicited emotional response. Coders were trained undergraduate research assistants who were blind to the child-report data, the nature of the film clips, and the order in which clips were presented. To maintain the blind, video recordings of the child did not include the film clip being viewed and videos were coded in the absence of accompanying sound. Because we felt that context was needed to elicit intended emotions, clips had expository material at the beginning that was often not emotion inducing; put differently, the emotion-inducing component of the film clips occurred toward the end of clips. For this reason, coders considered the last 30 s of presentation of each video clip, rating the most intense instance of positive affect, sadness, fear, and anger expressed during that epoch. To facilitate comparisons between coder and child ratings, both child self-reports and coder ratings were completed using the child emotion self-rating scales. All video recordings were coded by two independent coders. The average of the two ratings was used for analyses.

Results

Child Attentiveness to Film Clips

Since low attentiveness to a film clip may attenuate elicited emotion, we examined mean experimenter ratings of children's attentiveness to clips as well as correlations between these ratings and mean coder-rated and child-reported emotion for each clip. Mean attentiveness ratings ranged from 3.54 to 4.00 across all clips (Tables 2–4), indicating that, in general, children found the clips to be engaging. Attentiveness and both coder- and child-rated emotion for individual film clips were significantly associated in several cases. We report here only those correlations that reached significance, but provide all correlations between child attentiveness, coder-rated emotion, child-reported emotion, and child age across all clips in Appendix B in the online supplemental materials (supplementary Tables 1–3).

The majority of significant correlations were in the expected direction, such that target emotions increased or nontarget emotions decreased as children's attentiveness to a clip increased. For coder ratings of child emotional response, there were significant negative correlations between attentiveness and positive affect for two clips intended to elicit fear, *Jumanji* ($r(35) = -.65$, $p < .001$) and *Honey, I Shrunk the Kids* ($r(36) = -.33$, $p < .05$), and three clips intended to elicit dysphoria, *The Cure* ($r(34) = -.39$, $p < .05$), *Flash* ($r(37) = -.37$, $p < .05$), and *Fly Away Home* ($r(37) = -.51$, $p < .01$). Significant positive correlations were found between attentiveness and child self-reports of a target emotion (i.e., sadness) for *Stepmom* ($r(33) = .42$, $p < .05$) and *The Cure* ($r(35) = .36$, $p < .05$). Contrary to expectations, attentiveness and a target emotion (i.e., sadness) were negatively correlated for *What's Eating Gilbert Grape* ($r(39) = -.35$, $p < .05$). There were no significant associations between attentiveness and the SAM valence and arousal scales.

Lastly, attentiveness to clips may vary with children's age, potentially impacting clips' utility in MIPs with certain age groups. We therefore examined associations between children's attentiveness to clips and child age; none, however, reached significance.

Interrater Reliability

Interrater reliability for coding of children's emotional responses was estimated using two-way mixed effects, average measures, absolute intraclass correlation coefficients (ICC). However, ICCs are influenced by variance in coded behaviors (Koo & Li, 2016), such that acceptable ICCs may not be obtained if variance is low, even when agreement between raters is high. In the current study, lower ICCs might be expected for affective behaviors that rarely occur, such as those not targeted by specific clips (e.g., fear during a clip intended to elicit positive affect). Therefore, to capture agreement on coding of nontarget emotions, we also report percent agreement between coders.

Reliability was generally good. For clips intended to evoke positive affect, reliability ranged from good to excellent for the target emotion and poor to excellent for nontarget emotions (see Table 2), based on Cicchetti's (1994) guidelines. For coded sadness, reliability ranged from poor to excellent for the target emotion and poor to excellent for nontarget emotions (see Table 3). For clips intended to evoke fear, reliability ranged from fair to excellent for the target emotion and poor to excellent for nontarget emotions (see Table 4). For *The Neverending Story*, the ICC was poor for the target emotion.

