Journal of Youth and Adolescence (2018) 47:1684–1696
https://doi.org/10.1007/s10964-018-0885-7

EMPIRICAL RESEARCH

Experiencing and Learning About Emotions: A Longitudinal Analysis of Youth Program Participants

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Received: 21 February 2018 / Accepted: 12 June 2018 / Published online: 30 June 2018

Abstract

Organized youth programs provide a context where adolescents experience strong emotions and may develop new ways of thinking about and dealing with emotions. The current study examined youth's reports of positive and negative emotions arising during the course of their work in different types of project-based programs; learning about emotions from different sources (e.g., from observing peers, interacting with adult staff, or engaging in self-reflection); and longitudinal associations between emotional experiences and learning. Quantitative data were collected at two time points from 319 youth (57% female; *M* age = 15.8 years; 33% Latino, 29% Black, 32% White, 6% other) participating in 14 Midwestern programs focused on Leadership, Arts and Performance (Arts), and Science, Technology, Engineering, and Math (STEM). Overall, positive emotions occurred more frequently than negative emotions, but emotional experiences differed based on the focus of the program. There were few significant differences in emotional learning from various sources (self, peers, staff) across the three types of programs. Multiple regression models controlling for prior learning indicated that, consistent with theory, positive emotions predicted subsequent learning about emotions from all sources. In contrast, negative emotions predicted increased learning from peers but decreased learning from self, suggesting that experiencing negative (vs. positive) emotions may lead youth to attend to different sources of information. The study's findings have implications for theory, research, and practice.

Keywords Organized youth programs · Emotional experiences · Emotional learning, Longitudinal

Introduction

During adolescence, youth experience a more complex range of emotions and greater potential to reflect on their own and other people's emotions compared to childhood (Rosenblum and Lewis 2003). Organized youth programs, formal group activities through school-based or community-based organizations outside of classroom hours, represent an important context for adolescents' emotional growth (e.g., Larson and Brown 2007; for reviews, see Mahoney et al. 2009; Pittman 2017). For example, a quantitative study found that structured youth activities afforded greater opportunities for developing emotion-related skills than time with friends and in class (Hansen et al. 2003; see also Vandell et al. 2005). Adolescents in these programs often experience strong positive and negative emotions (Rusk et al. 2013); in turn, strong emotions can contribute to the process of seeking out learning opportunities (Baumeister et al. 2007). Prior research in this area has focused primarily on what is termed social and emotional learning – the acquisition of skills to respond adaptively to demands, regulate emotions, achieve goals, maintain positive relationships, and handle challenging situations constructively (Durlak et al. 2011; for review, see Smith et al. 2016). These skills can be considered the outcomes of emotional learning. Less well studied is the question of how youth gain these skills – how they learn to recognize, react to, and deal with emotions - and the extent to which experiencing positive and negative emotions is connected to emotional learning from different sources of information available within programs.

To address this gap, the current study examined youth learning about emotions from three sources: through experimentation and self-reflection as they experience emotions themselves (e.g., Martin et al. 2013); by observing

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and interacting with peers as they work together on projects (e.g., Perry 2013); and from program staff, who provide encouragement and help youth overcome challenges, including emotional upsets (e.g., Rusk et al. 2013; Smith et al. 2016). We also examined whether positive and negative emotions were differentially related to learning about emotions from these different sources. Because programs may afford distinct opportunities for emotional experiences and learning based on their focus (e.g., Hansen et al. 2003; Larson et al. 2006), we explored the potential role of the type of program (Arts, Leadership, STEM). Our review of the literature is selective, with the goal of providing a background for our study of these processes in project-based youth programs. In this type of program, youth engage in an extended arc of work that results in an end product (e.g., public performance of a play, community workshop; Larson and Angus 2011).

Youth Programs as Contexts for Experiencing and Learning About Emotions

Experiencing emotions

An effective program will engage, motivate, and mimic real-life work for adolescents (Mahoney et al. 2005). Adolescents in project-based programs are often highly invested in their work, and experience both positive and negative emotions as they work toward project goals and encounter successes or challenges (Rusk et al. 2013). For example, youth in a high school theater program described a range of emotions – including disappointment, stress, anger, excitement, and happiness – dependent on situations and conflicts that arose as they worked on a major musical production (Larson and Brown 2007). In a quantitative study, youth reported more positive than negative emotions across different types of activities (e.g., sports, arts; Shernoff and Vandell 2007). Similar findings were reported in a study of youth in summer STEM programs (Beymer et al. 2018). Adolescents in the theater program also described learning from their emotional experiences; for example, using their understanding of negative emotions to develop strategies to relieve their intense feelings, and channeling positive emotions as a source of motivation (Larson and Brown 2007). Taken as a whole, this body of work suggests that youth programs represent a context where youth will experience a range of emotions that can lead to emotional growth.

Learning about emotions

Emotional experiences within programs have been linked to different types of emotional learning. Project-based programs may foster skills for recognizing and dealing with emotions in the context of a meaningful and challenging project (Rusk et al. 2013). According to Larson and Brown (2007), youth's accounts of emotional episodes indicated that they "were beginning to understand that emotional episodes were shaped by fairly predictable systemic processes – that emotions were not out of their control; they could understand their causes and intervene to influence how they unfold" (p. 1094). Similar findings were reported in an earlier focus group study of youth participating in a range of afterschool and community-based programs (Dworkin et al. 2003). Youth in these studies described learning about emotions from three sources: themselves, peers, and program staff.

Learning from self-reflection and personal experience allows youth to see themselves as agents in their emotional growth (Dworkin et al. 2003). Youth respond to the demands of the program by comparing their ideas, reflecting on their own patterns, and seeking to understand how they learn and feel emotions (Larson and Brown 2007; Martin et al. 2013). Larson and Brown (2007) reported that youth framed their learning by saying "I learned that" or "I discovered that" by observing themselves and noticing how their negative emotions played out in various situations. They then developed strategies to deal with disappointment, anxiety, and stress, such as avoiding social interactions when they were angry or figuring out ways to calm themselves down (Larson and Brown 2007). Youth also described managing positive emotions, for example, they channeled satisfaction and excitement by celebrating successful work and motivating themselves to increase creativity and problem-solving (Larson and Brown 2007). By learning about emotions from themselves, youth are active producers of their own development.

