EFFECTS OF EMAIL PERFORMANCE FEEDBACK ON EARLY CHILDHOOD TEACHERS' USE OF EMOTION WORDS

by

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Thesis

Submitted to the Faculty of

Peabody College of Vanderbilt University

in Partial Fulfillment of the Requirements

for the Degree of

Master of Education

in

Early Childhood Special Education

May 2023

Major Professor	4/26/2023 Date
Second Reader	4/26/2023 Date
Department Chair	4/26/2023 Date
Dean of Peabody College	5/1/23 Date

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Major Area: Early Childhood Special Education Number of words: 10880 words

Social emotion plays a vital role in children's development, and email performance-based feedback (email PF) has been shown to effectively improve teachers' social-emotional practice. In this research, I evaluated the effect of brief training and email PF on teachers' and children's use of emotion words and the diversity of the emotion words they use. Participants in this study included four early childhood education teachers. A multiple probe design across participants was used to evaluate the effects of email PF. Participants received brief training at the beginning of the study and received a general email that did not include feedback on their emotion word uses. They received email PF which had descriptive feedback on their emotion word uses in the intervened settings (i.e., center time). They did not receive an email in the generalized settings (i.e., small groups and recess) across the study and during the maintenance conditions. Results showed that there was a functional relationship between email PF and teachers and children's use and diversity of emotion words in the intervened setting. Further researchers can modify the coaching content according to individuals' diverse needs, set criteria for intervention conditions to avoid extraneous variables, conduct more covert observations, etc.

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CHAPTER I

Literature Review

A wide range of research has shown the significance of social-emotional competence, which for children can be defined as effective interactions with others and the development of successful intrapersonal and interpersonal skills (Rose-Krasnor, 1997). Elements of social-emotional competence include emotional expressiveness, understanding of emotion, self-regulation, and social problem-solving (Denham, 2006). Social-emotional competence is essential for children to develop positive attitudes towards school, build and maintain relationships with others, participate in school, develop academic skills, and make academic achievements (Carlton, 1999; Jones & Bouffard, 2012; Shields et al., 2001). Children with developmental delays or disabilities affecting social-emotional skills tend to experience fewer peer interactions and more academic failure, reciprocally impacting their social-emotional skills. (Fox & Hemmeter, 2009; Jones et al., 2015). Therefore social-emotional learning, which is defined as the process by which children acquire and use knowledge and skills to identify and manage emotions, is critical for helping them build positive relationships, maintain academic motivation, and be able to work collaboratively (Jones & Kahn, 2017).

One way to improve social-emotional learning in the classroom is the modeling of emotional expression (e.g., emotion word use), which has been shown to be effective (Ahn, 2005; Ashiabi, 2000). During this process, teachers can instruct children in the meaning of emotions while modeling regulation of those various emotions (Ahn, 2005; Ashiabi, 2000). For practitioners to better integrate social-emotional learning and implement evidence-based practices in the classroom, professional development (PD) is important. PD is defined as "facilitated teaching and learning experiences that are transactional and designed to support the acquisition of professional knowledge, skills, and dispositions as well as the application

of this knowledge in practice" (p. 3) by National Professional Development Center on Inclusion (Snyder et al., 2011; Snyder et al., 2012). Performance-based feedback (PF) has been shown as one of the evidence-based PD practices that increase practitioners' use of intervention practices. This includes verbal, written, or visual feedback about the practitioners' implementation of the intervention (Fallon et al., 2015). Research also has indicated that PF can promote teachers' implementation of social-emotional learning practices. For example, Hemmeter et al. (2015) suggested that in-person PF could increase the use of Pyramid Model practices, which include social-emotional learning, by early childhood teachers.

Among various forms of feedback, email has been found to be an efficient way to provide feedback, change teacher behaviors, increase teachers' use of target practices, and build a positive relationship between the coach and practitioners (Artman-Meeker & Hemmeter, 2013; Barton et al., 2013; Barton et al., 2016; Barton et al., 2018; Barton et al., 2020; Gomez et al., 2021; O' Flaherty et al. 2019). Some research indicated the effects of email performance-based feedback (email PF) on increasing teachers' practice that promotes children's social-emotional competence. Artman-Meeker and Hemmeter (2013) increased teachers' use of social-emotional strategies by providing teachers within situ training and PF via email based on their practices. They define social-emotional practice as any teacher utterance, physical gesture, signal, or visual support that help children recognize and cope with emotions and socialization with others. Barton and colleagues have conducted systematic research on the use of email PF on teachers' practices that promote children's social-emotional learning (Barton et al. 2013; Barton et al., 2016; Barton et al., 2018; Martinez et al., 2021). For instance, Barton et al. (2018) has shown the effectiveness of a brief training followed by email PF on pre-service early childhood teachers' use of practices that promote social interactions (PPSI) among children, such as descriptive praise and

emotion labeling during centers time. Martinez et al. (2021) compared the effects of training and general and specific email feedback on preservice early childhood teachers' use of PPSI. Results revealed that specific feedback (i.e., counts and examples) increased teachers' use of PPSI during the intervention and maintenance sessions. Overall, previous research found that there was a functional relationship between email PF and teachers' increased use of strategies that promote children's social-emotional learning. Furthermore, research has indicated that it may be important to focus on one target behavior of the teacher at a time (Barton et al., 2020). In support of this theory, Robinson's (2020) research found positive results of email PF on one single practice that promotes children's social-emotional competence (i.e., emotion labeling).

The limitations and positive results from the current research suggest that more research is needed to determine whether email PF can assist in training teachers' implementation of social-emotional learning in the classroom. The current study is a replication of the study by Robinson et al. (2020) and builds on the research conducted by Hasik (2022), who intervened with two early childhood special education teachers. Specifically, the current study evaluated the effects of email PF on two teachers' social-emotional teaching strategies in the classroom setting, specifically on modeling of emotion word use (i.e., "You look so happy. I love your happy face."). The current study follows the procedures of the Hasik (2022) study, replicates Hasik procedures with two additional participants and extends the research by examining whether teachers' the frequency and variety of the use of emotion words generalized across different classroom activities, such as recess and small group activities.

The questions guiding this research are:

1. Does a brief training followed by email performance-based feedback (PF) increase early childhood teachers' use of emotion words during centers in early childhood classrooms?
2. Does a brief training followed by email PF increase early childhood teachers' use of different emotion words during centers time in early childhood classrooms?
3. Does early childhood teachers' use of emotion words lead to increases in children's use of emotion words?
4. Does early childhood teachers' use of emotion words lead to increases in children's use of different emotion words?
5. Do the teachers generalize their use of emotion words across different classroom activities (i.e., small groups activities, or recess)?
6. Do the teachers generalize their use of different emotion words across different classroom activities (i.e., small groups activities, or recess)?
7. Does the teachers' use of emotional words maintain after the termination of email?

CHAPTER II

Method[1]

Participants

The target participants were teachers in a university-based inclusive preschool in a southeastern state in the United States. Four participants were recruited through email. In detail, the researchers sent an email to the director of the preschool to indicate their interest in conducting a study and what the study was mainly about. Then the director introduced the study to the staff in the preschool and recruited the staff who had interests in the study. The teachers were included in the study if they (a) were lead teacher or assistant teacher, (b) used fewer than five emotion words during a 10-min pre-baseline observation, and (c) reported that they checked email at least once every 24 hours.

A demographic questionnaire was given to each participant before the implementation of the study to collect information on their age, gender, highest degree, degree major, year of paid experience in early childhood education settings, role in the classroom, their class information (e.g., number of children in the classroom, number of children with an Individualized Education Program (IEP) or Individualized Family Support Plan (IFSP), the age range of children) and email account (See Appendix A). The characteristics of the participants are shown in Table 1. All the participants were from different classes. The children from Donna and Jackie's classes were from two to three years old; the children from Fez and Kitty's classes were from three to five years old.