Within-Clip Comparisons of Target to Nontarget Emotions

We used paired *t* tests to examine whether clips elicited stronger emotional responses for the target emotion compared to other emotions. Findings that a clip elicited significantly more of the target emotion than nontarget emotions would support its utility in MIPs. For each clip, average coder ratings of child emotional response for the target emotion were compared to the average coder ratings for each of the three other emotions. The same procedure was then applied to the child-reported emotion ratings. The results of these analyses are displayed in Tables 2–4.[1]

Table 2 shows comparisons of coder- and child-rated positive affect with sadness, fear, and anger for clips intended to evoke positive affect. All six clips elicited significantly higher positive affect than sadness, fear, and anger based on child self-report. In addition, four clips (all except *The Incredibles* and *E.T. the Extra-Terrestrial*) elicited significantly higher positive affect than two or more nontarget emotions based on coder ratings of child emotional response. Mean positive affect ratings were significantly higher in all comparisons across coder and child measures for three of these clips—*The Jungle Book*, *Unaccompanied Minors*, and *Hoosiers*. Surprisingly, *E.T. the Extra-Terrestrial* elicited significantly higher coder ratings for two nontarget emotions (sadness and fear) compared to the target emotion (positive affect).

[1] In addition, in analyses not reported here, we compared clips in the same emotion category on mean ratings of the target emotion. Given that the pattern of findings was different for coder and child ratings (i.e., the pattern of which clips tended to elicit the greatest mean ratings of the target emotion), we do not report the results of these analyses here, but they are available from the first author upon request.

Table 2
Clips Intended to Evoke Positive Affect: Descriptive Statistics and Paired T-Tests Comparing Positive Affect to Sadness, Fear, and Anger Using Coder Ratings of Emotional Response and Child Self-Reported Emotion

Film clip	Attn.		Coder rating of emotional response							Child self-reported emotion				
	M	*SD*	Scale	ICC	Agr. (%)	*M*	*SD*	*df*	*t*	Scale	*M*	*SD*	*df*	*t*
1. *The Jungle Book*	3.97	.17	Positive	.89	67.60	1.99	1.12			Positive	3.05	1.08		
			Sadness	.36	75.70	1.15	.31	36	4.00***	Sadness	1.08	.28	36	10.29***
			Fear	.42	86.50	1.14	.30	36	4.42***	Fear	1.14	.42	36	9.30***
			Anger	.94	97.30	1.07	.34	36	4.66***	Anger	1.05	.23	36	10.54***
										SAM valence	1.89	1.45	37	
										SAM arousal	5.03	3.18	37	
2. *Unaccompanied Minors*	3.95	.23	Positive	.90	70.30	1.76	.98			Positive	3.08	1.22		
			Sadness	.80	86.50	1.18	.41	36	3.12**	Sadness	1.11	.39	37	9.04***
			Fear	.46	73.00	1.34	.49	36	2.26*	Fear	1.16	.44	37	8.56***
			Anger	.78	89.20	1.14	.35	36	3.39**	Anger	1.08	.36	37	9.37***
										SAM valence	1.97	1.55	38	
										SAM arousal	4.89	3.38	38	
3. *Hoosiers*	3.89	.39	Positive	.86	69.40	1.43	.74			Positive	3.54	.80		
			Sadness	.41	77.80	1.14	.31	35	2.04*	Sadness	1.22	.63	36	13.07***
			Fear	.21	80.60	1.13	.25	35	2.26*	Fear	1.03	.16	36	19.03***
			Anger	.80	97.20	1.04	.18	35	2.97**	Anger	1.19	.57	36	14.63***
										SAM valence	2.41	2.30	37	
										SAM arousal	4.76	3.54	37	
4. *Harry Potter and the Sorcerer's Stone*	3.92	.28	Positive	.75	65.80	1.55	.86			Positive	3.18	.98		
			Sadness	.23	73.70	1.18	.29	37	2.29*	Sadness	1.05	.23	37	12.58***
			Fear	.56	71.10	1.28	.50	37	1.59	Fear	1.24	.49	37	9.77***
			Anger	.65	94.70	1.05	.19	37	3.37**	Anger	1.18	.46	37	11.31***
										SAM valence	1.97	1.30	38	
										SAM arousal	4.84	3.19	38	
5. *The Incredibles*	4.00	.00	Positive	.77	79.40	1.31	.69			Positive	3.32	.88		
			Sadness	.29	67.60	1.24	.37	33	.52	Sadness	1.12	.41	33	12.76***
			Fear	.49	52.90	1.47	.64	33	−.91	Fear	1.09	.29	33	14.65***
			Anger	.52	91.20	1.12	.30	33	1.41	Anger	1.09	.38	33	14.12***
										SAM valence	2.24	1.83	34	
										SAM arousal	4.38	3.25	34	
6. *E.T. the Extra-Terrestrial*	3.86	.42	Positive	.71	89.50	1.16	.48			Positive	2.32	1.09		
			Sadness	.64	57.90	1.53	.64	37	−2.64*	Sadness	1.63	.82	37	3.15**
			Fear	.59	47.40	1.64	.73	37	−3.27**	Fear	1.47	.86	37	4.18***
			Anger	.34	86.80	1.14	.33	37	.13	Anger	1.18	.56	37	6.37***
										SAM valence	4.29	2.52	38	
										SAM arousal	4.63	2.74	38	

