

# Academic Memories of School

Patricia A. Haught\*, Anne H. Nardi, Richard T. Walls

Department of Learning Sciences and Human Development, West Virginia University

\*Corresponding author: [pat.haught@mail.wvu.edu](mailto:pat.haught@mail.wvu.edu)

**Abstract** The current study, based in the autobiographical memory paradigm, was conducted to extend knowledge of academic recollections about school subjects. Undergraduates (N=195) were directed to recall memories about Language Arts, Social Studies, Math, Science, Physical Education, and Music/Art. In contrast to prior research where reported memories of school tended to focus on social components, the present study used prompts to provide a framework that focused on academic memories. Positive and Negative Learning Experiences were reported more frequently than Positive and Negative Teacher Behaviors, Interpersonal Experiences, or Recognition. Math was the only content area where Negative Learning Experiences were most often reported. A recency effect was evident for memories of different school subjects. Extremely pleasant recollections were frequently reported in all school subjects. No gender differences were observed.

**Keywords:** *autobiographical memory, school memories, academic recollections*

**Cite This Article:** Patricia A. Haught, Anne H. Nardi, and Richard T. Walls, "Academic Memories of School." *American Journal of Educational Research*, vol. 4, no. 11 (2016): 817-827. doi: 10.12691/education-4-11-7.

## 1. Introduction

Autobiographical memories, as reported by college students, tend to emphasize social situations. In research [56], university undergraduates wrote descriptions of their autobiographical memories of school. Although these college students were instructed that they could write about their school memories related to academics or social situations at school, the vast majority of the memories were "social" in nature; only 13% of the reported memories were academic in nature. Reference [15] stated that autobiographical memory "...is the knowledge base of the self...Autobiographical knowledge then functions to ground the self in memories of actual experiences or remembered reality..." (p. 1377). Given the amount of time that individuals spend in school from kindergarten to graduation from high school, their "remembered reality" can offer researchers and educators a view of the breadth of experiences that have influenced their learning and future life choices. Individuals often report the long-lasting impact of a teacher who was especially skilled [23,24,25].

When an investigator moves outside of laboratory control to less analytic "autobiographical" memories, accuracy of those recollections can be questioned. The uncontrolled factors in naturalistic contexts (e.g., delay, variability, frequency, and intensity) have led to questions about the accuracy of memories for events [4]. Distortion in event memories can occur because of socially transmitted information after the event. Disclosing negative recollections to others generally reduces the negative feelings, but such reports may also trigger recall of other bad memories [52]. These researchers went on to say that "...the recollection of an event often causes a cascade of responses, including the subsequent access of

additional memories" (p. 561). Social psychology and cognitive psychology interact in explaining autobiographical memory. Although some everyday memory studies call for participants to report recollections of actual events to which their memories can be compared and scored, such as flashbulb memories which are detailed, vivid 'snapshots' of the moment and circumstances [9], memories of school experiences are largely unverifiable.

## 2. Literature Review

"Autobiographical Memory" is memory across the lifespan for both specific events (episodic memories) and self-related semantic information [2]. Remembered events in autobiographical memory that help to define the self are part of a person's life narrative. Although the details of what happened years ago would usually be imperfect, the overall scenario is likely to be generally accurate [2]. Autobiographical remembrances of school may stray from complete verity, but purposeful improvisation in such reporting is unlikely.

Methods used to study autobiographical memory have included (a) recall of diary entries after months or years, (b) retrieval of memories associated with a major public event (e.g., flashbulb memory of the 9/11 terrorist attack), and (c) the memory probe method in which a memory is triggered by a cue or probe. Concerning the memory probe method, one researcher [2] said, "Despite its simplicity and relative lack of control, this method has been used widely, and productively" (p. 141). Studies of autobiographical memory have used various types of probes or cue words (e.g., object, activity, and affect) and cue pictures (e.g., famous people and people known personally) to trigger recall of events [8].

Remembering more recent events usually occurs (recency effect), but older adults often show a

“reminiscence bump” in which memories from about age 12 to 24 dominate. Researchers [16] acknowledged existence of the reminiscence bump and noted the high level of accessible memories during this age period, which is also an important time for the formation of one’s own identity [44,45]. Academic milestones (e.g., starting school and beginning college) often are involved in identity life scripts [6,7]. Their findings parallel the life event frequencies reported by [47]. Although more events are usually remembered from middle childhood to early adulthood (the time frame of the reminiscence bump), they were not found to be more vivid than memories of more recent events [32].

Major components of autobiographical memory are (a) narrative, (b) imagery, and (c) emotion [46]. Verbal *narrative* is the way most of the memories are stored. They can be told to self or others. *Imagery* is a component that can cement memorable events. Seeing the event as a vivid picture makes the memories seem more accurate and believable. *Emotion* is a third main component of autobiographical memory. A highly positive, reinforcing event will be remembered. Similarly, a highly negative, punishing event will be remembered.

Types of autobiographical knowledge identified in research include (a) lifetime periods (general, abstract, measured in years), (b) general events (more specific, measured in months/weeks/days), and (c) event-specific knowledge (single event, measured in hours/minutes/seconds) [14]. Although error in the dating of an autobiographical event tends to increase over the years, overall such placement in the time continuum is quite accurate [34]. Reference points across time (e.g., 1<sup>st</sup> grade through 12<sup>th</sup> grade) have been shown to be key in judging the time when the event happened as well as placement within the series of life events. Boundaries such as “elementary school” or “sophomore in high school” keep a person’s memories appropriately within the given time interval covered by the beginning and ending boundaries.

Personal memories do not seem to be specifically coded for time, but they appear to be reconstructed within a temporal succession of events. Events are often recalled in chronological order (forward or backward). A “personal event memory” is remembered by the person as having a particular time and place, personal circumstances, sensory images, and reality [43]. These memories are particularly vivid and enduring when associated with life transitions (e.g., beginnings or endings of school such as finishing high school or starting college). Research [43] noted that “...school is a nearly universal source of vivid recollections...personal event memories of school also may have a profound impact on academic and life success” (p. 131). Exploring memories of different subjects could contribute to a better understanding of the impact of the earlier experiences on later behavior. Research in educational settings [23,25,33,37] points to the impact of early experiences on current beliefs and practices. Researchers [41,58] emphasized early experiences and the contributions of cultural and gender influences in the development of autobiographical memories.