[1] The methods of the current study are identical to those of Hasik (2022). The methods and results are reported for a total of four participants; two participants participated in the Hasik (2022) study and two participants (Jackie and Kitty) participated in the current study.

Table 1

Characteristics of Participants

Name	Fez	Donna	Jackie	Kitty
Age	27	33	33	51
Race/ Ethnicity	White	White	Black	NA/ Other
Gender	M	F	F	F
Highest Degree Earned	Master	Master	H.S.	Master
Degree Major	Applied theatre of Intervention	Special Education for vision	NA	Education
Years of paid Experience in Early Childhood Education	2	10	10	10+
Current Role in Classroom	Assistant teacher	Lead teacher	Assistant teacher	Lead teacher
Number of Children in the Classroom	11	10	9	12
Number of Children with Disabilities/ At Risk	6	5	2	1

The implementers included two female graduate students pursuing their master's degree in early childhood special education at Vanderbilt University. The demographic information and experience of the implementers are shown in Table 2.

Table 2

Characteristics of the Implementers

	First implementer	Second Implementer
Age in Years	24	24
Race/Ethnicity	White, Non-Hispanic	Asian
Years in coaching teachers	0	0
Years in Early Childhood Special Education Field	6	6
Participants that coach	Fez and Donna	Jackie and Kitty

Settings

The study was conducted in inclusive classrooms in a university-based inclusive preschool in a southeastern state in the United States of America. The people present in this classroom setting were students, lead teacher, assistant teacher, and student teaching fellow. Generalization data collection was conducted on the playground or classroom. The training of emotion word use to teachers was held through Zoom or in situ meetings according to the participants' availability. The feedback was delivered online through email to teachers within 24 hours after the observation of the teachers' practice.

Materials

All observation sessions in the inclusive classroom were recorded with a lab iPad and then uploaded onto Box, a secure storage platform. Two researchers (i.e., a primary and a reliability data collector) reviewed the recording and coded the videos. Table 3 indicates the percentage of baseline, intervention, generalization, maintenance conditions conducted for IOA. The coders knew whether the videos were calculated for reliability, and they were separated during the coding without viewing each other's data.

Table 3

Percentage of Baseline, Intervention, Generalization, Maintenance Conditions Conducted for IOA

	Baseline		Intervention		Generalization		Maintenance	
	Emotion Words	Novel Words	Emotion Words	Novel Words	Emotion Words	Novel Words	Emotion Words	Novel Words
Average	97.25%	97.25%	88%	87%	96%	95.5%	100%	100%

Microsoft Excel was used to track and graph all the data. Microsoft Power Point was used to train the participants. The content of training included the importance of using emotion words, the ways to demonstrate emotion labeling, non-examples of emotion word labeling, steps to emotion labeling, and emotion word examples. Procedural fidelity data were collected through the procedural fidelity checklist after the email was sent.

Response Definitions and Measurement System

The teacher's total use of emotion words was the primary dependent variable (DV) and was used to make experimental decisions. The teacher's use of emotion words was operationally defined as the teacher labeling the child's emotion or modeling labeling their own emotion in an appropriate situation directed at one child. Examples included: "I like your happy face," when the participant is observing one child with happy face, or "I am so pleased that I can feel your happy." Non-examples included: "You must have some funny things to tell me!" when the participant was observing a child's happy face. This variable was measured via observations throughout baseline, intervention, maintenance, and generalization sessions. The duration of each observation session was 10 minutes. Timed-event recording was used to measure the teacher's total emotion word use. Emotion words repeated by a single teacher within 3 seconds were counted only once. However, the use of different emotion words within 3 seconds were counted separately. For instance, "I think you look sad and anxious" was counted two instances of emotion word use. The maintenance of the DV was measured following the termination of email PF. The generalization of the DV was measured during recess and small group activities time throughout the baseline, intervention, and maintenance condition.

The teacher's different uses of emotion words and the child's use of emotion words, including total use of emotion words and different uses of emotion words, were the secondary DVs. Child's use of emotion words was defined as the child labeling their or others' (i.e., the

teachers, fictional characters, or peers') emotions. Examples included "I feel so sad," or "The cat is angry." Non-examples included "I am hungry." This was measured via observations throughout baseline, intervention, maintenance, and generalization sessions. Recordings were coded through a timed event recording method. Emotion words repeated by a single child within 3 seconds were counted only once. However, the use of multiple emotion words within 3 seconds were counted separately. For example, "I feel angry and sad" was counted as two instances of emotion word use. Instances of same emotion words used by different children were counted as one different use of emotion words.

The screenshot of data summary spreadsheet of the DV is depicted in Figure 1.

Figure 1

Screenshot of Data Summary Spreadsheet for the DV

Video Name/Number?	Time Stamp?	Emotion word used?	Teacher/Child Use?	Novel Word (yes or no)?

Interobserver Agreement

Interobserver agreement (IOA) data were collected across all participants, dependent variables, and conditions (i.e., centers, small group activities, recess). The primary and reliability data collector observed and coded the behavior separately.

The training of the reliability data collector included the review of all operational definitions by using a codebook (See Appendix B), coding of training videos that included teachers' and students' emotion word use, and discussion about the discrepancies of the coding results with the primary data collector. Data collectors will practice coding until the primary and reliability data collector reached 100 % agreement on three consecutive training sessions.

IOA was calculated using a point-by-point agreement. Agreements were scored if an occurrence was recorded by both data collectors with no more than a 3 second difference.

The IOA was calculated as the number of agreements divided by the sum of agreements and disagreements (Ledford & Gast, 2018). The minimum acceptable IOA was 80%. If IOA fell below 80%, the primary data collector discussed discrepancies with the reliability data collector, and the two data collectors coded the behavior independently again. If IOA still fell below 85%, the reliability data collector received the training again. An example is shown in Appendix C.

Experimental Design

A multiple probe (MP) design across participants (Ledford & Gast, 2018) was used in this study for three reasons. First, the primary DV (i.e., teachers use of emotion words) was non-reversible and the independent variable (i.e., email feedback) could not be withdrawn. Due to this, a withdrawal design was not chosen. Second, the primary research questions in this study were demonstration questions; consequently, a multiple baseline or probe design was appropriate. Third, compared with a multiple baseline design (MB) across participants, a MP design across participants requires intermittent instead of continuous data collection during the baseline condition. Intermittent probes could not only minimize the distractions to participants but also reduce the participants' burden and conserve research team resources by requiring fewer observations and data collection. The MP design across participants included four time-lagged tiers and conditions included baseline, intervention and maintenance with generalization sessions conducted throughout the study.

Attrition bias and inconsistent effects were threats to internal validity that are at an increased likelihood when using a MP design across participants. First, attrition bias was a threat because if one of three participants withdrew from the study, then experimental control could not be established because there are fewer than three demonstrations available. This threat was mitigated by recruiting more than three participants and randomly assigning them to different tiers. Therefore, four participants were recruited, including two lead teachers and

two assistant teachers, in the current study. Second, inconsistent effects were more likely in this design due to little information about what variables are related to response (cf. Eldevik et al., 2010). This threat could be mitigated by carefully selecting participants with similar characteristics and getting familiar with the dependent and independent variables. Consequently, universal inclusion criteria were required to ensure the functional equivalence of participants in this study.

To identify functional relations, researchers visually analyzed the vertical level, trend, variability of each condition, and the trend, level, immediacy of change and extent of overlap across different conditions, and horizontal patterns in data across tiers. Additionally, the researcher ensured there were enough sessions in each condition for the visual analysis. As a result, there were at least three data points per condition in this study. In addition, the condition did not change until there were at least three consecutive data with similar values in the precedent condition.

Procedures

Pre-Baseline

Each potential participant was consented before data collection began. Prior to baseline data collection, the researchers observed and recorded the participants during centers in the covert observation booth without notifying the participants in advance to make sure they meet the inclusion criteria of using less than five emotion words in a 10-minute observation. Then baseline, intervention, maintenance, and generalization observations were scheduled according to the participants' availability and preference.