Note. Clips presented in order of perceived utility. Paired *t*-tests were not performed for the Self-Assessment Manikin (SAM) valence and arousal scales. Attn. = attentiveness; Agr. = agreement between coders; ICC = intraclass correlation coefficient.
* $p < .05$. ** $p < .01$. *** $p < .001$.

For clips intended to induce dysphoria, coder and child ratings of sadness were significantly higher than ratings of anger for all clips. In addition, none of these clips was found to elicit significantly more anger than positive affect or fear for either coder or child ratings. In light of these findings, we hereafter focus solely on the sadness ratings for the dysphoric clips. As such, we report comparisons of coder and child ratings of *sadness* with positive affect, fear, and anger for these clips (see Table 3). Five clips (all except *Stepmom* and *What's Eating Gilbert Grape*) elicited significantly higher sadness than positive affect, fear, and anger based on child self-report. In addition, all seven clips elicited significantly higher sadness than two or more nontarget emotions based on coder ratings of child emotional response. Mean sadness ratings were significantly higher in all comparisons across coder and child measures for three of these clips—*Little Women*, *Flash*, and *The Cure*.

Table 4 shows comparisons of coder and child ratings of fear with positive affect, sadness, and anger for clips intended to evoke fear. Five clips (all except *Monster House* and *The Fox and the Hound*) elicited significantly more fear than positive affect, sadness, and anger based on child self-report. In addition, six clips (all except *The Fox and the Hound*) elicited significantly more fear than two or more nontarget emotions based on coder ratings of child emotional response. Mean fear ratings were significantly higher in all comparisons across coder and child measures for five of these clips—*Are You Afraid of the Dark?*, *Goosebumps*, *Jumanji*, *Harry Potter and the Chamber of Secrets*, and *Honey, I Shrunk the Kids*.

Clip Valence and Arousal

To characterize the valence and arousal related to each clip based on the SAM scales, we present mean child-reported SAM valence and arousal ratings in Tables 2–4. In general, valence ratings were consistent with data from the child emotion self-rating scales. Mean valence ratings for clips intended to elicit positive affect ranged from 1.89 to 4.29 (1.89 to 2.41 when

Table 3
Clips Intended to Evoke Dysphoria (i.e., Sadness and/or Anger): Descriptive Statistics and Paired T-Tests Comparing Sadness to Positive Affect, Fear, and Anger Using Coder Ratings of Emotional Response and Child Self-Reported Emotion