Researchers [44] asked older undergraduates and alumni to remember and report memories from their college experiences. Early freshman year and other transition points such as approaching graduation yielded the majority of influential memories about college. In their

memories of college, transitional and emotional events were reported most often. Those authors studied “...a potentially rich but relatively unexplored source of information about the form and function of personal event memories: educational experiences” (p. 319). Researchers [51] reported that college students “...show a strong tendency to tell memory narratives that provide detailed renderings of particular events” (p. 887). Researchers have pointed out the richness of memories associated with school experiences. Specific investigations, however, have rarely tapped school related-memories.

### 3. Objectives

An earlier investigation of autobiographical memories of school [56] reported events that were primarily “social” or otherwise nonacademic. Another study [20] examined School events (e.g., first/last day of high school), Triumphs (e.g., an award received), Family events (e.g., First day of school) among several other events (e.g., Leisure or Social) with 100 undergraduate students. Many of the events described by these students overlap with the types of autobiographical memories to be examined in the present study. The intent of the present research was to elicit academic memories across the grades. Since both studies [44,56] found that reported memories were mainly nonacademic, a set of academic probes was implemented in the current study. In order to focus on academic memories, the present investigation was specifically designed to elicit an academic memory in each of six school subjects. Undergraduate students were asked to remember and report academic memories from grade 1 through grade 12. An academic memory might be (a) failing an algebra quiz in 9<sup>th</sup> grade or (b) being praised by a 4<sup>th</sup> grade teacher for writing a good story. The participants were required to write their academic memories of Language Arts, Social Studies, Math, Science, Physical Education, and Music/Art in grades 1 through 12.

Specifically, the objectives of the present investigation were to examine the following research questions. What were the perceived positive and negative academic memories that college students attribute to School Subjects? What were the perceived positive and negative academic memories that college students attribute to School Subjects? What were the School Subjects most frequently reported at different Grade Levels (Elementary, Middle, High School) in the academic memories of college students? What were the Event Categories of experiences about School Subjects (Grades 1 through 12) that were remembered by college students?

## 4. Methodology

### 4.1. Participants

The participants were 195 traditional-aged undergraduate students at a major mid-Atlantic university. This was a convenience sample of volunteers from sections of a large introductory liberal arts course where the instructor offered extra credit to participate in research. None of the authors of the present study were instructors of this course. There were 74 men (38% of total participants) and 80

women (41% of total participants) and 41 individuals (21% of the participants) did not report gender from various university majors. Information about race, ethnicity, and socioeconomic status (SES) was not reported by the participants. Procedures were approved by the University's Institutional Review Board for the Protection of Human Subjects.

## 4.2. Design

The design included recollections of school events in "specified school subjects." The primary variables were school subject, grade in school, affect, positive-negative event component, and event categories. School subject referred to Language Arts, Social Studies, Math, Science, Physical Education, and Music/Art. Grade in school included grades 1 through 12. Affect referred to how negatively or positively the individual rated the event from 1 (Extremely Unpleasant) to 6 (Extremely Pleasant). The positive-negative event component consisted of Academic Categories coded by the authors that included (1) Positive Teacher Behavior, (2) Negative Teacher Behavior, (3) Positive Learning Experience, (4) Negative Learning Experience, (5) Positive Interpersonal Experience, (6) Negative Interpersonal Experience, (7) Positive Recognition, and (8) Negative Recognition. The Event Categories used by Walls et al., 2001, and coded by the authors included (1) Sports-Games, (2) Elected-Chosen-Honor-Award, (3) Injury-Illness-Misfortune-Embarrassment-Disappointment, (4) Boy-Girl, (5) Teacher-Principal-Staff, (6) Misbehavior-Discipline, (7) Academic Grades, (8) Friend, (9) New School-New Class, (10) Family, (11) Fight (verbal-physical), (12) General School Experiences, (13) Learned-Accomplished-Created, (14) Event-Party, (15) Field Trips-Travel, (16) Alcohol-Drugs-Tobacco, and (17) Cheating.

## 4.3. Materials and Procedure

Participants responded to materials in a five-page packet. The information provided on the first page described the voluntary, anonymous nature of the study being conducted to "find out more about what people remember in relation to academic topics." The second page asked for gender, major, and rank and provided the following instructions:

Describe six *academic* events that you remember that happened while at school. Academic events relate to a school subject matter such as Language Arts (Reading, English, Literature), Social Studies (History, Government, Geography), Math (Arithmetic, Algebra, Geometry), Science (General Science, Biology, Chemistry, Physics), Physical Education, and Music/Art. The event you describe for each subject matter should be the first one that occurs to you while filling out these pages. They can be from any grades (Grade 1 to Grade 12). Please tell the details of who was involved and what happened. After you write each description, circle the information asked for about that event. (Note: The six school subjects were specified.)

On the same page, examples of events in Language Arts and Science were presented in rectangles (9 cm by 18 cm). These examples were handwritten to illustrate how a participant might respond to the prompts for the six academic event memories that followed. The Language

Arts example was a scenario about doing a good job of reading in the first grade. The Science example was a scenario about an 11<sup>th</sup> grade physics teacher who demonstrated the concept of gravity by making a leap onto one of the lab tables. For both examples, the grade level and affect were circled to illustrate the rating procedure to be used by the participant.

Pages three, four, and five of the packet included a brief one-sentence direction for each of the six specified subject areas. A blank 9 cm by 18 cm rectangular response box (two per page) was provided for the participant to write his/her academic memory. Below each box, the participant was to indicate the grade level (1 to 12) and the affect (1 to 6) for the event described.

There were 1,132 memories written by the 195 participants. These memories were categorized by the authors into (a) *Academic Categories* and (b) *Event Categories*. In the Walls et al. (2001) study, the categories of school memories were inductively derived from the participants' reported memories. These categories reflected predominantly social recollections. A new set of categories, titled "Academic Categories," was derived by the authors to encompass the primarily academic probes of the current research. The original categories of school memories from an earlier investigation [56] were retained as "Event Categories." In the present investigation, all of the participants' written recollections were coded twice, separately, (a) one time for *Academic Categories* and (b) one time for *Event Categories*.