Many studies attribute social-emotional development in youth programs to the projects and roles that help youth work through obstacles and celebrate successes in partnership with peers (e.g., McLauchlan and Winters 2014; for review, see Vandell et al. 2015). Youth attribute much of their learning to collaborations with peers (e.g., Larson and Brown 2007). In a qualitative study of emotional development in four youth programs, Rusk and colleagues (2013) described how youth learned from peers. For example, youth learned what to do when upset by observing peers dealing with strong emotions, or talking about an upsetting situation with peers. Similarly, youth in the theater program described learning how individuals differed in emotional expression by observing their peers and noting the differences in personality type (Larson and Brown 2007). Encouragement from peers was also important; when youth completed good work, or got something right, peers encouraged them and provided positive feedback, stimulating youth to want to get better and continue growing in their roles (Larson and Brown 2007). Observing and

interacting with peers helps youth understand what emotions might be stimulating or hindering them from reaching their goals.

Adult staff are important facilitators of emotional learning for youth in organized programs. Rhodes (2004) postulated that caring, supportive relationships between program staff and youth are key to promoting positive emotional development. A variety of staff practices are theorized to contribute to positive developmental outcomes for youth (for review, see Smith et al. 2016). Program staff can encourage youth to solve problems by talking through frustration or helping them navigate complex situations, support youth as they tackle new challenges, and teach youth effective ways to deal with their emotions (Rusk et al. 2013). For example, youth in the theater program said that adult leaders were available to talk through emotional issues, provided ways to channel frustration, communicated openly about emotional issues, and created strategies to change negative emotions (Larson and Brown 2007). Therefore, it is likely that youth look to adult program staff as a source of emotion learning.

Do Emotions Lead to Learning?

Emotion theory suggests that the interplay of felt emotions and cognitive processing contributes to learning (e.g., Baumeister et al. 2007). More specifically, the broaden and build theory of emotion states that "discrete positive emotions such as joy and interest share the ability to broaden people's momentary thought-action resources" (Fredrickson 2001, p. 220). This theory holds that those who have positive emotions are likely to play, explore, and survive because positive emotions broaden the scope of attention, cognition, and action. In contrast, the typical response to negative emotions is to seek escape or alleviation (Baumeister et al. 2007). These different reactions to positive and negative emotions may result in differential learning.

Experiencing positive emotions has been shown to elicit motivation and increase problem-solving thinking in different contexts, including schools (e.g., Reschly et al. 2008) and youth programs (e.g., Larson and Brown 2007). These outcomes may enhance youth's ability to learn about emotions from others and themselves. Negative emotions on the other hand often elicit a strive towards alleviation. Among youth in the theatre program, strategies were needed to deal with disappointment, anxiety, and stress; these included anticipating and managing negative emotions as opening night approached, or dealing quickly with interpersonal conflicts (Larson and Brown 2007). In other words, youth had to quickly learn about managing their emotions to channel and change the negative emotions they did not want (Izard 2002). Both positive and negative emotions lead to learning through different processes of seeking balance and pursuing desired outcomes. These theories make it evident that positive emotions are likely to promote learning about emotions, but it is less clear about how negative emotions might be connected to learning.

Differences in Emotional Experiences and Learning by Type of Program

A central concern in the current study is whether emotional experiences and learning about emotions from different sources vary depending on a program's focus and activities. To our knowledge, prior studies have not examined the same emotion variables across the types of programs we studied; however, there are indications that the focus of a program may be linked to its emotional climate and learning opportunities for youth. For example, Shernoff and Vandell (2007) reported some differences in positive and negative emotions between various types of activities (e.g., sports, arts, socializing), although they did not report results of statistical comparisons. More pertinently, Larson and colleagues conducted two studies of youth's developmental experiences in different types of organized youth programs (Hansen et al. 2003; Larson et al. 2006). Programs were categorized as: (1) faith-based and service, (2) academic and leadership, (3) performance and fine arts, (4) community and vocational organizations, and (5) sports. Among other variables, these studies examined emotion regulation (a scale with items such as learning to control one's temper and learning that emotions affect performance). Although the emotion construct and types of program are different from those examined in the current study, this work is informative because it revealed differences based on the type of program. For example, mean levels of emotion regulation were lower in academic and leadership programs than in either sports or faith-based and service activities, with performance and fine arts in between (Hansen et al. 2003). Other studies indicate that involvement in the arts (particularly drama) is linked to specific types of emotional growth (e.g., emotional control and empathy; see Goldstein et al. 2017), which may result from the emotional climate of these programs (cf. Larson and Brown 2007). This body of work informed the current study by suggesting that specific type of programs might offer different opportunities for experiencing and learning about emotions.

Current Study

The current study investigated emotional experiences and learning within Leadership, Arts, and STEM programs. Three objectives were addressed. The first objective was to evaluate whether experiences of positive and negative emotions differed across the three types of programs. Based

on theory and prior research, we hypothesized that youth would report higher levels of positive than negative emotions in all types of programs, but that Arts programs would elcicit negative emotions more frequently than Leadership or STEM programs. The second objective was to explore learning about emotions from different sources (i.e., self, peers, and staff) across programs. Given the lack of theory and research on this topic, we did not formulate specific hypotheses for this objective. The third objective was to examine longitudinal associations between emotional experiences and subsequent emotional learning from self, peers, and staff across programs. The broaden and build theory suggests that positive emotions expand thought-action resources (Fredrickson 2001); therefore, we hypothesized that positive (but not negative) emotions would be linked to increased learning about emotions from all three sources. We did not formulate specific predictions about differences in these associations based on the type of program, given the lack of prior research on this topic.

Methods

Procedures

Data were from a larger multi-informant, multi-method longitudinal study examining positive youth development in the context of 14 programs serving high school age adolescents. Data were collected from youth, program leaders and parents over a program cycle (typically a school year). All were project-based programs focused on arts, leadership, or STEM that met specific criteria associated with program quality (e.g., minimum of 100 contact hours, staff with at least 2 years of experience, low youth drop-out rates) and other characteristics (e.g., mixed gender). To obtain geographic diversity, programs were recruited from three locations (Chicago, central Illinois, and Minneapolis/Saint Paul).

Study procedures were approved by Institutional Review Boards at the study investigators' home institutions. At each program, a member of the research team presented information about the study and gave interested youth a parent information letter (in English and Spanish) that provided instructions for opting youth out of the study. Youth provided written assent at the first data collection session. Across the 14 programs, most eligible youth (94.4%; $N = 355$) participated in the study. Structured questionnaires were administered to youth at four-time points using audio computer assisted self interviewing (audio-CASI) on small laptop computers (Raffaelli et al. 2016). All programs completed Time 1 data collection early in the program cycle, and Time 4 at the end of the cycle; Times 2 and 3 were spaced approximately evenly in between, taking into account program-specific events related to youth's projects. Emotions data were collected at the second and third time points; for readability, in the current article we refer to these as Time 1 (T1) and Time 2 (T2). A total of 319 youth (89.9% of the study participants) provided emotions data at these time points and comprise the sample for the current paper.