	Attn.		Coder rating of emotional response							Child self-reported emotion				
Film clip	*M*	*SD*	Scale	ICC	Agr. (%)	*M*	*SD*	*df*	*t*	Scale	*M*	*SD*	*df*	*t*
1. *Little Women*	3.56	.72	Sadness	.75	53.80	1.81	.74			Sadness	2.59	1.04		
			Positive	.69	87.20	1.13	.41	38	4.54***	Positive	1.31	.57	38	5.52***
			Fear	.10	76.90	1.14	.26	38	5.07***	Fear	1.67	.96	38	5.31***
			Anger	−.01	74.70	1.17	.29	38	4.94***	Anger	1.23	.63	38	8.38***
										SAM valence	6.67	2.11	37	
										SAM arousal	5.64	2.70	37	
2. *Flash*	3.68	.63	Sadness	.70	64.90	1.42	.55			Sadness	2.54	.93		
			Positive	.58	86.50	1.09	.28	36	3.00**	Positive	1.22	.58	36	6.23***
			Fear	.36	78.40	1.20	.34	36	2.13*	Fear	1.73	1.04	36	4.95***
			Anger	.92	94.60	1.14	.40	36	2.33*	Anger	1.19	.46	36	8.66***
										SAM valence	6.43	1.80	37	
										SAM arousal	5.32	2.65	37	
3. *The Cure*	3.57	.78	Sadness	.59	48.60	1.67	.69			Sadness	2.58	1.11		
			Positive	.57	85.70	1.16	.42	34	3.72**	Positive	1.36	.80	35	4.79***
			Fear	.66	77.10	1.30	.60	34	3.01**	Fear	1.61	.80	35	5.68***
			Anger	−.25	80.00	1.10	.20	34	4.77***	Anger	1.28	.66	35	6.58***
										SAM valence	6.53	2.29	36	
										SAM arousal	5.00	2.70	36	
4. *Stepmom*	3.54	.62	Sadness	.77	58.80	1.56	.67			Sadness	2.03	1.01		
			Positive	−.01	79.40	1.18	.37	33	2.67*	Positive	1.86	1.03	34	.70
			Fear	.14	79.40	1.15	.29	33	3.03**	Fear	1.31	.72	34	3.26**
			Anger	.47	88.20	1.09	.23	33	3.83**	Anger	1.17	.57	34	4.17***
										SAM valence	5.17	2.02	35	
										SAM arousal	5.71	2.35	35	
5. *The Neverending Story*	3.86	.42	Sadness	.28	47.40	1.63	.54			Sadness	2.76	1.10		
			Positive	.80	94.70	1.05	.25	37	6.08***	Positive	1.26	.60	37	6.85***
			Fear	.58	60.50	1.45	.60	37	1.30	Fear	2.34	1.07	37	2.52*
			Anger	.70	92.10	1.09	.26	37	5.19***	Anger	1.32	.66	37	1.81***
										SAM valence	6.89	1.93	38	
										SAM arousal	5.42	2.83	38	
6. *What's Eating Gilbert Grape*	3.95	.22	Sadness	.76	64.10	1.56	.61			Sadness	1.97	1.04		
			Positive	.64	76.90	1.31	.66	38	1.66	Positive	1.85	1.11	38	.45
			Fear	−.10	66.70	1.19	.27	38	3.25**	Fear	1.54	.85	38	2.81**
			Anger	.40	82.10	1.21	.41	38	3.26**	Anger	1.26	.64	38	4.49***
										SAM valence	4.82	2.57	39	
										SAM arousal	5.05	3.01	39	
7. *Fly Away Home*	3.68	.66	Sadness	.47	59.50	1.38	.48			Sadness	2.47	1.11		
			Positive	−.09	89.20	1.05	.16	36	3.72**	Positive	1.37	.71	37	4.71***
			Fear	.60	59.50	1.51	.55	36	−1.09	Fear	2.05	1.06	37	2.66*
			Anger	−.10	83.80	1.08	.19	36	4.35***	Anger	1.21	.62	37	7.03***
										SAM valence	6.45	2.27	38	
										SAM arousal	5.45	2.99	38	

Note. Clips presented in order of perceived utility. Paired *t*-tests were not performed for the Self-Assessment Manikin (SAM) valence and arousal scales. Attn. = attentiveness; Agr. = agreement between coders; ICC = intraclass correlation coefficient.
* $p < .05$. ** $p < .01$. *** $p < .001$.

excluding *E.T. the Extra-Terrestrial*, which performed poorly as a clip intended to elicit positive affect, as indicated above), indicating positive valence. In contrast, mean valence ratings for clips intended to elicit sadness (range: 4.82 to 6.89) and fear (range: 4.41 to 5.97) indicated negative valence. With respect to SAM arousal ratings, mean ratings indicated that, in general, children found all clips to be moderately arousing. Mean arousal ratings across emotion categories indicated that children generally found clips intended to elicit sadness (mean arousal ratings ranging from 5.00 to 5.71) less arousing than those intended to elicit positive affect (range: 4.38 to 5.03) or fear (range: 4.51 to 4.92).

Associations Between Age and Emotional Responses to Clips

The maturation of emotion-related processes over the course of development raises the possibility that age could influence the strength of emotional responses to clips. We therefore examined associations between child age and coder and child ratings of target emotions. Significant correlations were found only for coder ratings of children's emotional response. All significant correlations between age and coder ratings were positive, such that coders rated higher emotional intensity for older children. Child age was positively correlated with coder-rated sadness for *Flash* ($r(35) =$

Table 4
Clips Intended to Evoke Fear: Descriptive Statistics and Paired T-Tests Comparing Fear to Positive Affect, Sadness, and Anger Using Coder Ratings of Emotional Response and Child Self-Reported Emotion