Baseline

The primary or the secondary data collector went into the classroom, observed, and recorded the participants during centers. During generalization sessions, they went to the playground to record recess or went into the classroom to record small group activity. After

the observation, the primary and secondary data collector watched the recording and coded the target behaviors. One of the researchers then sent an email to the participant within 24 hours of the observation. The email included a general feedback statement, a positive closing statement, and a request for response. In addition, the email did not include feedback specific to teachers' use of emotion words, or examples of using emotion words. An example is shown by Figure 2.

Figure 2

An Example of the Content of an Email during Baseline Condition

> Thank you for allowing me to come into your classroom and record yesterday. I loved how you allowed the children to explore with actual leaves from outside to play with and incorporate into their learning. You have a special way of incorporating real life experiences for your children in the classroom!
>
> Please respond to this email so I know you have received it!

Intervention

A brief training about emotion word use and email PF were included in the intervention. When the baseline data for the participant were stable, they entered the intervention condition. The participant received an individual training session about emotion word use given by the researcher in person. The training was scheduled based on the participant and researcher's availability and the participants' preference. The training included (a) appreciation for participating in the study, (b) the importance of emotion words, (c) demonstration of emotion word labeling and examples, and non-examples of emotion word labeling, (d) steps to emotion labeling (e) introduction of the electronic performance feedback, and (f) check of understanding of the training contents.

The intervention observations were scheduled after the intervention training session. Same as the baseline condition, the primary researcher and a reliability data collector observed and coded the behavior and the researcher who did the observation sent an email to

the teacher within 24 hours of the observation. What was different was that the email included not only general feedback statement, positive closing statement and request for response, but also feedback specific to teacher's use of emotion words, and one to three verbatim examples of use of emotion words. An example of the email is shown in Figure 3.

Figure 3

An Example of the Content of an Email during Intervention Condition

Thank you for allowing my team member to come in and observe you yesterday! I loved watching you talk to K* about calm downs strategies (e.g., take a breath!) after he got hurt. I am continuously impressed with your ability to label your student's emotions as well as express your own to them to see it being modeled appropriately!

Some examples I heard were:

- "There you are! That was a **SURPRISE**!."
- "Do you guys need some light in there, so you're not **SCARED**?"
- "You are being so **PATIENT**!"

Thank you for continuing your immaculate efforts towards using emotion words in your class. You are doing a phenomenal job!

Please reply to this email so I know you've received it!

Maintenance

The maintenance observation was scheduled according to the participants' and researchers' availability. The primary and reliability data collector observed and coded the behavior separately after the observation. No email was sent after the observation.

Generalization

Generalization sessions were conducted throughout the study, including the baseline, intervention, and maintenance conditions. The generalization observations were conducted in small group activities or recess. They were conducted every three to four baseline or intervention or maintenance sessions. The primary and reliability data collector observed and coded the behavior separately after the observation; however, no email was sent after the generalization observations.

Fidelity

Implementation Fidelity

Implementation fidelity was collected across all four teacher trainings to evaluate whether the training is implemented as intended. The implementation checklist is shown in Appendix D.

Procedural Fidelity

Procedural fidelity data were collected for 100% of sessions across all conditions and participants (Ledford et al., 2018). The procedural fidelity collector measured the behaviors by using a checklist for baseline, intervention, maintenance, and generalization conditions, which is shown in Appendix E. The acceptable level of fidelity was 80%. If the procedural fidelity was lower than 80%, the PF data collector would discuss discrepancies with the researcher who delivered performance-based emails. The researcher would then reflect on their implementation of sending email PF and adjust the practice if needed.

Social Validity

Two questionnaires, including social validity of procedures and social validity of goals, were used.

Social Validity of Procedures

Social validity of procedures (See Appendix F) included items that measured research participants' attitudes towards the use of emotion words and performance-based email feedback.

Social Validity of Goals

Social validity of goals (See Appendix G) included students' feedback on two videos. The participants were 10 graduate students from the early childhood special education program. They were asked to compare the teacher and children's use of emotion words during baseline and intervention conditions by observing two sets of two 1-minute video clips: one

set for one randomly chosen participant and another set for another randomly chosen participant. Two of the four video clips were from baseline sessions and the other two were from intervention sessions. The 1-minute video segment was randomly selected from the 10-minute video. The students were asked to rate the sets of baseline and intervention video clips for teacher and children's use of emotion words. Students did not know the sessions they rated were from baseline or intervention.

All questionnaires were delivered through paper and Redcap and completed anonymously by participants. A Likert Scale was used in the questionnaires to collect subjective evaluation data.

CHAPTER III

Results

Data Analysis

Data were graphed through Microsoft Excel after the completion of each observation session coding. The researchers made decisions about phase changes, such as changing from baseline to intervention or intervention to maintenance, when there were at least three consecutive data points with similar values, which indicated that the data are stable. The data in each condition were visually analyzed for level, trend, variability, immediacy of change, overlap and consistency. The data indicated there was a functional relationship between teacher training and email PF and increases in teacher and children's use of emotion words and different use of emotion words.

Pre-baseline Sessions

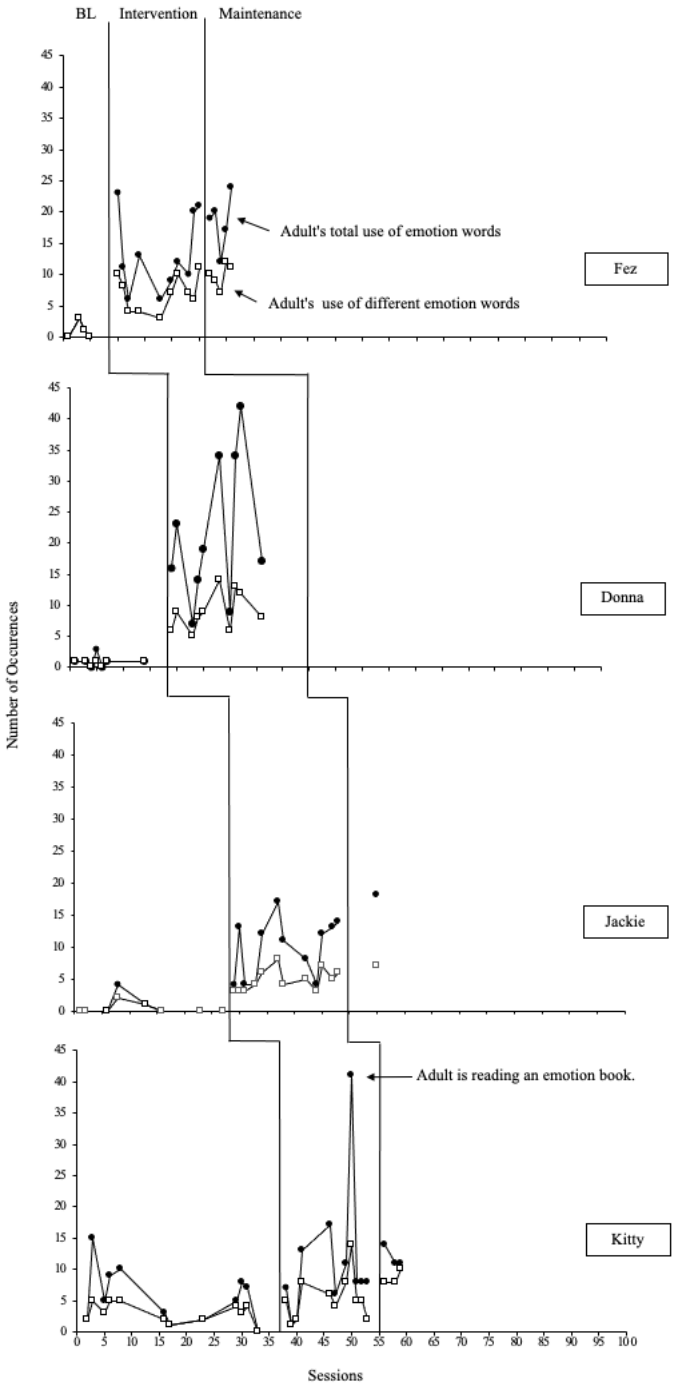
During pre-baseline, the 10-min observation during centers time, all participants used less than five emotion words.