Sample and Programs

The analytic sample consisted of 319 youth (57% female) aged 13 to 18 (M age = 15.8, $SD = 1.41$). Youth were ethnically diverse: 33.0% Latino, 28.8% Non-Hispanic Black, 32% Non-Hispanic White, and 6% other. The majority of youth had been born in the United States (86.8%), but 39.0% spoke a language in addition to or other than English at home. Most youth (60.7%) lived with two (or more, in cases of joint custody) parents (mostly biological or adoptive); 30.5% lived with one parent (mostly mothers) and 8.7% with a guardian or other parent figure. Youth had been in the program an average of 1.56 years ($SD = 1.63$, range 0–6).

The 14 programs were classified into three types based on their mission and primary activities: Leadership, Arts, and STEM. A description of each program and key youth characteristics are displayed in Table 1. The four Leadership programs ($n = 100$ youth, 31.3%) focused on activities that fostered organizational and leadership skills by allowing youth to be in charge of projects, activities, or teams. The five Arts programs ($n = 136$, 42.6%) involved activities that focused on a creative product such as a performance, documentary film, or mosaic. The five STEM programs ($n = 83$, 26.1%) focused on building technical skills related to science, technology, agriculture, and wildlife. For use in regression analyses, two program dummy codes were created: *Leadership* (1) vs. all *other programs* (0) and *Arts* (1) vs. all *other program* (0). Inclusion of both dummy codes in a single regression analysis tests the effects of each of the three types of programs (Tabachnick and Fidell 2007, p. 112).

Prior research has used a similar approach of grouping programs based on their primary focus (Eccles and Barber 1999; Fredricks and Eccles 2006; Larson et al. 2006). As a check on the categorization of programs by type, three Repeated Measures ANOVAs were conducted. These tested for differences between programs in the emotion variables within each of the three types of programs (i.e., Leadership, Arts, STEM). The RM-ANOVAs for Arts and STEM indicated significant differences between programs, whereas the RM-ANOVA for Leadership did not. One-way ANOVAs with pairwise comparisons were conducted to pinpoint program differences. The majority of the ANOVAs and follow-up tests were not significant ($ps > .05$), and no

Table 1 Characteristics of participating programs and youth

Program (Site)		Sponsorship/location	Primary activities	*N*	Mage	Male gender	Ethnicity
Leadership	"Unified Youth"	Standalone program in community center	Youth produce public service announcements and organize events to promote cultural understanding	9	15.6	50.0%	Latino (100%), Black (0%), White (0%)
	"Nutrition Rocks"	Program run by 4-H extension	Youth plan a 5-week healthy eating summer camp for children	24	15.3	25.0%	Latino (4.2%), Black (91.6%), White (4.2%)
	"Rising Leaders"	Extracurricular high school program	Organize school events and community service activities	54	15.9	24.1%	Latino (27.8%), Black (35.2%), White (37%)
	"Unity House"	Program in an urban settlement house	Youth work on leadership activities, plan a service project, and work on their college readiness plan	13	15.5	38.4%	Latino (69.2%), Black (15.4%), White (15.4%)
Arts & Performance	"Emerson Drama Club"	High school program	Youth produce and act in plays and musicals	62	16.0	33.3%	Latino (16.7%), Black (20.0%), White (78.3%)
	"Voces Unidas"	Afterschool program in urban charter school	Culture-oriented arts (e.g., creating a mosaic mural)	16	15.1	43.8%	Latino (86.7), Black (0%), White (13.3%)
	"La Prensa"	Urban program under a cultural arts museum	Youth make news videos about local Chicago neighborhood	13	16.4	46.2%	Latino (69.2%), Black (30.7%), White (0%)
	"The Station"	Standalone program in youth rec center	Youth plan and run music concerts and other activities for youth	23	15.3	43.5%	Latino (43.5%), Black (8.7%), White (47.8%)
	"Toltecat Muralists"	Urban program under a cultural arts museum	Youth develop graffiti art techniques and paint murals in city parks	22	16.2	54.5%	Latino (72.7%), Black (22.7%), White (4.6%)
STEM	"High Definition"	Program in urban settlement house	Youth carry out multimedia projects (e.g., produce online magazine, create videos)	21	16.0	57.1%	Latino (90.5%), Black (9.5%), White (0%)
	"On Target"	4-H Club in a per-urban county	Youth learn wildlife and fire arms skills	16	16.1	62.5%	Latino (0%), Black (0%), White (100%)
	"Reel Makers"	Program in an urban youth center	Youth learn video production skills through creating films	16	16.3	50.0%	Latino (43.8%), Black (43.8%), White (12.5%)
	"Computer Wizards"	Program in an urban youth center	Youth learn computer technology skills	15	14.6	73.3%	Latino (66.7%), Black (13.3%), White (2.0%)
	"Urban Farmers"	Urban youth farming program	Youth grow vegetables and sell them in the farmer's market	15	16.8	60.0%	Latino (6.7%), Black (93.3%), White (0%)

Note: Program names are pseudonyms

Table 2 Intercorrelations between study variables and demographic controls (and descriptive statistics for demographics)

Variable	Age	Years in Program	Female	Latino[a]	Black[a]
Time 1					
Positive emotions	0.11*	0.01	0.09	−0.04	0.13*
Negative emotions	0.06	0.04	−0.03	0.07	−0.13*
Learning from self	0.21**	0.40	0.25**	−0.05	0.12*
Learning from peers	0.05	0.04	0.15**	−0.05	0.05
Learning from staff	0.11	0.04	0.08	0.06	−0.02
Time 2					
Positive emotions	0.01	−0.02	−0.01	0.02	0.00
Negative emotions	0.02	0.04	0.04	0.06	−0.11
Learning from self	0.12*	0.09	0.13	−0.01	0.06
Learning from peers	0.10	0.08	0.10	0.03	0.02
Learning from staff	0.13*	0.07	0.04	−0.05	0.13*
Mean or percentage	15.8	1.56	1.58	33.0%	28.8%
Standard deviation	1.41	1.63	0.49	–	–

[a]Ethnicity dummy-coded as *Latino* (1) vs. *all other races* (0) and *Black* (1) vs. *all other races* (0)

*$p < .05$ and ** $p < .01$

Table 3 Intercorrelations, descriptive statistics and reliabilities, for study variable