Film clip	Attn.		Coder rating of emotional response							Child self-reported emotion				
	M	*SD*	Scale	ICC	Agr. (%)	*M*	*SD*	*df*	*t*	Scale	*M*	*SD*	*df*	*t*
1. *Are You Afraid of the Dark?*: "Tale of the Lonely Ghost"	3.83	.51	Fear	.78	52.80	1.88	.94			Fear	2.89	1.04		
			Positive	.73	83.30	1.18	.48	35	4.07***	Positive	1.50	.81	35	5.56***
			Sadness	.62	69.40	1.35	.56	35	2.86**	Sadness	1.53	.77	35	7.26***
			Anger	−.06	94.40	1.03	.12	35	5.45***	Anger	1.50	.91	35	7.94***
										SAM valence	5.86	2.26	36	
										SAM arousal	4.92	2.79	36	
2. *Goosebumps*: "Night of the Living Dummy III"	3.97	.17	Fear	.76	45.90	2.01	1.00			Fear	2.49	1.02		
			Positive	.00	94.60	1.05	.26	36	5.99***	Positive	1.57	.93	36	3.31**
			Sadness	.68	51.40	1.46	.62	36	2.84**	Sadness	1.38	.68	36	6.43***
			Anger	.32	86.50	1.15	.33	36	5.07***	Anger	1.35	.89	36	5.84***
										SAM valence	5.43	2.10	37	
										SAM arousal	4.86	2.49	37	
3. *Jumanji*	3.91	.28	Fear	.65	52.80	1.81	.86			Fear	2.44	1.05		
			Positive	.70	83.30	1.24	.59	35	2.84**	Positive	1.58	1.00	35	3.08**
			Sadness	.69	66.70	1.36	.52	35	2.73*	Sadness	1.61	.90	35	5.00***
			Anger	.44	88.90	1.08	.22	35	5.16***	Anger	1.28	.66	35	6.63***
										SAM valence	5.72	2.06	36	
										SAM arousal	4.92	2.96	36	
4. *Harry Potter and the Chamber of Secrets*	4.00	.00	Fear	.64	52.60	1.59	.71			Fear	2.55	1.16		
			Positive	.95	94.70	1.11	.50	37	3.22**	Positive	1.45	.86	37	4.24***
			Sadness	.70	76.30	1.28	.45	37	2.19*	Sadness	1.42	.79	37	6.10***
			Anger	.09	78.90	1.15	.28	37	3.47**	Anger	1.37	.71	37	5.65***
										SAM valence	5.84	1.91	38	
										SAM arousal	4.87	2.75	38	
5. *Honey, I Shrunk the Kids*	3.94	.23	Fear	.41	40.50	1.70	.69			Fear	2.35	1.06		
			Positive	.34	86.50	1.15	.44	36	4.53***	Positive	1.46	.96	36	3.20**
			Sadness	.75	70.30	1.36	.55	36	2.37*	Sadness	1.84	.99	36	3.07**
			Anger	.44	75.70	1.22	.38	36	4.10***	Anger	1.30	.66	36	5.94***
										SAM valence	5.97	2.50	37	
										SAM arousal	4.65	2.69	37	
6. *Monster House* [Animated]	3.94	.34	Fear	.66	62.20	1.59	.72			Fear	2.27	1.10		
			Positive	.94	89.20	1.22	.67	36	2.15*	Positive	1.62	1.06	36	2.34*
			Sadness	.40	54.10	1.47	.51	36	.82	Sadness	1.95	.91	36	1.78
			Anger	.54	75.70	1.26	.37	36	2.83**	Anger	1.68	.97	36	3.39**
										SAM valence	5.49	2.46	37	
										SAM arousal	4.84	2.73	37	
7. *The Fox and the Hound* [Animated]	3.97	.17	Fear	.52	63.90	1.56	.66			Fear	2.00	1.15		
			Positive	.97	91.70	1.31	.85	35	1.38	Positive	1.86	1.06	36	.44
			Sadness	.62	58.30	1.50	.57	35	.38	Sadness	1.65	.79	36	1.88
			Anger	.79	72.20	1.28	.58	35	1.84	Anger	1.43	.83	36	3.23**
										SAM valence	4.41	2.11	37	
										SAM arousal	4.51	2.60	37	

Note. Clips presented in order of perceived utility. Paired *t*-tests were not performed for the Self-Assessment Manikin (SAM) valence and arousal scales. Attn. = attentiveness; Agr. = agreement between coders; ICC = intraclass correlation coefficient.
* $p < .05$. ** $p < .01$. *** $p < .001$.