Sample academic memories for all *Academic Categories* are shown in Appendix A. Coding rules for the *Academic Categories* were established as follows: (1) if the memory described both Teacher Behavior and Learning Experience, it was coded as a Learning Experience; (2) if both Teacher Behavior and Interpersonal Experience, it was coded as Teacher Behavior; (3) if both Teacher Behavior and Recognition, it was coded as Recognition; (4) if both Learning Experience and Interpersonal Experience, it was coded as Learning Experience; (5) if both Learning Experience and Recognition, it was coded as Recognition; (6) if both Interpersonal Experience and Recognition, it was coded as Recognition. The authors categorized the memories into *Event Categories* (see a sampling in Appendix B). Previously established coding rules [56] were used. Thus, scoring procedures were based on coding rules. When the categorization (Academic or Event) of a particular memory was unclear to a scorer, consultation between authors occurred.

## 5. Results

Data were examined in relation to the four research questions posed in the investigation. The findings are reported as percentages of the memories of school subjects within the relevant dimensions (Academic Categories, Pleasantness Levels, Grade Levels, and Event Categories).

### 5.1. Research Question 1

What were the perceived positive and negative academic memories that college students attribute to School Subjects? In Table 1, the rows represent the positive and negative Academic Categories (e.g., Positive

Teacher Behavior), and the row percentages total to approximately 100% across the School Subjects. As may be noted in Table 1, the highest percentages for Positive Teacher Behavior were in Social Studies and Science which were tied. The highest percentage for Negative Teacher Behavior was in Math. The highest percentage for Positive Learning Experience was in Language Arts. The

highest percentage for Negative Learning Experience was in Math. The highest percentage for Positive Interpersonal Experience was in Physical Education. The highest percentage for Negative Interpersonal Experience was in Physical Education. The highest percentage for Positive Recognition was in Music/Art. The highest percentage for Negative Recognition was in Physical Education (Table 1).

**Table 1. Row Percentages of Academic Categories by School Subjects**

Academic Categories	Language Arts	Social Studies	Math	Science	Physical Education	Music/Art
Positive Teacher Behavior (n=114)	14	25	15	25	8	12
Negative Teacher Behavior (n=97)	12	21	26	17	8	17
Positive Learning Experience (n=330)	22	19	12	18	16	14
Negative Learning Experience (n=254)	15	15	21	20	17	13
Positive Interpersonal Experience (n=58)	9	10	19	17	28	17
Negative Interpersonal Experience (n=29)	3	3	10	10	59	14
Positive Recognition (n=171)	21	17	15	9	12	26
Negative Recognition (n=79)	20	11	20	9	23	17

Note. There were 1,132 memories reported. Each row percentage total is approximately 100%.

In Table 2, the columns represent the School Subjects (e.g., Language Arts), and the column percentages total to approximately 100% across the Academic Categories. As may be seen in Table 2 the category of Positive Learning Experience received the highest percentage of reported academic memories in Language Arts, Social Studies, Science, Physical Education, and Music/Art. The subject

of Math was the only content area where Negative Learning Experience was the highest percentage reported. The dimension of Learning Experience (both Positive and Negative combined) was reported more frequently than Teacher Behavior (Positive and Negative), Interpersonal Experience (Positive and Negative), and Recognition (Positive and Negative).

**Table 2. Column Percentages of Academic Categories by School Subjects**

Academic Categories	Language Arts	Social Studies	Math	Science	Physical Education	Music/Art
Positive Teacher Behavior (n=114)	8	15	9	15	5	8
Negative Teacher Behavior (n=97)	6	10	13	8	4	9
Positive Learning Experience (n=330)	37	32	21	31	28	26
Negative Learning Experience (n=254)	19	20	28	26	24	18
Positive Interpersonal Experience (n=58)	3	3	6	5	9	6
Negative Interpersonal Experience (n=29)	1	1	2	2	9	2
Positive Recognition (n=171)	18	15	14	8	11	24
Negative Recognition (n=79)	8	5	8	4	10	7

Note. There were 1,132 memories reported. Each column percentage total is approximately 100%.

### 5.2. Research Question 2

Which reported academic memories about School Subjects (Grades 1 through 12) were remembered as extremely pleasant to extremely unpleasant? For the classification of “Extremely Unpleasant” memories, there were more reported for Math (26%) and Physical Education (25%) than for the other four School Subjects. In contrast, within the classification of “Extremely Pleasant” recollections, there were more reported for Music/Art (21%) than for any of the other five School Subjects. “Extremely Pleasant” memories were more frequently reported across all six School Subjects than were “Extremely Unpleasant” memories.

### 5.3. Research Question 3

What were the School Subjects most frequently reported at different Grade Levels (Elementary, Middle, High School) in the academic memories of college students? When memories for School Subjects were examined by Grade Level, Language Arts (34%) followed by Physical Education (20%) were the School Subjects most frequently reported in the Elementary grades (1-4). For the Middle School grades (5-8), Social Studies (23%) followed by Music/Art (21%) were the most frequently reported memories. In the High School grades (9-12), Science (25%) followed by Math (19%) were the most frequently reported School Subjects.

### 5.4. Research Question 4

What were the Event Categories of experiences about School Subjects (Grades 1 through 12) that were remembered by college students? In Table 3, the rows represent Event Categories (e.g., Learned-Accomplished-Created), and the row percentages total to approximately 100% across the School Subjects. A total of 1,132 memories were reported across all 17 Event Categories. The most frequently remembered Event Categories were (1) Learned-Accomplished-Created (425 or 38%), (2) Teacher-Principal-Staff (227 or 19%), (3) Elected-Chosen-Honor-Award (136 or 12%), (4) Injury-Illness-Misfortune-Embarrassment-Disappointment (95 or 8%), and (5) Academic Grades (71 or 6%).

As reported in Table 3, the Event Categories of Sports-Games, Fight, and Injury-Illness-Misfortune-Embarrassment-Disappointment had highest percentages for Physical Education. Also, the Event Categories of Cheating and Academic Grades showed greatest percentages for Math. In some Event Categories, the number of responses was low (e.g., only one reported memory for the Event Category of Family), but the percentage was high (e.g., 100% for Family). Those low frequency but high-percentage results are shown in Table 3, but they are not reported in this text. The Event Category of Graduation, with a total of eight responses, was omitted from Table 3 because it was not specific to any School Subject.