Baseline, Intervention, and Maintenance Sessions

Adult's Total Use of Emotion Words. Figure 4 depicts all the four teacher participants' total and different uses of emotion words across baseline, intervention, and maintenance conditions.

Figure 4

Teachers' Use of Emotion Words



Participant 1 (Fez). In the baseline condition, the use of emotion words was at a consistently low level, ranging from zero to three, for all four sessions. Data were stable with no increasing trend. From baseline to intervention, the emotion word use increased from a low to moderate level. The change in level was immediate with zero emotion word use in baseline to a high level of emotion word uses in intervention. There were no data points in the intervention that overlapped the data in the baseline condition. Data in the intervention condition, although variable, remained at a higher level than baseline with six to 26 emotion words. In the maintenance condition, Fez's use of emotion words was unstable but remained at a moderate level, ranging from 12 to 20. There was no overlap with baseline condition.

Participant 2 (Donna). In the baseline condition, there were seven sessions. The use of emotion words was at a low level with a range from zero to three with no increasing trend. From baseline to intervention, the use of emotion word increased from a low to a moderate level immediately with variability observed in the intervention data. There were no data points in the intervention that overlapped the data in the baseline condition with a range from seven to 42. Due to scheduling issues, maintenance data were not collected.

Participant 3 (Jackie). In the baseline condition, there were six sessions. The use of emotion words was at a stable and low level, ranging from zero to four with no increasing trend. An increasing trend was detected immediately after phase change, where the data quickly rose from a low to a moderate level. There were four data points in the intervention that overlapped the data in the baseline condition. In the intervention condition, there were 12 sessions. Data were variable but overall, at a high level, ranging from four to 17. In the maintenance condition, Jackie's use of emotion words remained at a moderate level with 18 uses of emotion words. Maintenance data had no overlap with baseline data.

Participant 4 (Kitty). In the baseline condition, there were twelve sessions. The use of the emotion words was variable, ranging from zero to 15 with no increasing trend. From

baseline to intervention, emotion word use changed from a low to a moderate level immediately at phase change. After three intervention sessions, there was an increasing trend. Data were variable but remained at a slightly higher level than that in the baseline, ranging from six to 41. There were four data points in the intervention that overlapped the data in the baseline condition. There were 41 emotion word uses in the eighth intervention session when Kitty was reading an emotion book. Data in the intervention condition, although variable, remained at a higher level than baseline with six to 26 emotion words. Maintenance data had a decreasing trend with a range from 11 to 14. The level of maintenance data was similar as that of the baseline data. Two data points in the maintenance overlapped the data in the baseline condition.

Overall, the increase in of the use of emotion words after the intervention began across planned replications was consistent. Consequently, a functional relation between emotion word training and performance-based email feedback and adults' emotion word use was demonstrated because there were four demonstrations of effects. The implementation of training about emotion word use, and performance-based email feedback increased the use of emotion words among all the teachers who received the intervention. Due to the lack of three data points in the maintenance for at least three participants, a functional relationship between the email PF and teacher's use of emotion words during the maintenance was not presented.

Adult's Use of Different Emotion Words.

Participant 1 (Fez). In the baseline condition, the use of different emotion words was at a stable and low level for all the four baseline sessions with no increasing trend. From baseline to intervention, the use of different emotion words increased immediately. It had an increasing trend from a low to high level, from zero to 10 different emotion words use. There was one data point in the intervention that overlapped the data in the baseline condition. There were eleven sessions in the intervention condition. Intervention data was variable but

remained at a moderate level with a range from three to 11. From intervention to maintenance, the use of different emotion words remained at a high-level ranging from seven to 12. There was no data overlap compared with the data in the baseline condition.

Participant 2 (Donna). In the baseline condition, the use of different emotion words was at a low but stable level, ranging from zero to one, for the seven sessions with no increasing trend. From baseline to intervention, the different emotion words use increased in level immediately. It increased from a low to a moderate level, from one to six. There was no overlap with data in the baseline condition. Intervention data were stable and at a moderate level, with a range from five to nine and a slightly increasing trend. No maintenance data was collected due to schedule issues.

Participant 3 (Jackie). In the baseline condition, the use of different emotion words was at a stable and low level, ranging from zero to two, for the eight sessions with no increasing trend. From baseline to intervention, the different emotion words use increased gradually in trend. There were no data points in the intervention that overlapped the data in the baseline condition. Intervention data remained at a consistent and moderate level, with a range from three to seven. In the maintenance condition, Jackie still had a moderate level of different emotion words use.

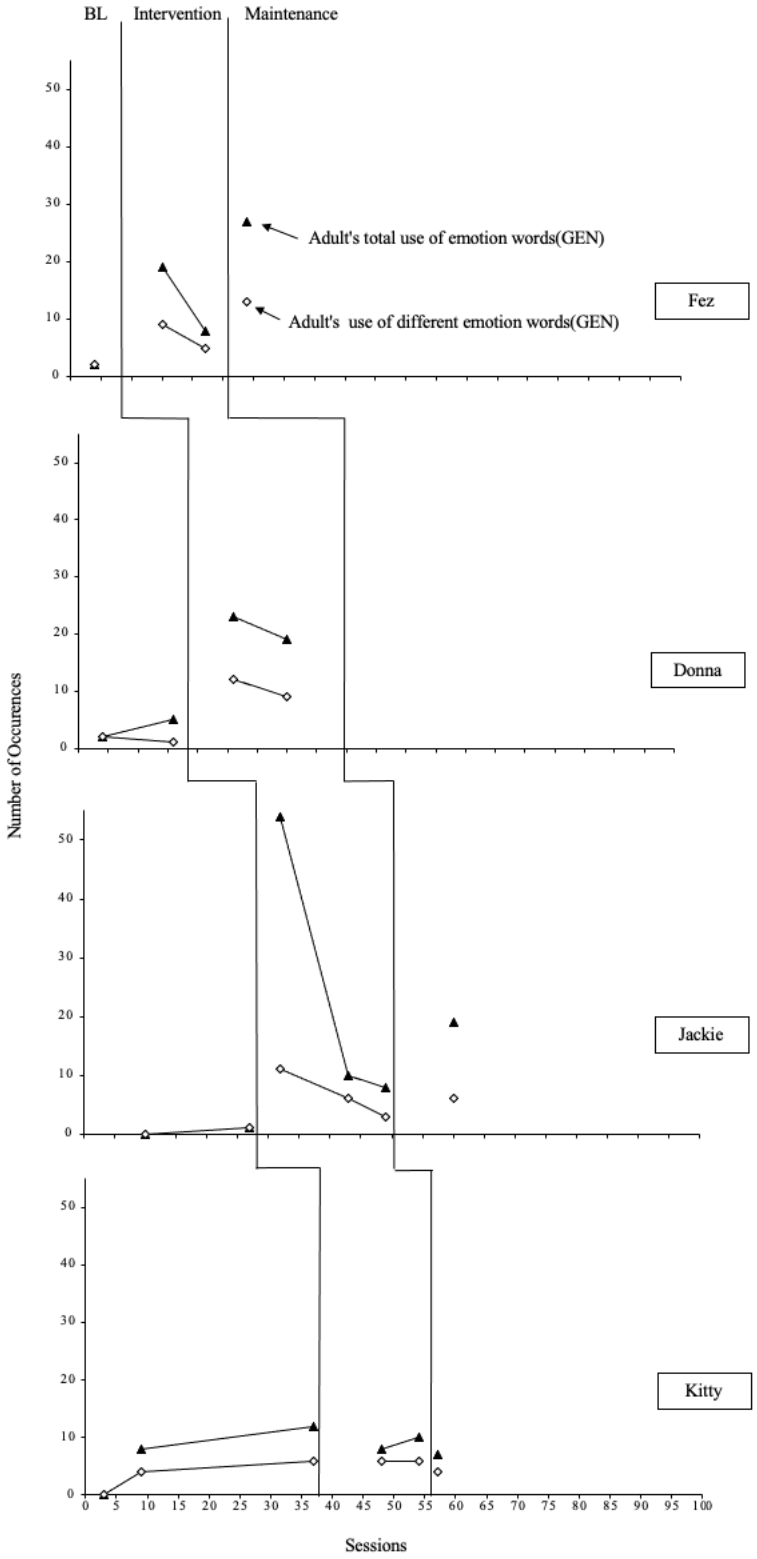
Participant 4 (Kitty). In the baseline condition, the use of different emotion words was at a variable level, ranging from two to five for the twelve sessions with no increasing trend. From baseline to intervention, the different emotion words use increased immediately from zero to seven different uses of emotion words. There were six data points in the intervention that overlapped the data in the baseline condition. Intervention data were variable and at a moderate level, with a range from one to 14. Maintenance data had an increasing trend with a moderate level and a range from 8 to 10. There were no data points in the maintenance that overlapped the data in the baseline condition.