Variable	1	2	3	4	5	6	7	8	9	10
Time 1										
1. Positive emotions	–									
2. Negative emotions	−0.20**	–								
3. Learning from self	0.37**	0.02	–							
4. Learning from peers	0.40**	0.01	0.49**	–						
5. Learning from staff	0.39**	−0.01	0.48**	0.64**	–					
Time 2										
6. Positive emotions	0.55**	−0.27**	0.20**	0.25**	0.35**	–				
7. Negative emotions	−0.15**	0.67**	0.00	0.06	−0.04	−0.26**	–			
8. Learning from self	0.31**	−0.18**	0.50**	0.47**	0.42**	0.42**	−0.09	–		
9. Learning from peers	0.47**	0.03	0.43**	0.65**	0.49**	0.40**	0.03	0.55**	–	
10. Learning from staff	0.41**	−0.15**	0.33**	0.50**	0.66**	0.45**	−0.14*	0.48**	0.61**	–
Mean	4.14	1.79	3.60	3.18	3.28	4.04	1.82	3.63	3.14	3.15
Standard deviation	0.82	0.71	0.63	0.84	0.88	0.90	0.73	0.60	0.83	0.92
Cronbach's α	0.69	0.78	0.67	0.82	0.84	0.77	0.78	0.64	0.79	0.91

*$p < .05$ and **$p < .01$

systematic pattern of results was observed, supporting the program categorization (detailed results available from the first author).

Measures

A subset of measures from the larger study was used in the current analysis. Table 2 displays descriptive statistics for individual characteristics and Table 3 displays descriptive statistics and reliabilities for the study variables.

Individual characteristics

At T1, youth reported their age (in years), gender, race/ethnicity, and years participating in the program. These were examined as potential control variables in preliminary analyses. Age and years in the program were treated as continuous variables; gender was coded as 1 (*female*) vs. 0 (*male*). Two dummy codes were created for race/ethnicity: *Latino* (1) vs. *other* (0) and *Black* (1) vs. *other* (0).

Emotional experiences and learning

Structured measures were developed based on prior qualitative (e.g., Dworkin et al. 2003; Larson and Brown 2007) and quantitative (e.g., Shernoff and Vandell 2007) investigations of adolescents' subjective experiences in the context of youth programs. The measures asked youth about experiences in the program in the past 2 months, and were administered at both time points.

Emotional experiences Participants reported how often they experienced six emotions while at the program (i.e., happy, excited, bored, frustrated, angry, and worried/nervous) using a scale from *never or rarely* (1) to *every day* (5). Two subscales were created (positive and negative emotions).

Learning about emotions from different sources Three multi-item scales assessed the extent to which adolescents learned to recognize and deal with emotions from three sources of information: themselves (five items; e.g., "I experimented with ways to calm myself down"); peers (four items; e.g., "Friends in the program helped me understand why I was feeling upset"); and staff (four items; e.g., "When I was feeling frustrated about work, the adult staff helped me see it another way"). Each item was rated on a scale from 1 = *strongly disagree* to 5 = *strongly agree*.

Plan of Analysis

Several preliminary analyses were conducted. First, because data were collected within programs, we tested for potential clustering effects in the three variables used as outcomes in regression models (Garson 2012) by calculating the variation of program means across programs and the variation in youth's means within the programs using a hierarchical linear model (Snijders and Bosker 2012). These analyses revealed nonsignificant intraclass correlations (ICCs) at the program level for the three measures of learning emotions from peers, self, and leaders (ICCs = .10, .08; and .04, respectively). These ICCs indicated little variance at the program level, and accordingly data were analyzed using standard multivariate analytic techniques with the Statistical Package for Social Sciences (SPSS).

Next, missing data patterns were evaluated. Attrition analyses indicated that most of the 319 participants in the analytic sample completed the T1 ($n = 268$; 84.0%) or T2 ($n = 253$; 79.3%) questionnaires. Missing data analysis indicated that 18.2% of the data for the items of interest were missing. Data were missing completely at random based on the Little MCAR test ($p = .108$) (Little 1988). Therefore, youth who had participated at either T1 or T2 were included in the analytic sample and missing data was addressed with multiple imputation, which shows the least amount of bias compared to other methods (Schlomer et al. 2010). Scale scores were computed by averaging to retain the original metric and the resulting scores were examined to ensure that assumptions of normality were met.

Correlation coefficients were computed to identify potential control variables. As shown in Table 2, three of the individual characteristics (age, gender, and Black race) were associated with several of the emotional experiences and learning variables and were retained for the main analyses. (Years in program and Latino race/ethnicity were not associated with the variables of interest.) For descriptive purposes, we also explored bivariate correlations among emotional experiences and sources of learning at T1 and T2.

The first and second research objectives were addressed by computing two Repeated Measures MANOVAs. The first R-MANOVA tested for program differences in emotional experiences (i.e., positive and negative emotions) and the second for program differences in source of emotional learning (i.e., self, peers, staff). In both analyses, the type of program (Leadership, Arts, and STEM) was entered as a between-subjects factor; time was entered as a within-subjects factor; and age, sex and Black race served as control factors. Follow up ANOVAs with pairwise comparisons were conducted to probe significant differences. Because our main interest is in program differences, in the presentation of results we do not report findings relating to control variables (detailed results available from the first author).

To address the third objective, we examined whether positive and negative emotional experiences differentially predicted later emotional learning, and whether those associations were moderated by the type of program. Three separate multiple regression models were estimated, one for each of the emotional learning sources at T2. In each regression model, the first step included control variables (age, gender, Black race) and the T1 measure of learning from that specific source (e.g., T1 learning from self was included in the model for T2 learning from self). The inclusion of T1 learning from the respective source provided a test of the role of emotional experiences in subsequent learning about emotions, net of the effect of prior learning. The two emotion variables (positive, negative) at T1 and the two program dummy codes were entered on the second step. The interaction of positive X negative emotions was entered on the third step, and the interactions of each emotion and program dummy code at the fourth step (i.e., Leadership X positive emotion, Arts X positive emotion, Leadership X negative emotion, and Arts X negative emotion). Each emotion variable was centered by subtracting its mean score then the interaction term was created by multiplying the centered emotion variable and the program dummy code (Aiken et al. 1991). None of the