.36, $p < .05$) and *Fly Away Home* ($r(35) = .37$, $p < .05$), and coder-rated positive affect for *E.T. the Extra-Terrestrial* ($r(36) = .44$, $p < .01$). Lastly, we examined correlations between age and child-reported SAM valence and arousal ratings. One significant positive correlation was found between child age and arousal for *What's Eating Gilbert Grape* ($r(37) = .36$, $p < .05$).

Discussion

We aimed to develop and validate a relatively broad, developmentally sensitive battery of emotionally evocative film clips for children, successfully identifying clips that elicited the target emotion more so than nontargeted emotions according to both coder-rated and child self-report indices of emotion. In general, we found few age-related effects on emotional response when considering both coder- and child-rated emotion, indicating that our film clips are generally equally effective for children varying in age from 6 to 8. All clips were acceptable to parents based on pilot data. Thus, this battery may serve as a useful tool for investigating emotional reactivity and regulation in middle childhood.

Mean child-reported ratings for the target emotion were higher than coder-rated emotion for all clips. This is perhaps not surprising, given that children develop some capacity for self-monitoring and regulating their outward expressions of emotion by middle

childhood (Zeman et al., 2007). At this stage of development, children are aware of display rules for social situations (Saarni, 1984) and may adapt their emotional responses to their social audience (Zeman et al., 2007). In addition, they increasingly use cognitive, and thus more covert, strategies for regulating their emotions (Compas et al., 2017). The presence of a video camera and an unfamiliar research assistant may have created social conditions under which children felt compelled to regulate and restrict their facial expressions of emotion, resulting in lower coder ratings of emotion.

In contrast to previous work (von Leupoldt et al., 2007), we found several age differences in children's emotional responses to clips. Significant correlations were found only for coder ratings of children's facial expressions, with coders rating higher emotional intensity for older children. Older children displayed higher sadness for two clips and higher positive affect for one clip. Notably, all three clips for which significant correlations were found featured the death of a character. Research suggests that children do not develop a complete understanding of the concept of death, such as its finality and irreversibility, until approximately age 7 (Speece & Brent, 1984). Thus, having a more mature understanding of death may have increased the poignancy of these clips for older children, such that they displayed higher sadness in response to the two clips intended to induce this emotion and, in the case of the clip intended to elicit positive affect (*E.T. the Extra-Terrestrial*), more positive emotion when a character comes back to life.

We assessed both sadness and anger in response to clips we anticipated would elicit dysphoric affect, given previous research showing that these emotions are often intermingled in younger children (Dyson et al., 2012). However, we found that all clips of this sort elicited significantly more sadness than anger according to both child- and coder-rated measures. While this finding may reflect the challenges of eliciting anger under laboratory conditions (Gross & Levenson, 1995; Philippot, 1993; Zupan & Babbage, 2017), it is perhaps better explained by the fact that most of our dysphoric film clips featured themes typically associated with sadness (e.g., grief and loss). While assessing both sadness and anger enabled us to identify several film clips that effectively elicit sadness in children, future research is needed to identify and validate similar video stimuli for eliciting anger in young children.

In addition to child self-reported emotions, we also collected self-reported hedonic valence and arousal ratings using the SAM scales. In general, the mean SAM valence ratings for clips were consistent with data from the discrete emotion scales, such that children rated clips intended to induce positive affect as more pleasant than clips intended to induce sadness or fear. These valence data may be of particular interest to investigators whose research questions call for eliciting broader emotional states in children rather than discrete emotions. With respect to the SAM arousal ratings, in general, children reported lower arousal in response to clips intended to induce sadness than clips intended to elicit positive affect or fear.

Recommendations for Use

Clips are presented in Tables 2–4 in the order of their perceived utility based on (a) whether clips elicited significantly more of the target emotion than nontarget emotions according to both coder and child ratings, (b) the degree to which each clip elicited the target emotion considering both mean coder and child ratings of the target emotion, relative to other clips intended to elicit the same emotion (e.g., mean sadness in *Little Women* relative to mean sadness in *Stepmom*), and (c) the acceptability of ICCs and percent agreement for coder ratings of target emotions. Importantly, we make these recommendations with the aim of guiding, rather than replacing, the judgment of the researcher in selecting the stimuli best suited to his or her particular research context. Finally, we completed a neutral activity with children prior to attempting to induce emotion; although we do not know whether this influenced our findings, we recommend doing so when time permits.