Overall, the change of different uses of emotion words after the intervention across planned replication was consistent. For all the participants, the training and email PF immediately showed an increasing trend in their use of different emotion words in the intervention condition. In addition, the level of using different emotion words during intervention was higher than that during baseline. Consequently, a functional relation between emotion words training and email PF and adult's different emotion words use was demonstrated because there were four demonstrations of effects. The implementation of training and email PF increased the use of different emotion words among the teachers. Due to the lack of three data points in the maintenance for at least three participants, a functional relationship between the email PF and teacher's use of different emotion words during the maintenance could not be determined.

Adult's Use of Emotion Words in Generalized Settings. Figure 5 depicts all the four teacher participants' total and different uses of emotion words across baseline, intervention, and maintenance conditions in generalized settings (i.e., small groups time, playground).

Figure 5

Teachers' Use of Emotion Words in Generalized Settings



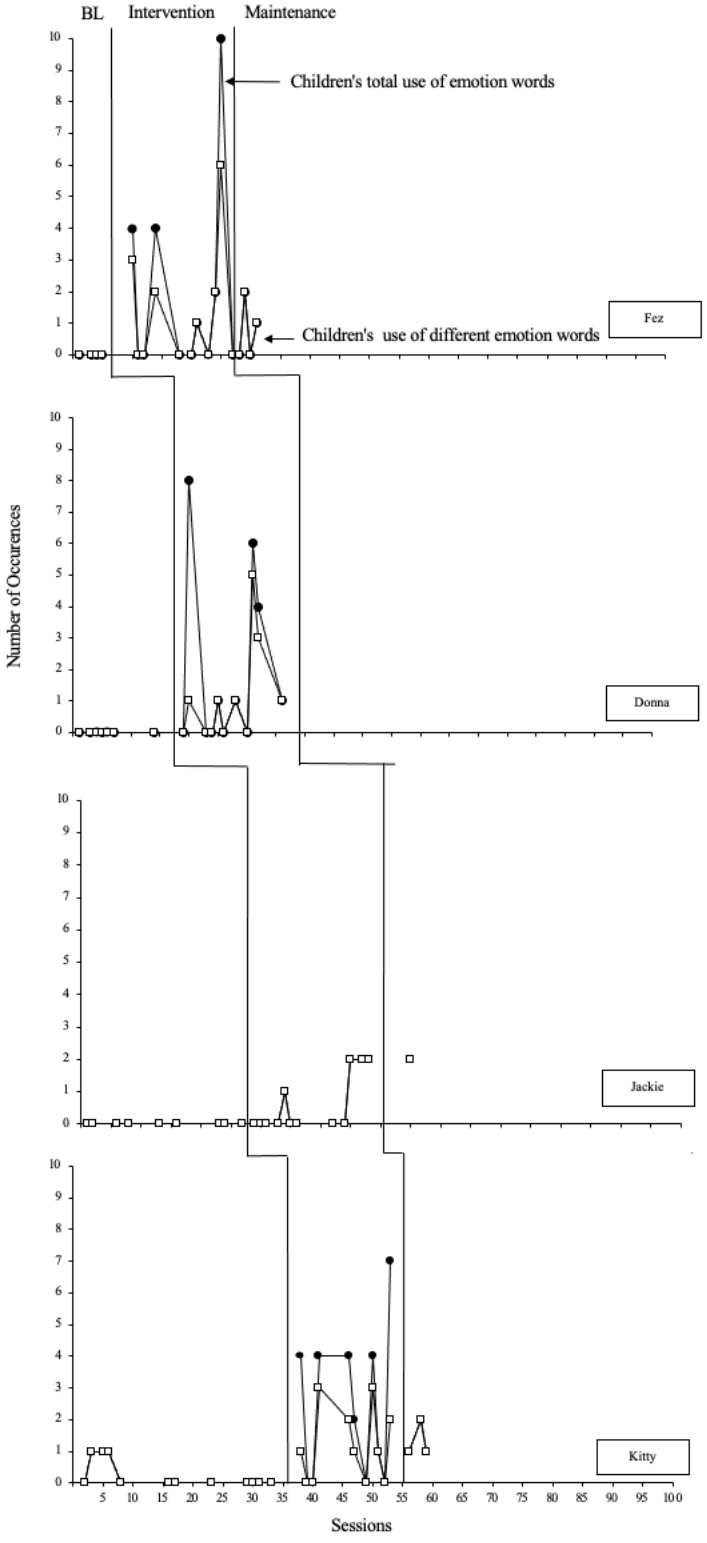
For the first three participants, the use of emotion words and different emotion words in generalized settings was at a stable and low level in the baseline condition with a range from zero to two. After the intervention, the use of emotion words and different emotion words increased to a moderate level, although there was a decreasing trend. The range of total emotion word uses was from eight to 54 and the range of different emotion word uses was from three to 11. In the maintenance condition, three participants showed a similar or higher-level use of total and different emotion word uses. However, due to the lack of three data points in baseline and intervention for at least three participants, a functional relationship between the email PF and teacher's use of emotion words in generalized settings was not presented.

Children's Total Use of Emotion Words. The children's total number of emotion word use was calculated by summing all the occurrences of emotion word use by any child in the class and the number of different uses of emotion words was calculated by counting how many kinds of emotion words the children in the class use in total.

Figure 6 depicts all the child participants' total use of emotion words across baseline, intervention, and maintenance conditions and children's use of different emotion words across baseline, intervention, and maintenance conditions.

Figure 6

Children's Use of Emotion Words



Fez's children. In the baseline condition, there was no use of emotion words for all the four sessions. From baseline to intervention, the emotion word uses immediately increased in level, from zero to four. The data were variable during intervention, ranging from two to ten. The data in six of the eleven intervention sessions overlapped with the data in the baseline condition. From intervention to maintenance, the data decreased in level. Maintenance data was stable and at a low level with a range from 0 to 2. However, the data were higher than that in the baseline session with an overlap of six points out of 11 interventions in total.

Donna's Children. There were no emotion word uses for all the seven baseline sessions. From baseline to intervention, the level of emotion word use did not increase immediately but an increasing trend began in the second intervention session. There were five of ten intervention data that overlapped the baseline data. Intervention data were variable with an overall decreasing trend, ranging from zero to eight. Four out of ten data points overlapped the data in the baseline condition. Due to schedule issues, no maintenance data were collected.