Table 3. Row Percentages of Event Categories by School Subjects

Event Categories	Language Arts	Social Studies	Math	Science	Physical Education	Music/Art
Learned- Accomplished-Created (n=425)	22	17	14	18	14	15
Teacher- Principal-Staff (n=227)	15	23	20	20	8	14
Elected-Chosen-Honor-Award (n=136)	21	18	17	10	9	27
Injury-Illness-Misfortune-Embarrassment-Disappointment (n=95)	20	6	6	13	44	11
Academic Grades (n=71)	11	20	45	17	1	6
General School Experiences (n=27)	7	11	19	11	37	15
Misbehavior-Discipline (n=38)	8	18	11	21	13	29
Friend (n=35)	14	11	11	17	26	20
Sports-Games (n=24)	0	0	4	4	88	4
Field Trips-Travel (n=23)	0	30	4	39	0	26
Cheating (n=15)	13	20	53	13	0	0
Boy-Girl (n=6)	17	0	17	0	33	33
Fight (n=6)	0	0	0	0	83	17
New School-New Class (n=1)	0	100	0	0	0	0
Family (n=1)	0	0	0	100	0	0
Event-Party (n=2)	0	0	0	0	0	100
Alcohol-Drugs-Tobacco (n=1)	0	0	0	0	100	0

Note. There were 1,132 memories reported. Each row percentage total is approximately 100%.

In Table 4, the columns represent the School Subjects (e.g., Language Arts), and the column percentages total to approximately 100% across Event Categories. When memories were grouped by Event Categories, memories related to Learned-Accomplished-Created were most frequently reported in each of the six School Subjects. The Teacher-Principal-Staff Event Category was second in terms of percentage of memories reported in Language Arts, Social Studies, Math, and Science. The Event Category of Elected-Chosen-Honor-Award was second highest for Music/Art and was third highest for Language Arts and Social Studies.

Analyses were also conducted to determine the effects of Gender on school memories reported by college students. No differences were observed between women and men on Gender and School Subjects by (1) Academic Categories, (2) Pleasantness Levels, (3) Grade Levels, and (4) Event Categories. As noted previously, demographic

information on race, ethnicity and SES was not available for the participants.

### 6. Discussion

Memories of school reported by college students were examined as they related to specific academic school subjects. In contrast to earlier research, in which social memories of school were predominant, the present study cued participants to recall academic memories. The “knowledge base of the self” [15] is reflected in the ample memories of academic experiences reported by the participants in the present study. Although there is no way to validate the memories reported, there would have been no plausible reasons to purposefully distort one’s anonymously reported memories of school. There is evidence to support participants’ belief in the accuracy of

their recalled autobiographical memories in the findings of earlier studies [2,48].

**Table 4. Column Percentages of Event Categories by School Subjects**

Event Categories	Language Arts	Social Studies	Math	Science	Physical Education	Music/Art
Learned- Accomplished-Created (n=425)	47	37	32	41	32	36
Teacher- Principal-Staff (n=227)	18	27	24	24	9	18
Elected-Chosen-Honor-Award (n=136)	14	12	12	7	7	20
Injury-Illness-Misfortune-Embarrassment-Disappointment (n=95)	10	3	3	6	23	6
Academic Grades (n=71)	4	7	17	6	1	2
General School Experiences (n=27)	0	2	3	2	5	2
Misbehavior-Discipline (n=38)	2	4	2	4	3	6
Friend (n=35)	3	2	2	3	5	4
Sports-Games (n=24)	0	0	1	1	11	1
Field Trips-Travel (n=23)	0	4	1	5	0	3
Cheating (n=15)	1	2	4	1	0	0
Boy-Girl (n=6)	1	0	1	0	1	1
Fight (n=6)	0	0	0	0	3	1
New School-New Class (n=1)	0	1	0	0	0	0
Family (n=1)	0	0	0	1	0	0
Event-Party (n=2)	0	0	0	0	0	1
Alcohol-Drugs-Tobacco (n=1)	0	0	0	0	1	0

Note. There were 1,132 memories reported.

## 6.1. Research Question 1

What are the perceived positive and negative academic memories that college students attribute to School Subjects? The college undergraduates were directed to write their memories about Language Arts, Social Studies, Math, Science, Physical Education, and Music/Art. Since the participants were instructed in each of six response boxes (one per School Subject) to “Describe one academic event related to...” (a school subject), it is not surprising that Positive Learning Experience and Negative Learning Experience were more frequently reported than the other academic categories (Teacher Behavior, Interpersonal Experience, and Recognition). With the exception of Math, where the Negative Learning Experience category was more often remembered, the Positive Learning Experience category was dominant.

Negative perceptions about mathematics have been previously reported [1,12,21,57]. As reported in a review [21], negative attitudes toward math begin early and are related to teachers’ use of instructional techniques that are perceived to be boring. Teacher behavior was also reported to be a major factor in math anxiety. This may be attributed to the fact that teachers in the elementary grades often do not like math themselves [42]. Researchers [25] reported that 68% of their pre-service teachers “discussed the power that one teacher...wielded to shape participants’ successes and failures with mathematics” (p. 305). High levels of mathematics anxiety were noted for pre-service elementary education majors [10,22,27]. Researchers [53] observed that students who expressed dislike of math

described experiences of frustration, anxiety, and embarrassment.

The highest percentages reported for the Negative Teacher Behavior and for the Negative Learning Experience categories were in Math in the present study. More negative than positive attitudes and experiences about Math before college were also expressed in earlier research [11]. They reported comments by students about bad math teachers that included “unfair grading, made me feel stupid, never explained how to do a problem, yelled at students” (p. 51). These findings are congruent with the frustration, anxiety, and embarrassment reported by other researchers [24,25,53].

Math anxiety is identified as a salient variable in the reluctance to study mathematics. If one could identify memories of school experience, especially teacher behaviors, connected to development of math anxiety, then could one address this in the preparation of teachers who are required to teach math in elementary schools? There is ample evidence that pre-service teachers often experience high levels of mathematics anxiety [10,22]. Further, elementary education majors will be teaching arithmetic/math in elementary school, and do not have confidence in their ability to do so [10]. When elementary teachers who have math anxiety have to teach mathematics, they tend to use teaching methods (e.g., concentrate on rote skills rather than concepts) that cause their students to develop math anxiety. One study [22] indicated that those teachers with mathematics anxiety tend to not use Bruner’s facilitative teaching/learning constructs of “discovery learning” and “constructivism.”

Math anxiety often emerges in third and fourth grades [31]. Mathematically anxious teachers may contribute by having negative attitudes themselves and lacking confidence in their own ability. There is evidence of these high-math-anxiety teachers using mostly seatwork, whole class instruction, few concepts, and rote memorization of algorithms. In addition to those findings, another researcher [5] found that the most troublesome, frightening, and overall worst math class experiences had direct impact on pre-service teachers' mathematics anxiety. Thus, a "math anxiety cycle" may be operative as (a) pre-service elementary-level teachers have developed those math fears and lack of confidence from their history of worst experiences, (b) they become elementary-level teachers and are required to teach mathematics, and (c) their students in elementary school develop math anxiety because of the persistent high math phobia of their teachers which transfers to young pupils because of bad teaching strategies [5].