Table 4 Means on emotion and emotion learning variables by type of program

Variable	Type of program			Overall	Program Comparisons
	Leadership (L) ($n = 100$)	Arts (A) ($n = 136$)	STEM (S) ($n = 83$)	($n = 319$)	F, p value[a]
Time 1					
Positive emotion	4.38^{S} (.74)	4.14 (.76)	3.88^{L} (.92)	4.13 (.80)	$F = 7.93$, $p = .000$
Negative emotion	$1.43^{A,S}$ (.53)	2.03^{L} (.70)	1.92^{L} (.73)	1.77 (.66)	$F = 22.25$, $p = .000$
Learning from self	3.69 (.61)	3.62 (.58)	3.47 (.74)	3.60 (.63)	$F = 0.91$, $p = .405$
Learning from peers	3.23 (.83)	3.30^{S} (.72)	2.95^{A} (.99)	3.19(.84)	$F = 3.36$, $p = .036$
Learning from staff	3.49 (.85)	3.25(.78)	3.13 (.99)	3.29 (.87)	$F = 3.15$, $p = .044$
Time 2					
Positive emotion	$4.34^{A,S}$ (.82)	3.90^{L} (.89)	3.89^{L} (.92)	4.04 (.90)	$F = 8.34$, $p = .000$
Negative emotion	$1.44^{A,S}$ (.61)	$2.14^{L,S}$ (.76)	$1.70^{L,A}$ (.59)	1.82 (.72)	$F = 28.74$, $p = .000$
Learning from self	31.69 (.59)	3.60 (.56)	3.61 (.64)	3.62 (.59)	$F = 0.37$, $p = .693$
Learning from peers	3.27 (.83)	3.13 (.73)	2.98 (1.00)	3.13 (.82)	$F = 1.91$, $p = .149$
Learning from staff	3.45^{A} (.98)	2.97^{L} (.88)	3.11 (.80)	3.15 (.91)	$F = 6.09$, $p = .003$

Note: Figures are *M* (*SD*). Within rows, superscripts indicate mean differences between programs, $p < .05$. For example, the T1 positive emotion mean for Leadership programs (L) differs significantly from T1 positive emotion mean for STEM programs (S)

[a]All program comparisons have the same (*df*, *N*) of (2, 308)

interactions entered at the third or fourth step was significant, so these are omitted from the presentation of results.

Results

Descriptive Analyses

Bivariate correlations among study variables are displayed in Table 3. Positive and negative emotions were moderately and inversely associated with each other at both time points. Positive emotions were strongly and positively associated across time; the same was true of negative emotions. Indicators of emotional learning from different sources were positively correlated with each other within and across time. Positive emotions were significantly and positively correlated with learning from the three different sources. T1 negative emotions were not concurrently associated with learning from any source, but were inversely associated with T2 learning from self and staff (i.e., higher levels of negative emotions were associated with less learning from these two sources).

Emotional Experiences and Learning from Different Sources

Analyses were conducted to evaluate differences in emotional experiences and learning by type of program as described in the plan of analysis. The repeated measures MANOVA for emotional experiences (Objective 1) was significant, $F = 9.92$, $p < .001$, partial eta squared $= .118$. As predicted, youth experienced positive emotions significantly more frequently than negative emotions ($p < .001$). As shown in Table 2, in the sample as a whole, average reports of positive emotions were well above the scale midpoint (over 4 on the 5-point scale) and negative emotions were below the midpoint (under 2). There were also significant differences by type of program in how frequently youth reported experiencing both positive and negative emotions at both time points (controlling for age, gender, and race). Mean comparisons and *F*-statistics for univariate tests are displayed in Table 4; here, we summarize the overall pattern of results.

At T1, youth in Leadership programs reported significantly higher levels of positive emotion than those in STEM programs (these types of programs did not differ from Arts programs). Youth in Leadership programs reported lower levels of negative emotion at T1 than those in Arts and STEM programs, who did not differ from each other. At T2, youth in Leadership programs reported higher levels of positive emotion than those in STEM and Arts programs, who again did not differ from each other. All types of programs differed from each other on negative emotion at T2: youth in Leadership programs reported the lowest, and youth in Arts the highest, levels of negative emotion, with STEM programs falling in between.

The repeated measures MANOVA for sources of emotional learning by type of program (Objective 2) was significant, $F = 3.00$, $p < .001$, partial eta squared $= .056$. Univariate tests revealed significant effects for emotional learning from peers at T1, and from staff at T2 (see

Table 5 Linear regressions predicting sources of learning from emotional experiences dependent on type of program

	Learning from self			Learning from peers			Learning from staff		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Step 1									
Age	0.01	0.02	0.16	0.04	0.03	0.06	0.03	0.03	0.04
Female gender	0.01	0.06	0.00	0.02	0.07	0.02	−0.05	0.08	−0.03
Black race	0.00	0.07	0.00	−0.04	0.08	−0.02	0.28	0.09	0.14**
T1 Learning from Source[1]	0.46	0.05	0.50**	0.62	0.04	0.64**	0.69	0.04	0.66**
Step 2									
Age	0.01	0.02	0.02	0.02	0.02	0.04	0.03	0.03	0.30
Female gender	0.02	0.06	0.02	0.00	0.07	0.00	−0.05	0.07	−0.03
Black race	−0.04	0.07	−0.03	−0.11	0.08	−0.06	0.18	0.09	0.09*
T1 Learning from Source[1]	0.43	0.05	0.45**	0.54	0.04	0.55**	0.63	0.05	0.60**
T1 Positive Emotion	0.08	0.04	0.11*	0.26	0.05	0.26**	0.17	0.05	0.15**
T1 Negative Emotion	−0.15	0.04	−0.18**	0.12	0.05	0.10*	−0.09	0.06	−0.07
Leadership Programs	−0.12	0.08	−0.09	0.08	0.10	0.05	−0.02	0.12	−0.01
Arts Programs	−0.07	0.07	−0.06	−0.13	0.09	−0.08	−0.21	0.09	−0.11*
Step and model statistics									
Step 1	$R^2 = 0.25$, $F = 25.42$**			$R^2 = 0.42$, $F = 56.34$**			$R^2 = 0.46$, $F = 65.89$**		
Step 2	$\Delta R^2 = 0.05$, $\Delta F = 5.33$**			$\Delta R^2 = 0.07$, $\Delta F = 9.62$**			$\Delta R^2 = 0.04$, $\Delta F = 6.48$**		

Note: [1] T1 learning from each respective learning source (e.g., T1 learning from self-served as a control in the model predicting T2 Learning from self)

*$p < .05$a and **$p < .01$

Table 4). At T1, youth in Arts programs reported significantly higher levels of learning from peers compared to youth in STEM programs (Leadership programs did not differ from the other types of programs). At T2, youth in Leadership programs reported significantly higher levels of learning from staff than youth in Arts programs, with youth in STEM programs not differing from other types of program.

Emotional Experiences as Predictors of Learning

The third objective was to examine associations between emotional experiences and subsequent learning about emotions from different sources across the three types of programs. Results of regression analyses are displayed in Table 5; for ease of presentation, step and model statistics are included in the table. In the first model, T1 learning from self was a significant predictor of T2 learning from self on initial entry, and remained significant at all subsequent steps. Control variables (gender, age, and Black race) were not significant on initial entry and at all subsequent steps. The addition of the four predictors at Step 2 resulted in a significant change in R^2. At this step, the two emotion variables were each independently associated with learning from self, but in opposite directions: positive emotion was associated with higher, and negative emotion with lower, levels of learning from self. The program dummy codes were not significant.