Jackie's Children. There was no emotion word use during the seven baseline sessions. From baseline to intervention, there was no emotion word use during the first four intervention sessions. However, an overall very modest increasing trend from zero to two was observed. Data during eight out of 12 sessions overlapped the data in the baseline condition. During the maintenance, Jackie's children maintained a moderate level use of emotion words.

Kitty's Children. In the baseline condition, there were 12 sessions. Baseline data for emotion words was stable and low in level ranging from zero to two. There was a slight increase in level from baseline to intervention. There were 11 intervention sessions. There were six data points in the intervention that overlapped the data in the baseline condition. Intervention data were variable and at an overall moderate level, with a range from zero to

seven. Maintenance data were stable and had a slightly lower level with a range of one to two. Two out of three data points in the intervention overlapped the data in the baseline condition.

Training and email PF for their increased children's use of emotion words in all four classrooms. Specifically, children's level of emotion word use remained low during the baseline condition, and then the level increased during intervention. Overall, the level of children's emotion word use during intervention was at a higher level than that during baseline. Although Jackie's data did not show a strong demonstration, the remaining tiers provided demonstration of effects. Consequently, a functional relation between emotion word training and performance-based email feedback and children's emotion word use was demonstrated because there were four demonstrations of effects. The implementation of training and performance-based email feedback increased the use of emotion words among the children in all the participants' classes.

Due to the lack of three data points in maintenance for at least three participants, a functional relationship between the email PF and teacher's use of emotion words in maintenance could not be determined.

Children's Use of Different Emotion Words.

Fez's Children. There was no emotion word use for all the four baseline sessions. Baseline data remained at a low level with zero emotion word use. From baseline to intervention, the use of different emotion words immediately increased from a low to a moderate level, increasing from zero to three. Data points in five out of eleven intervention sessions overlapped the data in the baseline condition. In the intervention condition, there were eleven sessions. Overall, the different emotion words use was at a moderate level, ranging from zero to six. Data had a decreasing trend. From intervention to maintenance, the different emotion words use remained at a low level with a range from zero to two. The

maintenance data were stable and low with a range from zero to two but remained higher than the baseline data with six data points overlapping with the baseline data.

Donna's Children. There was no different emotion word use during all seven baseline sessions. From baseline to intervention, emotion word use did not change in the first intervention session but had a slight increase from zero to one in the second intervention session. Generally, children's different emotion words use was at a low level, with a range from zero to one. Two out of five data points in the intervention overlapped the data in the baseline condition. The maintenance data was not collected.

Jackie's Children. Jackie's different emotion words use had the same data pattern with her total emotion word use. There was no different emotion word use for all seven baseline sessions. From baseline to intervention, the emotion word use did not change in the first intervention session but had a slight change from zero to one in the second intervention session. Generally, children's different emotion words use was at a low level, with a range from zero to one. Generally, data had an increasing trend. Two of five data points in the intervention overlapped the data in the baseline condition. Jackie's children remained at a similar level use of different emotion words in the maintenance.

Kitty's Children. In the baseline condition, the use of different emotion words was at a stable but low level, ranging from zero to one for all the twelve sessions. From baseline to intervention, different emotion word use showed an increasing trend from a low to moderate level. Intervention data was variable, with a range from zero to three and a fluctuating trend. Seven out of 11 data points overlap with the baseline data. Maintenance data was stable and had a similar level with a range of one to two. Two out of three data points in the maintenance overlapped the data in the baseline condition.

The implementation of training and performance-based email feedback increased the average use of different emotion words among the children in all intervened classes. The

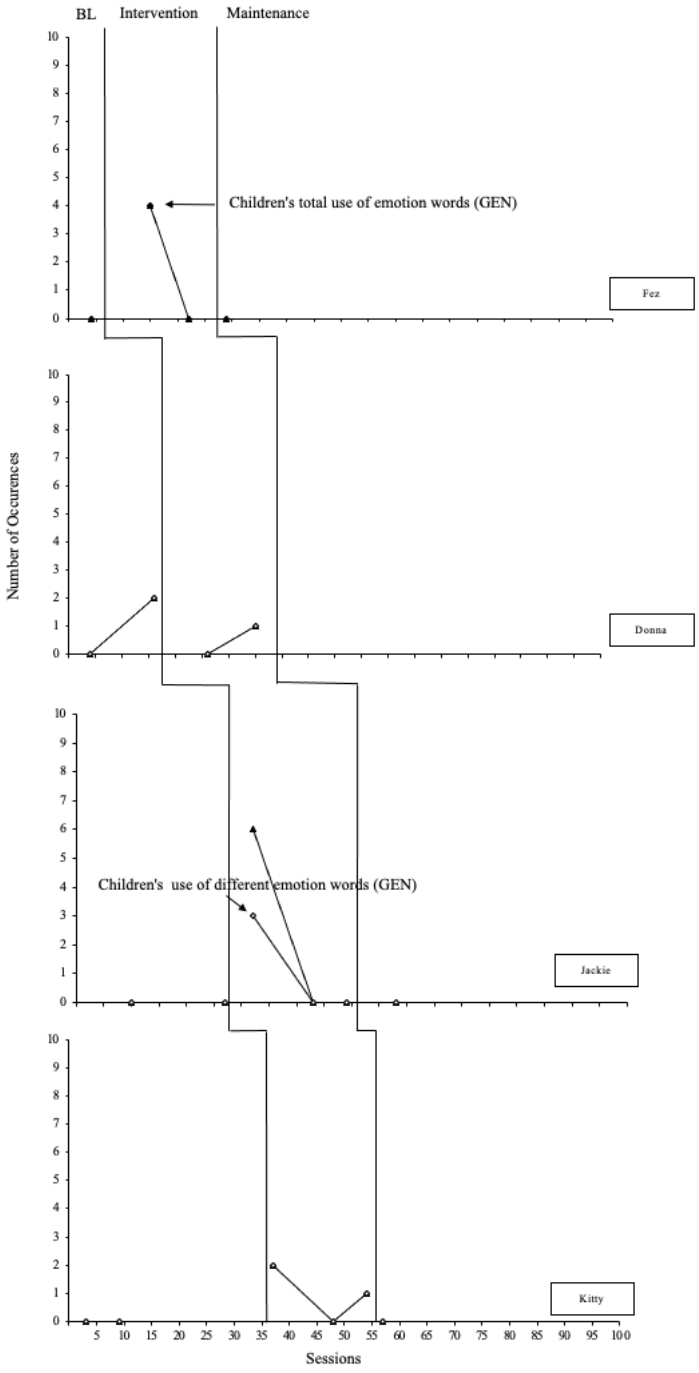
child participants' different emotion words use increased from low to moderate from baseline to intervention. The level of children's use of different emotion words during intervention was higher than that during baseline. For two of the four participants, it increased immediately. Consequently, a functional relation between training and performance-based email feedback and children's different emotion words use was indicated because there were four demonstrations of effects.

Due to the lack of three data points in maintenance for at least three participants, a functional relationship between the email PF and teacher's use of different emotion words in maintenance could not be determined.

Children's Use of Emotion Words in Generalized Settings. Figure 7 depicts all the children's total and different uses of emotion words across baseline, intervention, and maintenance conditions in generalized settings (i.e., small groups time, recess).

Figure 7

Children's Use of Emotion Words in Generalized Settings



For all the participants, the use of emotion words and different emotion words in generalized settings was stable and at a low level in the baseline condition with a range from zero to two. After the intervention condition began, the use of emotion words and different emotion words increased immediately for three of the four children. However, the data in the intervention was variable and zero for two participants after the initial high point. During the maintenance, all the three participants' students observed had zero use of total and different emotion word uses. Due to the lack of three data points in baseline and intervention for at least three participants, a functional relationship between the email PF and students' use of emotion words in the generalization sessions could not be determined.

Interobserver Agreement (IOA)

IOA was collected to evaluate the consistency and agreements between different raters on the same variable. The average IOA across all participants and children during all conditions and the percentage of the sessions when IOA was reported were shown in Table 4.