The findings in the current investigation reveal consistent patterns of Positive Teacher Behavior in Science. Researcher [13] found that teachers who focused thoroughly on Science content influenced students' knowledge of Science as well as their positive attitudes toward Science. Yet, shortages of Science teachers are frequently reported [28,30,35,49]. An innovative attempt funded by NSF to increase science majors was reported overall success in increasing the number of declared science majors with the greatest increase (733%) occurring in science teaching [39]. Future research might examine the apparent disconnect between the positive perception of Science teachers and college students not selecting Science teaching as a career.

In the current investigation, the Negative Interpersonal Experience category was higher in Physical Education than in any of the other Academic Categories. Memories of Physical Education (PE) were reported by college students who were PE Majors or Non-PE Majors. Even though the most frequent theme was positive interpersonal experience for the memories of PE Majors, the Non-PE Majors most frequently reported memories of negative learning experiences for Grades 5-8 and Grades 9-12 [50]. One study [59] examined student attitudes and perceptions of Physical Education and reported that peers were a source of humiliation, embarrassment, and alienation for some students. Also, PE teachers were a reported source of negative interpersonal experiences which corresponds to the present findings.

The report of strong Negative Learning Experience in mathematics reaffirms previous research. The Positive Teacher Behavior recollections remembered in Science were not an expected finding. For Physical Education, the tenor of Interpersonal Experience memories shifted across grade levels, from positive in grades one through four to negative in the middle school and high school years.

The implications of the affective components may bear on subsequent choices that students make to pursue or not pursue certain fields of study. Future research could examine the relationships between career choice and affective aspects of earlier academic experiences.

## 6.2. Research Question 2

Which reported academic memories about School Subjects (Grades 1 through 12) are remembered as

extremely pleasant to extremely unpleasant? When Extremely Unpleasant memories were considered, more memories were reported for Math and Physical Education. Whereas, when only Extremely Pleasant memories were considered, the highest numbers were in Music/Art. Overall, participants in the present research frequently rated their memories as Extremely Pleasant. This finding is consistent with the "positivity bias" reported in the memory research literature [2,29]. Both examples of memories presented to the current participants were positive (reading experience and science experience). In subsequent research, both positive and negative examples of classroom memories might be shown to the participants.

## 6.3. Research Question 3

What are the School Subjects most frequently reported at different Grade Levels (Elementary, Middle, High School) in the academic memories of college students? For each academic memory, the participant indicated the Grade Level (from 1 to 12). Memories from the Elementary years (Grades 1-4) were more often from Language Arts than from any of the other five school subjects. There is a necessarily strong focus in the elementary curriculum on Language Arts in the time allocated for instruction, including reading, writing, and spelling. The proportions of memories in Elementary School (Grades 1-4) for Language Arts were dominant, 34%. This percentage in Elementary School is appropriate because of the amounts of time typically devoted to Language Arts (36%) as compared to the other three "core academic subjects" of Math (17%), Social Studies (7%), and Science (7%) reported [54] for 2007-2008 by the U. S. Department of Education, National Center for Education Statistics, retrieved 5/16/2016 from [http://nces.ed.gov/surveys/sass/tables/sass0708\\_005\\_t1n.a.sp](http://nces.ed.gov/surveys/sass/tables/sass0708_005_t1n.a.sp). When compared to those proportions of time spent (36%, 17%, 7%, 7%), the proportions of memories reported in the present investigation (Language Arts 34%, Math 17%, Social Studies 7%, Science 4%) showed comparable distributions.

Since the participants were allowed to choose the grade level, the reported memories were not equally distributed across grade levels and the majority of memories were reported in the upper grades (possibly a recency effect). Almost 20% of the pre-service teachers in one study [18] commented in autobiographical stories that they did not remember much about the elementary years. For the Middle School years (Grades 5-8), memories of Social Studies and Music/Art were most frequently reported. Although the content of social studies is introduced in kindergarten, it becomes more focused in middle school [55]. Music programs such as band usually are introduced during the middle school years [19]. For the High School years (Grades 9-12), Science followed by Math yielded most recall. At the High School level, the number of memories in these two subareas may be a reflection of the increased emphasis on Math and Science in the secondary curriculum [39].

## 6.4. Research Question 4

What are the Event Categories of experiences about School Subjects (Grades 1-12) that are remembered by college students? It was found that the most frequently

remembered Event Categories were (1) Learned-Accomplished-Created, (2) Teacher-Principal-Staff, (3) Elected-Chosen-Honor-Award, (4) Injury-Illness-Misfortune-Embarrassment-Disappointment, and (5) Academic Grades. Learned-Accomplished-Created had 425 of 1132 or 38% of all the reported memories. This Event Category (Learned-Accomplished-Created) encompasses many aspects of academic memories. The finding reflects the impact of the academic probes. As may be seen in the row percentages in Table 3, within specific school subjects such as Physical Education, certain Event Categories are much more likely to occur than in the other school subjects (Sports-Games and Injury-Illness-Misfortune-Embarrassment-Disappointment).

## 7. Concluding Remarks

In the usual theoretical model of memory [3], information is said to come in through our sensory registers (e.g., iconic memory and echoic memory) where it lasts for only about a second. The more interesting of that incoming information is taken into a temporary maintenance and manipulation system of working memory, often termed Short Term Memory (STM). There, information can stay for approximately a half-minute, but that span can be lengthened if maintenance rehearsal (going over and over it every couple of seconds) is employed. If the information in STM is considered to be worth saving, elaborative encoding (e.g., semantic relationships, emotions, visual imagery, encoded meaning, concentration, and spatial orientation) is used to attach the new, incoming information to similar memories already stored in Long Term Memory (LTM).

