WINNING OVER TWEENS:
MUSEUM PROGRAMMING FOR THE
MIDDLE SCHOOL AUDIENCE

by

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July 18, 2006

Submitted in Partial Fulfillment

of the Requirements for the Degree of

Master of Arts

in

Museum Studies

in the

School of Education and Liberal Arts

at

John F. Kennedy University

Approved:

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Department Chair   Date

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

"How about a giant grasshopper that you could climb in and see how things work on the inside?" "Why not an exhibit that teaches you how to make video games, both the computer programming part and building the actual electronics." "The second floor would have a rock climbing wall and hands-on exhibits with water and bubbles."

The above quotes are taken from some of the eight focus groups with tweens conducted as part of this study. They represent the creativity and enthusiasm which can flow from a group of tweens when asked the simple question: "How would you design your ideal museum?" This question is at the heart of this study, which attempts to discover who tweens are and how their needs can best be met in museums.

Tweens—also known as preteens, early adolescents, or middlers—are youth, approximately ages ten to thirteen, who have outgrown childhood, but are not yet teenagers. Often defined by their "split personalities," which bounce between child-like behaviors and attitudes and those of teenagers, tweens represent a distinct stage in human development. Tweens are a largely misunderstood population segment in the United States, and this is especially true in museums. While museums have a long history of addressing a younger youth audience composed of elementary school children and have been more recently addressing an

older youth audience made up of high school students, the tween audience containing middle school students is still largely overlooked. According to Deborah Schwartz in her 2005 *Museum News* article, "twenty years ago, the teen audience was perceived by most museum programmers to be difficult and unruly, treated suspiciously by museum security staff, and in the main, written off by museum educators."[1] While this attitude towards teen audiences is slowly changing, the perception still applies to tweens today. Consequently, museums are missing out on the opportunity to serve an audience that really needs what museums have to offer.

This study investigates tween psychology and neuroscience in literature and translates the findings for the use of museum educators. It reports on current museum efforts to address the tween audience and provides museum educators with knowledge and tools to better serve this audience.

Divided into thirteen sections, this study begins with the statement of purpose for this study, accompanied by its research goals and objectives. The next section details the methodology utilized in performing the primary and secondary research, followed by a description of the limitations of the methodology used.

The main sections of the study follow. First, the literature review examines literature in the fields of neuroscience, psychology, and museum

studies that pertains to the characteristics of tweens and museum efforts to address the tween audience. The literature review is divided into six thematic sections: 1) a discussion of adolescent and early adolescent psychology; 2) a discussion of adolescent and early adolescent neuroscience; 3) a review of parent and teacher guides for dealing with tweens; 4) an examination of the theory and practices of youth development; 5) an assessment of the literature about tweens in museums; 6) and finally a summary.

The second main section of this study details the findings from the primary research. It discusses the findings from twelve interviews and eight focus groups. The interview findings contain a description of tween characteristics and examples of successful tween museum programs. The focus group findings illustrate the ideas of over eighty tweens from communities throughout California. The tweens discussed what they do and do not like about museums, how they would like to design their ideal museum, and what their favorite activities are outside of school.

The next section draws conclusions as to the meaning of these findings. It argues that museums and tweens are a natural fit, but that museums must do more to engage the tween audience. The conclusions section is followed by a section of recommendations for how museums can better serve tweens by enhancing their middle school field trip

curriculum, developing programs that allow for prolonged engagement with tweens, better understanding the tween audience through improved audience research, and creating a more tween-friendly atmosphere in the museum.

Additional information, including endnotes, a bibliography and five appendices, supplement the main sections of the study. The last section contains this study's product, an article detailing the results of the study to be submitted to *WestMuse*, the bimonthly journal published by the Western Museums Association and read by a large number of professionals in the field. This article is intended to draw the field's attention to the great possibilities that exist for museums to better engage the tween audience.

STATEMENT OF PURPOSE

The purpose of this project is to improve the way that museum educators can understand and serve a "tween" audience with more compelling age-appropriate programs. The research for this project focuses on museums in the state of California and describes the characteristic behaviors and needs of tweens, through researching tween psychology and neuroscience and assessing the prevalent attitudes and beliefs about tweens from professionals in the field, as well as from tweens themselves. The purpose of compiling this information is to articulate what museum educators need to know about tweens in order to better address their needs. Through effective programming for tweens, museums can reach an important, but largely underserved audience that can really benefit from what museums have to offer. The end result of this project is an analysis of the essential elements in a successful tween program and recommendations for museum educators to use when programming for a tween audience.

RESEARCH GOALS AND OBJECTIVES

Goal: Delineate the common characteristics of tweens in the United

States, especially those which relate to museum programming.

Objectives:

    a. Review the literature in the fields of neuroscience,

    psychology, and museum studies that pertains to the

    characteristics of tweens.

    b. Interview museum educators, middle school personnel, and

    other professionals who work with tweens in California to

    determine their attitudes, beliefs, and practices when

    working with tweens.

    c. Talk directly to tweens to determine their attitudes and

    beliefs about museums and museum programming.

Goal: Identify the essential elements of a museum program appropriate

for a tween audience.