Table 4

Average IOA (% of sessions) for Interobserver Agreement of Total and Different Emotion Words Use

	Baseline		Intervention		Generalization		Maintenance	
	Emotion Words	Novel Words	Emotion Words	Novel Words	Emotion Words	Novel Words	Emotion Words	Novel Words
Fez	100% (100%)	100%	90% (100%)	88% (100%)	100% (100%)	100% (100%)	100% (100%)	100% (100%)
Donna	100%	100%	85%	84%	90%	88%	NA	NA

	(100%)		(73%)	(73%)	(100%)	(100%)		
Jackie	100% (100%)	100%	89% (25%)	89% (25%)	100% （33%）	100% （ 33% ）	NA	NA
Kitty	89% （ 83.33% ）	89% （ 83.33% ）	NA	NA	94% (33%)	94% (33%)	NA	NA
Average	97.25%	97.25%	88%	87%	96%	95.5%	100%	100%

*Note: NA means that there were no sessions calculated for IOA since one of the coders has been graduated and there is only one coder

Fidelity

Procedural Fidelity

Procedural fidelity was collected for 100% of sessions across all conditions (i.e., baseline, intervention, maintenance, and generalization conditions) and all participants. The results are shown in Table 5.

Implementation Fidelity

Implementation fidelity was 100% across all four teacher trainings.

Table 5

Average Procedural Fidelity Data across Participants and Conditions

	Fez	Donna	Jackie	Kitty
Baseline	95.83%	97.2%	95.83%	98.61%

Intervention	100%	100%	95.83%	95.45%
Maintenance	100%	100%	100%	100%
Generalization	100%	100%	83.33%	66.67%
Teacher Training	100%	100%	100%	100%

Social Validity

Social Validity of Procedures

Six teachers from a preschool completed the questionnaire, by using a 5-point scale. Average ratings of each item are shown by Table 6. Results showed that participants rated their willingness to complete a brief training and to receive feedback on the use of descriptive praise with young children lowest (3.83 and 4.0) and rated the feasibility and importance of using emotion words in the classroom relatively higher (both 4.33).

Table 6

Average Ratings of Each Item

	Willingness to complete a training and receive email PF on emotion word use	Willingness to complete a training and receive email PF on descriptive praise	Feasibility of using emotion words in the classroom	Importance of using emotion words in the classroom	Benefit of using emotion words in the classroom
Average Ratings	4	3.83	4.33	4.33	4.17

Social Validity of Goals

Ten graduate students from early childhood special education program watched four randomly selected, 1-minute video clips from a baseline or intervention session and evaluated the frequency and variety of the use of emotion words by teachers and children in the four video chips (Video A vs Video B; Video C vs Video D). Video A and Video B were Fez' s baseline and intervention session. Video C and Video D were Kitty's intervention and baseline session. The results are shown by Table 7. Students observed more teacher and child emotion word uses in Kitty's interaction with children during intervention; however, they did not observe more emotion word uses in Fez's interaction with children during intervention.

Table 7

Results of Social Validity of Goals

Items	Video A Baseline	Video B Intervention	Video C Intervention	Video D Baseline
Teacher uses more emotion words in this clip	6	4	6	4
Child uses emotion words more frequently in this clip	7	3	8	2
Child uses different emotion words in this clip	6	4	8	2

Notes: Video A: one one-minute video clip from a baseline session of participant Fez; Video B: one one-minute video clip from an intervention session of participant Fez; Video C: one one-minute video clip from an intervention session of participant Kitty; Video D: one one-minute video clip from an intervention session of participant Kitty

CHAPTER IV

Discussion

The research examined how training and performance-based email feedback affected teachers' use of emotion words, including total and different uses when interacting with young children, and children's use of emotion words.

Effects of Training and Email Performance-based Feedback

Teacher Outcomes

The results showed that there was a functional and positive relationship between training and performance-based email feedback and the teachers' increased use of emotion words and diversity of emotion words they used in intervened conditions. The functional relationship was not shown in generalized conditions and maintained conditions due to lack of data. Three participants showed a similar or higher level of emotion word use and different emotion word uses during maintenance comparted to their performance in intervention. This was consistent with the results of previous research by Barton et al. (2018), Martinez et al (2021) and Robinson et al. (2020), which also indicated a functional relationship between brief training and email PF and teacher's increased use and diversity of emotion words in intervened conditions.

Child Outcomes

The results also showed that there was a functional and positive relationship between training and performance-based email feedback and the children's increased use of emotion words and diversity of emotion words they used in intervened conditions. On average, children increased the emotion word uses by one. Some emotion words children used included "sad", "angry", "love". The functional relationship was not demonstrated in generalization and maintenance conditions due to lack of sufficient data; however, the

children from three participants' classes showed a higher level of emotion word use and different emotion word uses during maintenance than baseline.

There are several limitations in the study. Other variables, such as children's age, might have affected the results of the study. Across all the participants, Jackie's children had the minimum average number of emotion word uses probably because they were still at a young age (2-year-old~ 3-year-old), which corresponds with the early stages of language development. Consequently, it may have been more difficult for them to understand abstract concepts, such as emotions. At this age, teachers can label their own emotions and prompt the children to use emotion words in order to increase their exposure and learning opportunities related to emotional language. Future researchers should consider targeting different emotion word examples for children from different ages.

There were some extreme or outlier data, such as Jackie's first generalization session in the intervention condition and Kitty's eighth intervention session probably because Jackie or Kitty was reading an emotion book at that time.

The study replicated Tang et al. (2020)'s research and built on previous research by focusing on one behavior of the teacher at one time, providing evidence on teacher's and children's increased and diverse use of emotion words in the intervened settings and providing data on teacher's and children's use of emotion words in the generalized settings (i.e., small groups, recess) where the feedback was not provided.

Limitations and Future Research

Tang et al., (2020) indicated that the functionality of the emotion word list was limited. Therefore, in this study an emotion word list was not used, and instead a definition of emotion words and examples were used to teach participants the emotion words.

Although this study provides insights into the effects of training and email feedback for teacher's social-emotional practice, it is important to acknowledge some of its limitations.

Firstly, it should be noted that the examples of emotion words taught to all participants remained consistent throughout the study, despite variations in the age range of their students. Consequently, future research may benefit from designing coaching content tailored to the individual needs of participants and their children. Secondly, other variables may have influenced the teachers' use of emotion words, such as the number of children present and the activity's content. For instance, Kitty had an extremely high use of emotion words in one session when she was talking about emotion words. To account for these variables, future research may consider establishing criteria for the settings in which interventions are conducted, such as not using samples where the topic is emotion word. Variables can also include teacher's beliefs and practice. The third participant did not show a strong demonstration of effect probably because her students are from two to three years old, and she thought she could only talk a limited number of emotion words to them. This is because in one conversation with her, she expressed the idea that the little kids could not understand some complex emotions, thus it was not necessary to talk these emotions to them. This may be the reason why she had fewer emotion word use increases. The fourth participant did not show a strong demonstration of effect possibly because she is the most experienced teacher with the longest years of teaching, and it appears that she has already used a high level of emotion words before intervention based on her baseline data. However, her children showed a strong demonstration of effect probably because she prompted the children to use more emotion words after the implementation of the intervention, such as by asking "How do you feel?". Future researchers can conduct more observations, such as three 10-minute observations, and use the average use of emotion words to choose the participants. Thirdly, issues surrounding scheduling were encountered due to insufficient time allocated for generalization and maintenance sessions Irregular generalization sessions and maintenance sessions were conducted as a result, which could not provide evidence of a functional relation

and ask the research questions. To address scheduling issues, it is crucial to meet with the participant before to establish a schedule that allows for the regular and sufficient conduct of generalization and maintenance sessions, as this is essential for promoting the transfer of skills across different settings and time. In addition, several studies suggested the impact of email PF was hard to generalize across settings and most teachers did not increase the use of target behaviors during the covert observations (Barton et al., 2013, Barton et al., 2016; Barton et al., 2018). There were not any covert observations conducted in this research since it is difficult to hear from the observation booth for some participants, and more covert observations can be conducted in further research since covert observations can evaluate whether the participants can use emotion word independently and voluntarily.