Those retrieved memories of school are likely the ones that had strong elaborative encoding because of (a) visual imagery (e.g., I can still see her standing beside my desk), (b) emotion (e.g., I felt terrible when I found out the result), (c) relationships (e.g., I made all the target terms rhyme in a poem), (d) encoded meaning (e.g., It was easy after I could relate it to what I already knew), (e) concentration (e.g., I focused on it, totally, for 60 seconds), (f) cues (e.g., That sentence about pizza made remembering the planets really simple), and (g) mood congruency (e.g., I am really happy right now, and I am remembering when our music teacher made me laugh so hard about keys that I almost. . .). Attributes of the memory traces stored through elaborative encoding of academic experiences in grades 1 through 12 act in later days and later years. Thus, in the present investigation participants (college students) were able to find relevant personal memories in the subject-matter and grade-level contexts.

As noted earlier [56], the memories were largely social in nature (e.g., graduation, dating, friends, and the prom). This is also supported by researchers [29] who reported that when people were asked to describe the first memories of college that come to mind, the predominantly reported autobiographical memories were non-academic rather than academic.

In the present investigation, however, the academic emphasis in the probes resulted in a strong focus on academic memories. The Event Category of Learned-Accomplished-Created was salient in the reported

memories. The category includes many aspects of academic experiences; thus, it is not surprising that it is the most frequently reported Event Category.

There are potentially important implications of research on academic memories describing memories of learning geography in school [37], describing memories of mathematics instruction [23,25], and describing memories of assessment experiences in school [33]. In a brief study [33], education students reported both positive and negative classroom memories of assessment. They described being influenced by both good and bad experiences in the classroom. The students also reported that because of these memories, they planned to teach differently than the teacher they recalled (if the experience was bad), or they planned to base their assessment methods on especially strong teaching strategies (if the remembered experience was good). In an exploratory study of geographers' memories of their own learning of geography, participants were directed to speculate on the significance of their autobiographical memories [37]. There were no further guidelines provided to organize the memories. Participants' memories were classified into (a) those focused on geography as a subject, (b) those focused on the teacher's teaching strategies, and (c) those focused on the self and success versus failure experiences. Some researchers [37,38] identified the role of the teacher's use of anecdotes in these memories and urged the use of narrative teaching strategies. Other researchers [23,25] emphasized using memories to guide practice.

In earlier investigations [23,25,33,37,38], the focus was placed directly on the impact of the memories on current beliefs or practices. Researchers [40] examined mothers' memories of their own schooling and how these influence their behaviors with their own children and reported a relationship between mothers' autobiographical memories and their current behaviors reported about child rearing. For example, "I do it the same way I was taught...When you come home, you sit down, and you do your homework" (p. 168). In the present study, participants were instructed to recall academic events that happened while they were in school. The specific school subjects were Language Arts, Social Studies, Math, Science, Physical Education, and Music/Art. Would they have reported different academic memories if the school subject had not been specified and they had been free to write about any of the school subjects? Would the recollections have been different if they had been instructed to comment on the significance of the memories? Future research is needed to address these questions.

The present data showed generally positive memories of school. This may be related to "positivity bias" that tends to emerge as the person has more and more experiences [36]. In the current study, the sample consisted of college students; thus, they had continued their education after graduation from high school. The autobiographical memory of school ("remembered reality") for college students may be more positive about academic experiences than for individuals who did not continue their education beyond high school. Would young adults who did not pursue post-secondary education have similar academic memories? present data do not permit analyses of race, ethnicity, and SES; however, research on autobiographical memories [17,41,58] emphasized the importance of cultural, gender, and individual differences.



These variables are important to consider in interpretation of school experiences and should be included in future research.

A lot of the memories from the present college students described positive as well as negative teacher behaviors. This is similar to findings where preservice teachers reported more positive memories about teacher behavior, learning experiences and recognition [26]. Generally, these future teachers reported more positive than negative memories about their own classroom experiences.

Seventy-nine percent of the participants reported gender, and 21% did not report gender. In the present investigation, no significant gender differences were observed. This finding is in contrast to an overview concerning gender differences in autobiographical memory [23] which reported that gender differences have been reported across dozens of studies.

Presumably, autobiographical memories may have an influence on the participants' career choices. It could be important to explore the differences, if any, in the memories of education majors versus those of other college majors. Do education majors' memories of school relate to their content area of specialization? Equally relevant would be the examination of successful teachers and the reported impact of early experiences on their career choices.

School recollections may strongly affect later academic success, and ultimately, life success [43]. Future research might have participants from different career/occupational fields report their academic memories of school as well as factors that influenced their career paths. A promising research strategy to explore the influence that teachers have on their students would be the use of focus groups followed by in-depth individual interviews [40] to examine the ways that teachers, and the subjects and lessons that they teach, impact subsequent school performance and life decisions such as career path. "Memories of school" and the formal and informal learning experiences associated with them may influence behaviors and subsequent choices. Further exploration of the roles these memories play may in turn contribute to a better understanding of later performance in academic settings.