In the model for learning from peers, a similar pattern of results was seen at Step 1: T1 learning from peers was a significant predictor of subsequent learning from peers (and remained significant at later steps), and gender, age, and race were nonsignificant. The addition of the four predictors at Step 2 resulted in a significant change in R^2. In this model, both positive and negative emotions were positively associated with learning from peers; the program dummy codes were not significant.

A distinct pattern of results emerged for learning from staff. At Step 1, T1 learning from staff and Black race were significant predictors of T2 learning from staff, but gender and age were nonsignificant in all steps. At Step 2, positive emotion was significantly (positively) associated with learning from staff but negative emotion was not. At this step, one of the program dummy codes was significant: the coefficient for Art programs was negatively associated with learning from staff.

Discussion

Youth programs have been identified as important contexts for adolescents' emotional development (Pittman 2017;

Smith et al. 2016). Prior research has typically examined outcomes like emotional control or self-regulation skills (e.g., Durlak et al. 2011; Hansen et al. 2003). Less is known about *how* youth gain emotion-related skills as a result of program participation. Qualitative research suggests that youth learn by experiencing strong emotions then figuring out how to respond to them by observing and talking to peers and adult program staff and by engaging in self-reflection and trying out new strategies (Larson and Brown 2007; Rusk et al. 2013). To date, however, pathways between emotional experiences and learning about emotions from different sources have not been systematically examined. Moreover, although programs that differ in their focus and activities have been shown to provide different emotional climates (e.g., Shernoff and Vandell 2007) and developmental opportunities (e.g., Hansen et al. 2003; Larson et al. 2006), it is unknown how affordances for emotional development might vary across different types of project-based programs. Prior research has examined the emotional climate of a single type of program, such as drama (e.g., Larson and Brown 2007) or STEM (e.g., Beymer et al. 2018); others have included a mix of programs (e.g., Rusk et al. 2013). The current longitudinal study addressed these gaps by examining adolescents' emotional experiences and learning about emotions from different sources within different types of project-based youth programs.

The first study objective was to examine emotional experiences in youth programs. Positive emotions (i.e., happiness, excitement) occurred on a regular basis, with negative emotions (e.g., frustration, worry) being less frequent in the Leadership, Arts, and STEM programs we studied. These results are consistent with a prior study indicating that middle school students reported higher levels of positive than negative affect across a range of activities (Shernoff and Vandell 2007). Extending this descriptive work, we identified statistically significant differences in emotional experiences across various types of programs. In particular, adolescents in Leadership programs experienced positive emotions more frequently, and negative emotions less frequently, than those in programs focused on Arts or STEM. With one exception (negative emotions at T2), youth in Arts and STEM programs reported similar emotional experiences.

These differences may reflect the types of activities youth engage in within each type of program. The Leadership programs in our study allowed youth to carry out projects they often decided on themselves, with input and support from the leaders. Larson and Angus (2011) proposed that leadership programs may provide unique affordances for youth to exercise agency; we speculate that this sense of agency may contribute to positive feelings. The emotional climate in Arts programs likely reflects the high-stakes nature of creating a performance, film, or work of art for public consumption. Larson and Brown (2007) described multiple examples of negative episodes among youth in a theatre program, including disappointment over casting decisions, frustration and anger towards unprepared peers, and anxiety as a performance approached. The STEM programs focused on technical skills of various kinds (e.g., video editing, computer programming, gardening); learning these skills demands attention and effort, and may elicit frustration as youth strive to gain proficiency in a new area. To elucidate these findings, future research could track emotional episodes and their aftermath across an extended arc of work using repeated interviews (e.g., Larson and Brown 2007) or experience sampling approaches (e.g., Shernoff and Vandell 2007).

The second objective was to examine learning about emotions from various sources (i.e., self, peers, staff) across different types of programs. Only two of the six program comparisons were significant, and patterns differed across time points. Youth in Arts programs reported higher levels of learning from peers than youth in STEM programs (T1), and lower levels of learning from staff than those in Leadership programs (T2). The lack of prior literature addressing the same constructs makes our interpretation of these findings speculative, but we propose that these differences reflect program structures and goals. Arts programs offer multiple opportunities to observe and learn from peers as creative works are developed, shared, and critiqued (e.g., Larson and Brown 2007). These types of opportunities may not be as abundant in STEM programs where youth are typically exposed to novel information through a combination of lectures, individual work, and hands-on activities (e.g., Beymer et al. 2018; Yilmaz et al. 2010). For example, in the Beymer et al. study, youth spent half of their time participating in field experiments with community partners and the other half in a lecture type setting learning from staff. Youth in Leadership programs may focus on the actions of adult staff, since their focus is leadership and the staff may be seen as role models. In general, however, the lack of a consistent pattern of findings across different types of programs would seem to suggest that project-based programs present youth with similar opportunities for learning to recognize and deal with emotions.

The third objective was to examine associations between emotional experiences and learning over time, and whether these differed by type of program. Positive and negative emotions were differentially associated with emotional learning from different sources, net of demographic controls and previous learning from the respective source. Regardless of the type of program, positive emotions were prospectively associated with learning about emotions from the self, peers, and staff. This finding is consistent with theoretical predictions that positive emotions elicit exploration,

learning, and growth (Fredrickson 2001). Beymer et al. (2018) reported that positive affect was associated with youth engagement in STEM programs, and positive emotions are linked to increased problem-solving and motivation in school settings (Reschly et al. 2008). The current study demonstrated that positive emotions experienced in the context of youth programs facilitated youth's learning to recognize, react to, and deal with emotions from a variety of sources of information.

In contrast, the pattern of results for negative emotions was different for each source of emotional learning. Negative emotions were inversely associated with learning about emotions from oneself. Experiencing negative emotions may suppress learning from the self, because it might be difficult to make sense of these emotions on one's own (Gaskell 2008); instead, negative emotions may be better dealt with in collaboration with others. Indeed, negative emotions were positively associated with emotional learning from peers. Perhaps as youth observe, critique, and empathize with peers in negative emotional situations, they learn from each other (Izard 2002). Program staff have been shown to play an important role in helping youth deal with emotionally challenging situations (Rusk et al. 2013; Smith et al. 2016), but negative emotions did not predict learning about emotions from staff in the multivariate analysis. This was the only regression model where significant program effects were observed: being in an Arts program (vs. any other type of program) was associated with less learning from staff. This finding could reflect the different roles played by staff across programs, or the specific type of emotion learning we examined. Additional research is needed to identify the conditions under which experiences of negative emotions lead to learning from different sources.