Limitations

While our findings support the effectiveness of several film clips in eliciting an array of emotions in children, they must be considered in the context of several limitations. First, our sample was relatively small, thereby precluding adequate power to reliably detect certain effects, such as sex differences in emotional response to clips (for exploratory analyses of sex differences in emotion ratings, see Appendix C in the online supplemental materials). Second, our sample was relatively homogenous in terms of age, ethnicity, and socioeconomic status. All children fell within the narrow age range of 6 to 8 and the majority were White and middle class. It is possible that the same battery may elicit different patterns of emotional responding in children from other demographic groups. Studies have shown, for instance, that cultural norms can influence children's emotional expressions (Morelen, Zeman, Perry-Parrish, & Anderson, 2012). Considerable research has also shown that children's understanding, expression, and regulation of emotion varies significantly across developmental stages (Zeman, Cassano, Perry-Parrish, & Stegall, 2006), such that our findings may not generalize beyond middle childhood. Further, our findings are based on a community sample and may not generalize to clinical samples, particularly given research showing that children with psychological disorders show different profiles of emotion expression and regulation (Eisenberg et al., 2010). Additional research is therefore needed to validate this battery for use with diverse child populations.

Third, although pilot data indicated that parents found our film clips to be acceptable and the majority of parents who were approached by our team were willing to let their children participate, a small minority of families elected not to participate due to concerns that clips intended to elicit fear or dysphoria might be unduly upsetting to their child. Excluding these children may have biased our sample toward less sensitive children. Having said that, including children for whom the clips may have elicited high-intensity emotion would have likely strengthened the magnitude of our effects.

Further research is needed to establish the stability of children's emotional responses to the film clips included in this battery over time. A limitation of our study is that we did not control for the potential effects of prior viewings of clips on children's emotional responses. Research with adults suggests that prior viewing of a clip allows one to access more contextual material and therefore heightens the experience of the target emotion during subsequent viewings (Gross & Levenson, 1995). It is possible that children in

our study had previously seen clips from our battery and that this may have intensified their emotional responses. This effect is likely to have been small, however, given previous work showing only a weak effect of prior viewing on emotional response (von Leupoldt et al., 2007). A second issue concerning the stability of emotional responses to clips is the possibility that clips may fail to elicit the same response across studies. Indeed, it is not uncommon for video stimuli to successfully elicit the target emotion in initial testing but fail to elicit the same response in subsequent implementations (e.g., Kovacs et al., 2015). While the fact that clips were validated using both self-report and observational methods strengthens our findings of their effectiveness, additional studies are needed to confirm the reliability and validity of the emotional responses they are intended to elicit. Additional studies might also validate the utility of these clips by showing that they elicit stronger effects than other MIPs for tasks that rely on mood induction to be successful (e.g., self-referent encoding task; Derry & Kuiper, 1981).

Lastly, while research shows that children are able to provide valid self-reports of their emotions by age 6 (Durbin, 2010), there are several limitations associated with children's self-report. First, social desirability bias may have prompted children to change or exaggerate their emotional responses to match what they perceived to be the "correct" emotion for a clip. Second, the effectiveness of clips in eliciting the intended emotion may have been magnified by the fact that children in middle childhood are prone to dichotomous self-report tendencies (Chambers & Johnston, 2002). That is, children may have been more likely to use the extreme values of the emotion and SAM rating scales when reporting their emotional responses. Similarly, although we took care to emphasize to children that it was possible to feel more than one emotion in response to a clip, children may nonetheless have fixated on one particularly salient emotion to the exclusion of others in their reporting. It is possible that this self-report bias may have artificially inflated the differences between children's reported target and nontarget emotions. However, the fact that we found a similar pattern of results using observational ratings of children's facial expressions corroborates our findings from the child self-report data.

In conclusion, using both child-reported emotion and coder ratings of children's facial expressions, we identified several film clips that successfully elicited either positive affect, sadness, or fear more so than nontargeted emotions. In reporting additional data on valence, arousal, and age differences, we hoped to provide a rich dataset to inform the selection of video stimuli for addressing a wide range of research questions within the child emotion literature. We conclude with a call for further research that extends the reach of this battery to other populations and applications of interest to the field.

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Received October 5, 2018
Revision received March 11, 2019
Accepted March 17, 2019 ■