## References

- [1] Ashcraft, M. H. (2002). Math anxiety: Personal, educational, and cognitive consequences. *Current Directions in Psychological Science, 11*(5), 181-185.
- [2] Baddeley, A. (2009). Autobiographical memory. In A. Baddeley, M. W. Eysenck, & M. C. Anderson, *Memory* (pp. 137-162). New York, NY: Psychology Press.
- [3] Baddeley, A., Eysenck, M. W., & Anderson, M. C. (2009). *Memory*. New York, NY: Psychology Press.
- [4] Banaji, M. R., & Crowder, R. G. (1989). The bankruptcy of everyday memory. *American Psychologist, 44*(9), 1185-1193.
- [5] Bekdemir, M. (2010). The pre-service teachers' mathematics anxiety related to depth of negative experiences in mathematics classroom while they were students. *Educational Studies of Math, 75*, 311-328.
- [6] Bernsten, D., & Rubin, D. C. (2004). Cultural life scripts structure recall from autobiographical memory. *Memory & Cognition, 32*(3), 427-442.
- [7] Bohn, A. (2010). Generational differences in cultural life scripts and life story memories of younger and older adults. *Applied Cognitive Psychology, 24*(9), 1324-1345.
- [8] Brown, N. R. (2005). On the prevalence of event clusters in autobiographical memory. *Social Cognition, 23*(1), 35-69.
- [9] Brown, R., & Kulik, J. (1977). Flashbulb memories. *Cognition, 5*, 73-99.
- [10] Bursal, M., & Paznokas, L. (2006). Mathematics anxiety and pre-service elementary teachers' confidence to teach mathematics and science. *School Science and Mathematics, 106*(4), 173-179.
- [11] Caniglia, J., & Duranczyk, I. M. (1999). Understanding mathematics backwards: A qualitative analysis of students' mathematical beliefs through autobiographies. In J. L. Higbee & P. L. Dwinnell (Eds.), *The expanding role of developmental education* (pp. 43-55). Morrow, GA: National Association for Developmental Education.
- [12] Cates, G. L., & Rhymer, K. N. (2003). Examining the relationship between mathematics anxiety and mathematics performance: An instructional hierarchy perspective. *Journal of Behavioral Education, 12*(1), 23-34.
- [13] Chen, C. H., & Howard, B. (2010). Effect of live simulation on middle school students' attitudes and learning toward science. *Educational Technology & Society, 13*(1), 133-139.
- [14] Conway, M. A. (1996). Autobiographical knowledge and autobiographical memories. In D. C. Rubin. *Remembering our past: Studies in autobiographical memory* (pp. 67-93). Cambridge, England: Cambridge University Press.
- [15] Conway, M. A. (2001). Sensory-perceptual episodic memory and its context: Autobiographical memory. *Philosophical Transactions of the Royal Society of London, 356*, 1375-1384.
- [16] Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review, 107*(2), 261-288.
- [17] de la Mata, M. L., Santamaria, A., Hansen, T. G. B., & Ruiz, L. (2014). Earliest autobiographical memories in college students from three countries: Towards a situated view. *Memory Studies, 1750698014543966*.
- [18] Ellsworth, J. Z., & Buss, A. (2000). Autobiographical stories from preservice elementary mathematics and science students: Implications for K - 16 teaching. *School Science and Mathematics, 100*(7), 355-364.
- [19] Fortney, P. M., Boyle, J. D., & DeCarbo, N. J. (1993). A study of middle school band students' instrument choices. *Journal of Research in Music Education, 41*(1), 28-39.
- [20] Fuentes, A., & Desrocher, M. (2012). Autobiographical memory in emerging adulthood: Relationship with self-concept clarity. *Journal of Adult Development, 19*, 28-39.
- [21] Geist, E. A. (2010). The anti-anxiety curriculum: Combating math anxiety in the classroom. *Journal of Instructional Psychology, 37*(1), 24-31.
- [22] Gresham, G. (2007). A study of mathematics anxiety in pre-service teachers. *Early Childhood Education Journal, 35*(2), 181-188.
- [23] Grysman, A., & Hudson, J. A. (2013). Gender differences in autobiographical memory: Developmental and methodological considerations. *Developmental Review, 33*, 239-272.
- [24] Guillaume, A. M., & Kirtman, L. (2005). Learning lessons about lessons: Memories of mathematics instruction. *Teaching Children Mathematics, 11*(6), 302-309.
- [25] Guillaume, A. M., & Kirtman, L. (2010). Mathematics Stories: Preservice teachers' images and experiences as learners of mathematics. *Issues in Teacher Education, 19*(1), 121-143.
- [26] Haight, P. A., Nardi, A. H., & Walls, R. T. (2015). Preservice teachers' academic memories of school: A tool for learning. *American Journal of Educational Research, 3*(2), 166-172.
- [27] Hembree, R. (1990). The nature, effects, and relief of mathematics anxiety. *Journal for Research in Mathematics Education, 21*(1), 33-46.
- [28] Howard, T. C. (2003). Who receives the short end of the shortage? Implications of the U.S. teacher shortage on urban schools. *Journal of Curriculum and Supervision, 18*(2), 142-160.
- [29] Hyland, D. T., & Ackerman, A. M. (1988). Reminiscence and autobiographical memory in the study of the personal past. *Journal of Gerontology, 43*(2), 35-39.
- [30] Ingersoll, R. M. (2003). Is there a shortage among mathematics and science teachers? *Science Educator, 12*(1), 1-9.
- [31] Jackson, C. D., & Leffingwell, R. J. (1999). The role of instructors in creating mathematics anxiety in students from kindergarten through college. *Mathematics Teacher, 92*, 583-586.
- [32] Janssen, S. M. J., Rubin, D. C., & St. Jacques, P. L. (2011). The temporal distribution of autobiographical memory: Changes in relieving and vividness over the lifespan do not explain the reminiscence bump. *Memory & Cognition, 39*, 1-11.