The current study extended the literature in several ways. First, we assessed positive and negative emotions, and learning about emotions from different sources, using structured measures. This allowed us to conduct quantitative tests to confirm findings from primarily qualitative or descriptive studies. Second, the longitudinal design allowed an examination of associations between emotional experiences and learning over time. Finally, we examined these processes within a diverse set of programs, contributing to the sparse literature on program differences. Despite these contributions, the study had limitations. One resulted from the lack of prior literature specific to the construct of emotional learning from different sources. This meant that hypotheses were based largely on studies of other emotion constructs (e.g., emotion regulation, social-emotional learning). A second limitation was the use of novel self-report measures. Although the emotion measures were based on previous (primarily qualitative) work and had acceptable psychometric properties (e.g., alphas ranged from .64 to .91 and over-time correlations from .50 to .67), collateral reports from program leaders or peers would help establish their validity.

Another limitation is that the results cannot be generalized to all youth programs. Additional research is needed to replicate the findings in other Arts, Leadership, and STEM programs. Furthermore, because the current study focused on high-quality project-based programs, future research should examine programs that are not project-based (e.g., sports, youth groups) and that vary in quality (e.g., fewer contact hours, less experienced staff). These different program contexts are likely to afford distinct opportunities for experiencing and learning about emotions. Finally, differences attributed to the type of program may reflect unmeasured program characteristics (e.g., location, structure, staff background). We could not test for these because the larger study was not designed to examine program effects; instead, the selection process was designed to minimize potential program effects. Future research is needed to examine these potential sources of variation.

This study's findings can be used to inform program developers and front line staff. Perhaps most importantly, linkages between emotional experiences and learning from different sources provide insight into how staff can use emotional episodes to cultivate emotion-related skills. Positive emotions contributed independently to increased levels of emotional learning from all three sources (self, peers, staff). This finding supports the value of fostering a positive program climate and creating opportunities for youth to experience enjoyment, success, and happiness (Beymer et al. 2018). In contrast, negative emotions may be particularly useful in promoting peer or group learning. For example, staff can use charged emotional episodes as teachable moments (e.g., directing youth's attention to peers who engage in positive emotion management strategies) or helping youth process emotional events together (see Smith et al. 2016). Importantly, programs that differed in their focus appeared to elicit different types of emotional experiences, and staff should be prepared accordingly. For example, staff in Arts programs should expect – and develop ways to work with - the negative emotional reactions that youth are likely to manifest in the course of carrying out their projects (e.g., Larson and Brown 2007; Smith et al. 2016). Ultimately, training staff to facilitate a culture of emotional learning as they work towards program goals could benefit youth's personal development.

Conclusion

The current study provides a window into the emotional characteristics of high quality youth programs, which have been identified as optimal settings for promoting positive

youth development (e.g., Smith et al. 2016). To our knowledge, no single study has examined the same types of programs and emotion variables considered here. Consistent with prior research, youth experienced more frequent positive than negative emotions while at their programs (Shernoff and Vandell 2007). They also learned about emotions – actively figuring out how to understand and respond to their emotional responses – by observing and interacting with adult staff and peers and by reflecting on their own responses and trying out various strategies (e.g., Larson and Brown 2007; Rusk et al. 2013). The findings indicate that different types of program (i.e., Arts, Leadership, STEM) may afford distinct opportunities for youth to experience and learn about emotions. Regardless of program type, however, youth's reports of emotional experiences and learning from different sources were related over time. In keeping with the notion that positive experiences elicit exploration, learning, and growth (e.g., Fredrickson 2001; Reschly et al. 2008), positive emotions predicted subsequent learning from self, peers, and staff. The picture for negative emotions was more complicated: negative emotions predicted increased learning from peers but decreased learning from self, and no associations were found between negative emotions and learning from staff. Taken as a whole, the findings underscore the value of studying adolescent development in real-world contexts such as in organized youth programs.

Acknowledgements This research was supported by a grant from the William T. Grant Foundation #10914 (R. Larson, P.I.; M. Raffaelli, co-P.I.). We thank the participants in this study and acknowledge the contributions of the Pathways Project research team. We are grateful to Reed Larson and Natalie Rusk for their input on this manuscript.

Authors' Contributions E.V. conceived the current study under the mentorship of M.R., reviewing the literature, conducting the statistical analysis, and drafting the article. M.R. provided input and guidance to E.V. throughout this process. M.R. was co-PI of the larger study from which data for this article were derived. Both authors read and approved the final version of this article.

Funding The larger study was supported by a grant from the William T. Grant Foundation #10914 awarded to R. Larson, P.I. and M. Raffaelli, co-P.I. A subcontract was awarded to Kate Walker, who directed data collection at the University of Minnesota.

Data Sharing and Declaration This article's data will not be deposited.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional Review Boards at the University of Illinois at Urbana-Champaign (IRB # 11663) and the University of Minnesota (IRB #1106S01502).

Informed Consent Parental consent and youth assent were obtained. Parents received an information letter with instructions for opting their child out of the study (i.e., the requirement that parents provide written informed consent was waived). Written assent was obtained from all youth who participated in the study.

References

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: testing and interpreting interactions*. Thousand Oaks, CA: Sage.

Baumeister, R. F., Vohs, K. D., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review*, *11*(2), 167–203. https://doi.org/10.1177/1088868307301033.

Beymer, P. N., Rosenberg, J. M., Schmidt, J. A., & Naftzger, N. J. (2018). Examining relationships among choice, affect, and engagement in summer STEM programs. *Journal of Youth and Adolescence*, *47*, 1178–1191. https://doi.org/10.1007/s10964-018-0814-9.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: a meta-analysis of school-based universal interventions. *Child Development*, *82*(1), 405–432. https://doi.org/10.1111/j.1467-8624.2010.01564.x.

Dworkin, J. B., Larson, R., & Hansen, D. (2003). Adolescents' accounts of growth experiences in youth activities. *Journal of Youth and Adolescence*, *32*(1), 17–26. https://doi.org/10.1023/A:1021076222321.

Eccles, J. S., & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: what kind of extracurricular involvement matters*?* *Journal of Adolescent Research*, *14*(1), 10–43. https://doi.org/10.1177/0743558499141003.

Fredricks, J. A., & Eccles, J. S. (2006). Is extracurricular participation associated with beneficial outcomes? Concurrent and longitudinal relations. *Developmental Psychology*, *42*(4), 698 https://doi.org/10.1037/0012-1649.42.4.698.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: the broaden and-build theory of positive emotions. *American Psychologists*, *58*(3), 218–226. https://doi.org/10.1037//0003-066X.56.3.218.

Garson, G. D., (2012). *Hierarchical linear modeling: guide and applications*. Thousand Oaks, CA: Sage Publishers. https://doi.org/10.4135/9781483384450.