The social validity data indicated that the students perceived the training and email feedback to be effective in enhancing teacher social emotional practices and promoting children's social-emotional learning. However, it is worth mentioning that the study's social validity assessment may be improved by using longer video clips, such as five-minute clips, to facilitate the identification of emotion-word use of both teachers and children, to enhance the clarity of social validity results.

Conclusions

The study findings indicate that brief training and email PF are effective in enhancing teachers and children's use of emotion words and increasing the variety of emotion words uses in intervened settings (i.e., centers). Even children as young as 2-year-olds, could benefit from emotion word conversation. Therefore, it is meaningful to deliver email feedback to children from a wide range of age and it is important for teachers to use emotion words in class. Further research is necessary to explore how to make the emotion words more individualized and developmentally appropriate for children from different ages. Overall,

such coaching practice can promote sustained improvements in teacher's practice and emotional literacy among children from two to five.

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Appendix A

Teacher Questionnaire

Teacher name: _____

Age: _____

Race/ Ethnicity: _____

Gender: _____

Highest Degree Earned: _____ Degree Major: _____

Years of Paid Experience in Early Childhood Education: _____

Current Role in Classroom:

Lead Teacher _____Assistant Teacher _____Other (please explain) _____

Do you check your email at least once every 24 hours?

_____Yes _____No

Are you willing to receive performance-based feedback on your use of recommended practices?

_____Yes _____No

Number of children in the classroom: _____

Number of children with Disabilities/ At Risk: _____

Appendix B

Codebook for Emotion Word Use

General rules:

1. If the teacher or the child uses an emotion word, but is not in the frame, this emotion word use cannot be counted

2. Timed event recording is used to mark the onset of emotion word use. The onset of emotion word use is when the participant says the emotion word, not when the participant starts the sentence that includes the emotion word.

3. If the teacher or the child uses one emotion word and then uses the same emotion word again, two instances of emotion word use can be counted regardless of the latency between the two uses of this emotion word.

Measurement

1, Emotion word
- Definition: Word that describes a conscious mental reaction towards something
- Example: Happy, angry, sad, frustrated, disappointed; Statements starting with, "I feel _____"
- Non-Examples: Things that can impact your emotional state (i.e., hungry, silly, sick, un/healthy, sleepy, tired) or describe a physical state (safe, tired, un/comfortable, hurt)

2. Teacher's use of emotion words
- Definition: Labeling of an emotion in regard to self or others initiated by self or used to prompt children
- Example: Teacher: "I like your happy face"; Teacher: "I can feel your excitement to read this book together"; Teacher: "I'm feeling frustrated! How are you feeling?"
- Non-Examples: Teacher: "You must have some funny things to tell me!" when observing a child's grinning face.

3. Child's Use of Emotion Words
- Definition: Use of an emotion word in regard to self or others initiated by self or response prompted from a teacher
- Example: Teacher: "How are you feeling right now?" Child: "I feel frustrated"
- Non-Examples: Child: "It hurt my arm when she pushed me"

4. Novel words
- Definition: Emotion words that were not previously coded within the session.
- Example: During an observation, the emotion words happy, sad, happy, and excited were used. The first coded happy, sad, and excited are all considered novel.
- Non-Examples: Happy was used at 1:10 min. in the observation and then again at 3:46 min. Happy is no longer novel after the 1:10 coded use.

Appendix C

Example of Point-by-point IOA Calculating

Interval/timestamp	Coder 1 response: Emotion Word (write word)	Coder 1 response: New or Same (write N or S)	Coder 2 response: Emotion Word (write word)	Coder 2 response: New or Same (write N or S)	Agree or Disagree Emotion Word?	Agree or Disagree New Word or Same Word?
2.11	love	N	love	N	A	A
5.54	love	S	love	S	A	A
5.59	love	S	love	S	A	A
6:02	Sad	N	sad	N	A	A
Agreements					4	4
Disagreements					0	0
Total					4	4
Percent					1.00	1.00

Note: This is a data collection sheet from an intervention session, with any discrepancies between the primary and secondary coders being denoted as "D" for disagreements and "A" for agreements.

Appendix D

Implementation Fidelity Collected across Training

Highlight "Y" for correct implementation, "N" for incorrect implementation, "NA" for Not applicable		
Did the presenter provide an introduction to the research?	Yes	No
Did the presenter provide a definition of use of emotion words?	Yes	No
Did the presenter provide examples and non-examples of the use of emotion words?	Yes	No
Did the presenter provide possible procedures to increase the use of emotion words?	Yes	No
Did the presenter provide an emotion word list?	Yes	No
Did the presenter verbally check for understanding?	Yes	No
Percentage Correct (Total Y/ Total Y + N) (%)		XX%

Appendix E

Procedural Fidelity Collected During Each Session

Highlight "Y" for correct implementation, "N" for incorrect implementation, "NA" for Not applicable			
Baseline			
Email is sent within 24 hours	Yes	No	NA
Email includes appreciation	Yes	No	NA
Email includes general feedback statement	Yes	No	NA
Email does not include performance-based feedback	Yes	No	NA
Email includes positive closing statement	Yes	No	NA
Email includes request for response	Yes	No	NA
Intervention			
Email is sent within 24 hours	Yes	No	NA
Email includes appreciation	Yes	No	NA
Email includes general feedback statement	Yes	No	NA
Email does not include performance-based feedback	Yes	No	NA
Email includes positive closing statement	Yes	No	NA

Email includes request for response	Yes	No	NA
Maintenance			
No email is sent within 24 hours	Yes	No	NA
Generalization			
No email is sent within 24 hours	Yes	No	NA
Percentage Correct (Total Y/ Total Y + N) (%)			XX%

Appendix F

Social Validity of Procedures Questionnaire

The use of emotion words can be defined as labeling the child's emotions or modeling labeling their own emotions in an appropriate situation directed at one child, such as "I like your happy face" or "You feel sad".

1. How willing would you be to complete a brief training and receive feedback on your use of emotion words with young children?

1	**2**	**3**	**4**	**5**
Not willing at all		*Somewhat willing*		*Absolutely willing*

2. How willing would you be to complete a brief training and receive feedback on your use of descriptive praise with young children?

1	**2**	**3**	**4**	**5**
Not willing at all		*Somewhat willing*		*Absolutely willing*

3. How feasible do you think using emotion words are in your classroom?

1	**2**	**3**	**4**	**5**
Not feasible at all, it is unrealistic.		*Somewhat feasible, though complicated*		*Extremely feasible, ready to implement today!*

4. How important is it to use emotion words in your classroom?

1	**2**	**3**	**4**	**5**
Not important at all		*Somewhat important*		Extremely important

5. Does your use of emotion works increase children's use of emotion words in your classroom?

1	**2**	**3**	**4**	**5**
Not important at all		*Somewhat important*		Extremely important

Appendix G

Social Validity of Goals Questionnaire

The use of emotion words can be defined as occurring when the teacher models an emotion labeling statement or models in an appropriate situation directed at one child or when child use any modelled or unmodelled instance of vocal emotion words.

Please circle your response to the questions below.

In which video does the teacher appear to be using more emotion words?

Video A *Video B*

In which video does the child appear to be using emotion words more frequently?

Video A *Video B*

In which video does the child appear to be using different emotion words to explain the similar feeling?

Video A *Video B*

In which video does the teacher appear to be using more emotion words?

Video C *Video D*

In which video does the child appear to be using emotion words more frequently?

Video C *Video D*

In which video does the child appear to be using different emotion words to explain the similar feeling?

Video C *Video D*