- [33] Kist, W. (2008). Assessment memories. *Ohio Journal of English Language Arts*, 48(1), 80-82.
- [34] Larsen, S. F., Thompson, C. P., & Hansen, T. (1996). Time in autobiographical memory. In D. C. Rubin. *Remembering our past: Studies in autobiographical memory* (pp. 129-156). Cambridge, England: Cambridge University Press.
- [35] Mangrubang, F. R. (2005). Issues and trends in science education: The shortage of qualified teachers. *American Annals of the Deaf*, 150(1), 42-46.
- [36] Mather, M., & Carstensen, L. L. (2005). Aging and motivated cognition: The positivity effect in attention and memory. *Trends in Cognitive Sciences*, 9(10), 496-502.
- [37] McPartland, M. (1996). Walking in our own footsteps: Autobiographical memories and the teaching of geography. *International Research in Geographical and Environmental Education*, 5(1), 57-62.
- [38] McPartland, M. (1998). The use of narrative in geography teaching. *The Curriculum Journal*, 9(3), 341-356.
- [39] Miele, E. A., Hainline, L., Lesser, P., Powell, W. G., Tisch, S., & Tomkiewicz, M. (2011). Early exploration of opportunities in science and careers encourages students to pursue science majors. *Journal of College Science Teaching*, 40(5), 59-64.
- [40] Miller, K., Dilworth-Bart, J., & Hane A. (2011). Maternal recollections of schooling and children's school preparation. *The School Community Journal*, 21(2), 161-184.
- [41] Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, 111(2), 486-511.
- [42] Philipp, R. A. (2007). Mathematics teachers' beliefs and affect. In F. K. Lester, Jr. (Ed.). *Second handbook of research on mathematics reading and learning: A project of the National Council of Teachers of Mathematics* (pp. 257-318). Charlotte, NC: Information Age Publishing.
- [43] Pillemer, D. B. (2001). Momentous events and the life story. *Review of General Psychology*, 5(2), 123-134.
- [44] Pillemer, D. B., Picariello, M. L., Law, A. B., & Reichman, J. S. (1996). Memories of college: The importance of specific educational episodes. In D. C. Rubin. *Remembering our past: Studies in autobiographical memory* (pp. 318-337). Cambridge, England: Cambridge University Press.
- [45] Rathbone, C. J., Moulin, C. J. A., & Conway, M. A. (2008). Self-centered memories: The reminiscence bump and the self. *Memory & Cognition*, 36(8), 1403-1414.
- [46] Rubin, D. C. (1996). Introduction. In D. C. Rubin. *Remembering our past: Studies in autobiographical memory* (pp. 1-15). Cambridge, England: Cambridge University Press.
- [47] Rubin, D. C., Berntsen, D., & Hutson, M. (2009). The normative and the personal life: Individual differences in life scripts and life story events among U.S.A. and Danish undergraduates. *Memory*, 17(1), 54-68.
- [48] Sidwell, A. M., Schrauf, R. W., & Greenberg, D. L. (2003). Belief and recollection of autobiographical memories. *Memory & Cognition*, 31(6), 887-901.
- [49] Sausner, R. (2002, October). Desperately seeking teachers. *District Administration*, MS4-MS7.
- [50] Sidwell, A. M., & Walls, R. T. (2012). Memories of physical education. Unpublished manuscript, Department of Technology, Learning, and Culture, West Virginia University, Morgantown, West Virginia.
- [51] Singer, J., Rexhaj, B., & Baddeley, J. (2007). Older, wiser, and happier? Comparing older adults' and college students' self-defining memories. *Memory*, 15(8), 886-898.
- [52] Skowronski, J. J., & Walker, W. R. (2004). How describing autobiographical events can affect autobiographical memories. *Social Cognition*, 22(5), 555-590.
- [53] Stodolsky, S. S., Salk, S., & Glaessner, B. (1991). Student views about learning math and social studies. *American Educational Research Journal*, 28(1), 89-116.
- [54] U.S. Department of Education, National Center for Education Statistics. (2016). *Schools and staffing survey (SASS)*. Retrieved from [http://nces.ed.gov/surveys/sass/tables/sass0708\\_005\\_t1n.asp](http://nces.ed.gov/surveys/sass/tables/sass0708_005_t1n.asp)
- [55] Wade, R. (2002). Beyond expanding horizons: New curriculum directions for elementary social studies. *The Elementary School Journal*, 103(2), 115-130.
- [56] Walls, R. T., Sperling, R. A., & Weber, K. D. (2001). Autobiographical memory of school. *The Journal of Educational Research*, 95(2), 116-127.
- [57] Walsh, K. A. (2008). The relationship among mathematics anxiety, beliefs about mathematics, mathematics self-efficacy, and mathematics performance in associate degree nursing students. *Nursing Education Perspectives*, 29(4), 226-229.
- [58] Wang, Q. (2011). Autobiographical memory and culture. *Online Readings in Psychology and Culture*, Unit 5. Retrieved from <http://scholarworks.gvsu.edu/orpc/vol5/iss2/2>
- [59] Williams, A. (1996). Problematising physical education practice: Pupil experience as a focus for reflection. *European Journal of Physical Education*, 1, 19-35.

## Appendix A

### Sample Academic Memories for All Academic Categories

**Positive Teacher Behavior.** We had a ropes class and I was so excited to be challenged. The teacher was extremely impressed and during the whole time kept pushing me and challenging me even more—I loved it! (PHYSICAL EDUCATION; GRADE=12; PLE=5).

**Negative Teacher Behavior.** In 9<sup>th</sup> grade I had one of the meanest science teachers. She always got mad at everyone for anything they did whether they meant to do it or not. So one day I accidentally dropped a test tube and it shattered everywhere. Everyone stopped and looked to see who it was, and she yelled at me profusely. I was so embarrassed and my feelings were very hurt. (SCIENCE; GRADE=9; PLE=1).

**Positive Learning Experience.** I remember my social studies teacher, Mr. X. In the middle of the year we had a thing called “simulations.” It was some complicated game where we were a certain country in Europe. My group was Italy. We were powerful. We had to try to get the most land by pleasing the “gods” with money and do whatever else it took. We came in second place. It was the best thing we did the whole year. (SOCIAL STUDIES; GRADE=9; PLE=6).

**Negative Learning Experience.** When I was little I had the hardest time in Math! When I got into fifth grade we began learning our multiplication tables. I was so bad at it! I can remember being the last one in my class to learn all twelve! (MATH; GRADE=5; PLE=1).

**Positive Interpersonal Experience.** I was in my 7<sup>th</sup> grade math class and my back was very sore (I was a competitive swimmer). I decided to sit on the floor against the wall to make it feel better. My friend dared me to stay there until class started. I said that I would if she got the back row to do the same. The back row did, and within seconds the entire class was on the floor. The teacher was very amused. (MATH; GRADE=7; PLE=6).

**Negative Interpersonal Experience.** During my 7<sup>th</sup> grade History class I can remember sitting there paying full attention when all of a sudden the girl behind me let out a huge sneeze. Well since the seating was very close all I could see was a spray of snot flying past my head. I had to go to the bathroom to wash my neck as the whole room laughed. (SOCIAL STUDIES; GRADE=7; PLE=1).

**Positive Recognition.** I once wrote a short story about taking my cat to Mars on a space shuttle. The next day my teacher read it to the class and she submitted the story to the county writing contest. I won honorable mention. My story was published and I was so proud. (LANGUAGE ARTS; GRADE=4; PLE=6).

**Negative Recognition.** I was always slow in physed. I came in last at everything. I felt embarrassed. (PHYSICAL EDUCATION; GRADE=9; PLE=1).

## Appendix B

### Sampling of Academic Memories for Some Event Categories

**Learned-Accomplished-Created.** I remember 12<sup>th</sup> grade chem. I liked doing the lab where you would see if Oxygen was present and you would stick a splint into a test tube and fire would appear if Oxygen was present. (CHEMISTRY; GRADE=12; PLE=6).

**Teacher-Principal-Staff.** My teacher in the tenth grade had completely gray hair. One day he came into class and it was jet black. Everyone made fun of him and the next day it was gray again. (GRADE=10; PLE=6).

**Elected-Chosen-Honor-Award.** I remember that in 1<sup>st</sup> grade I was one of the few people that could read well and my teacher made me help some of the other kids. (LANGUAGE ARTS; GRADE=1; PLE=4).

**Injury-Illness-Misfortune-Embarrassment-Disappointment.** In PE I could never do pull-ups for the fitness test. It was always embarrassing. (PHYSICAL EDUCATION; GRADE=7; PLE=1).

**Academic Grades.** I failed my Algebra II final and the class. (MATH; GRADE=11; PLE=1).