Gaskell, C. (2008). 'Isolation and distress'? (Re) thinking the place of emotions in youth research. *Children's Geographies*, *6*(2), 169–181. https://doi.org/10.1080/14733280801963128.

Goldstein, T. R., Lerner, M. D., & Winner, E. (2017). The arts as a venue for developmental science: realizing a latent opportunity. *Child Development*, *88*, 1505–1512. https://doi.org/10.1111/cdev.12884.

Hansen, D. M., Larson, R. W., & Dworkin, J. B. (2003). What adolescents learn in organized youth activities: a survey of self-reported developmental experiences. *Journal of Research on Adolescence*, *13*(1), 25–55. https://doi.org/10.1111/1532-7795.1301006.

Izard, C. E. (2002). Translating emotion theory and research into preventive interventions. *Psychological Bulletin*, *128*(5), 796–824. https://doi.org/10.1037/0033-2909.128.5.796.

Larson, R. W., & Angus, R. M. (2011). Adolescents' development of skills for agency in youth programs: learning to think strategically. *Child Development*, *82*, 277–294. https://doi.org/10.1111/j.1467-8624.2010.01555.x.

Larson, R. W., & Brown, J. R. (2007). Emotional development in adolescence: what can be learned from a high school theater program? *Child Development*, *78*(4), 1083–1099. https://doi.org/10.1111/j.1467-8624.2007.01054.x.

Larson, R. W., Hansen, D., & Moneta, G. (2006). Differing profiles of developmental experiences across types of organized youth activities. *Developmental Psychology*, *42*(5), 849–863. https://doi.org/10.1037/0012-1649.42.5.849.

Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198–1202.

Mahoney, J. L., Larson, R. W., Eccles, J. S., & Lord, H. (2005). Organized activities as developmental contexts for children and adolescents. In J. L. Mahoney, R. W. Larson & J. S. Eccles (Eds), *Organized activities as contexts of development: Extracurricular activities, after-school and community programs* (pp. 3–22). Mahwah, NJ: Erlbaum.

Mahoney, J. L., Vandell, D. L., Simpkins, S., & Zarrett, N. (2009). Adolescent out-of-school activities. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology (3rd ed.). Vol.2: Contextual influences on adolescent development* (pp. 228–267). Hoboken, NJ: Wiley.

Martin, A. J., Mansour, M., Anderson, M., Gibson, R., Liem, G. A., & Sudmalis, D. (2013). The role of arts participation in students' academic and nonacademic outcomes: a longitudinal study of school, home, and community factors. *Journal of Educational Psychology*, *105*(3), 709 https://doi.org/10.1037/a0032795.

McLauchlan, D., & Winters, K. L. (2014). What's so great about drama class? Year I secondary students have their say. *Research in Drama Education: The Journal of Applied Theatre and Performance*, *19*(1), 51–63. https://doi.org/10.1080/13569783.2013.872431.

Perry, S. C. (2013). *How teens learn to work together: collaborative processes of development at camp* (Unpublished doctoral dissertation). University of Illinois at Urbana-Champaign, Urbana, IL.

Pittman, K. (2017). Why after-school matters for positive youth development. In N. Deutsch (Ed.), *After-school programs to promote positive youth development* SpringerBriefs in Psychology (pp. 1–12). Cham, Switzerland: Springer.

Raffaelli, M., Armstrong, J., Tran, S. P., Griffith, A. N., Walker, K., & Gutiérrez, V. (2016). Beyond paper and pencil: conducting computer-assisted data collection with adolescents in group settings. *Journal of Adolescence*, *49*, 1–9. https://doi.org/10.1016/j.adolescence.2016.02.002.

Reschly, A. L., Huebner, E. S., Appleton, J. J., & Antaramian, S. (2008). Engagement as flourishing: the contribution of positive emotions and coping to adolescents' engagement at school and with learning. *Psychology in the Schools*, *45*(5), 419–431. https://doi.org/10.1002/pits.20306.

Rhodes, J. E. (2004). The critical ingredient: caring youth-staff relationships in after-school settings. *New Directions for Student Leadership*, *2004*(101), 145–161. https://doi.org/10.1002/yd.75.

Rosenblum, G. D., & Lewis, M. (2003). Emotional development in adolescence. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell Handbook of Adolescence* (pp. 269–289). Oxford, UK: Blackwell.

Rusk, N., Larson, R. W., Raffaelli, M., Walker, K., Washington, L., Gutierrez, V., & Perry, S. C. (2013). Positive youth development in organized programs: how teens learn to manage emotions. In C. Proctor & A. Linley (Eds.), *Research, applications, and interventions for children and adolescents: a positive psychology perspective* (pp. 247–261). Dordrecht, Netherlands: Springer.

Schlomer, G. L., Bauman, S., & Card, N. A. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling Psychology*, *57*(1), 1–10. https://doi.org/10.1037/a0018082.supp.

Shernoff, D. J., & Vandell, D. L. (2007). Engagement in after-school program activities: quality of experience from the perspective of participants. *Journal of Youth and Adolescence*, *36*(7), 891–903. https://doi.org/10.1007/s10964-007-9183-5.

Snijders, T. A. B., & Bosker, R. J. (2012). Discrete dependent variables. In T. A. B. Snijders & R. J. Bosker (Eds.), *Multilevel analysis: an introduction to basic and advanced multilevel modeling* (pp. 304–307). London, UK: Sage Publisher.

Smith, C., McGovern, G., Larson, R., Hillaker, B., & Peck, S. C. (2016). *Preparing youth to thrive: promising practices in social emotional learning*. Washington, DC: Forum for Youth Investment.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. 5th ed. Boston, MA: Allyn & Bacon/Pearson Education.

Vandell, D. L., Larson, R. W., Mahoney, J. L., Watts, T. W. (2015). Children's organized activities. In: M. H. Bornstein, T. Leventhal, R. Lerner, (eds.)*Handbook of child psychology and developmental science, 7th Ed., Vol. 4: Ecological Settings and Processes in Developmental Systems*. (pp. 305–344). New York, NY: Wiley. 10.1002/9781118963418.childpsy408.

Vandell, D. L., Shernoff, D. J., Pierce, K. M., Bolt, D. M., Dadisman, K., & Brown, B. B. (2005). Activities, engagement, and emotion in after-school programs (and elsewhere). *New Directions for Youth Development*, *105*, 121–129. https://doi.org/10.1002/yd.111.

Yilmaz, M., Ren, J., Custer, S., & Coleman, J. (2010). Hands-on summer camp to attract k-12 students to engineering fields. *IEEE Transactions on Education*, *53*(1), 144–151. https://doi.org/10.1109/TE.2009.2026366.

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