Objectives:

    a. Review the literature in the museum field that pertains to

    California museum efforts to address the tween audience.

    b. Interview California museum educators, middle school

    personnel, and other professionals who work with tweens,

to determine their attitudes and beliefs about tween programming.

c. Formulate a list of criteria that identifies museum programs in California that successfully address the tween audience.

METHODOLOGY

In order to research the common characteristics of tweens and identify the essential elements of museum programs appropriate for tween audiences, a literature review, twelve professional interviews, and constituent evaluations in the form of a series of eight focus groups with a total of eighty-three tween participants were conducted in the winter and spring of 2005-2006. From these three sources, a description of tweens was compiled and what museum educators need to know about tweens to better serve the tween audience was articulated.

The literature review includes a wide variety of sources of information about tween psychology and neuroscience and about museum efforts to address tween audiences. Sources include articles from psychology, neuroscience, and museum journals; books which explore tween psychology and neuroscience, or serve as guides for parents of tweens; and studies done by organizations that have worked with tweens. The literature review identifies the key characteristics of tweens and describes current tween programming efforts by museums.

The twelve professional interviews (see Appendix A for a detailed list of the interviewees) were conducted in person and on-site. The interviewees consisted of eight museum educators, two middle school personnel, and two professionals who work with tweens in programs

outside of school. The museum educators interviewed all worked directly with tweens as an integral part of their job description. Two were from the Exploratorium (San Francisco), two from the Lawrence Hall of Science (Berkeley), one from the San Bernardino County Museum (Redlands), one from the Palm Springs Art Museum, one from the Mexican Museum (San Francisco), and one from the Crissy Field Center (San Francisco). A seventh and eighth grade social studies teacher was interviewed in Bloomington, a semi-rural community in San Bernardino County and a middle school counselor was interviewed in Moraga, a small suburb in Contra Costa County. Leaders of programs for middle school students were interviewed in San Jose and San Francisco.

An interview question list (see Appendix B) was used during the interviews to help guide the conversation, but it was not restrictive in that the interviews did not follow a precise script and conversations were open ended. The questions revolved around the professionals' experience working with tweens, their thoughts about tween characteristics and needs, and their beliefs about effective museum programming for the age group. The data from these interviews was recorded by the interviewer taking notes during the interview and then translating the notes into a text document on the computer. The results of the professional interviews were

assessed in order to measure the prevalent attitudes, beliefs, and practices of professionals who work with tweens.

The constituent evaluation was achieved by conducting a series of focus groups with tweens (see Appendix C for more details on the focus groups). Eight focus groups were held in various parts of California in order to represent a broad spectrum of cultural and socio-economic groups. A total of eighty-three tweens participated in the focus groups: forty were boys, forty-three were girls; forty-two were White, thirty-three were Latino, four were Asian-American, and four were African-American. The first focus group took place in Walnut Creek, with seven eighth grade boys. Two focus groups were held in Bloomington with a total of twenty-six participants in the seventh grade. A focus group in Redlands consisted of seven participants in the seventh and eighth grades. Two focus groups were held in Bakersfield with thirty participants in the eighth grade. One focus group was held in San Rafael with seven sixth grade boys. The final focus group took place in San Jose with six sixth and seventh graders.

The focus group sessions were facilitated by the author and were guided by a focus group question list (see Appendix D). The question list evolved over time. Tweens were asked about their experiences with museums, both positive and negative, and about the characteristics of programs that would interest them. The data from these focus groups was

recorded by a third party who took notes during the focus group sessions. This information was then translated into a text document on computer. The results from these focus groups were assessed in order to measure the prevalent attitudes and beliefs of tweens about museums and museum programming.

LIMITATIONS OF METHODOLOGY

This project describes the common characteristics of tweens and identifies the essential elements of museum programs appropriate for tween audiences. For the purposes of this project, tweens are defined as youth between the ages of ten to thirteen. These ages generally correspond to grades six through eight in middle school. This study does not consider youth who are older or younger than this definition of tweens or programs for youth older or younger than tweens. In describing tween characteristics, research focuses on psychology and neuroscience. This project does not address the physical attributes of puberty, other than the physical changes in the brain, that tweens are experiencing. Research into the sociology of tweens is also beyond the scope of this project. This study does not discuss the characteristics of "today's" tweens, also referred to as Generation Y, as opposed to other tween generations. This project describes tweens broadly and does not delve into the divisive issues of ethnicity, socio-economic status, or gender, although future studies of this topic might benefit from focusing on these specific issues. The project focuses on tween characteristics that relate directly to the design of museum programming for tweens. Issues such as tween peer groups and the transition to middle school are also beyond the scope of this project, as

are serious psychological distress, drug and alcohol use, divorced parents, eating disorders, and sexual activity.

This project was limited by time, geographic, and sample size constraints. The results are restricted to the literature reviewed and to the professionals and tweens interviewed in California in the winter and spring of 2005-2006. The project has a narrow sample size: twelve professional interviews and eighty-three focus group participants. The results of the interviews are limited by the number and type of people interviewed: museum educators, middle school staff members, and other professionals who work with tweens. Parents of tweens and other interested individuals were not interviewed as part of this project. The results of the focus groups are limited by the number and type of participants. Only eighty-three tweens participated in focus groups—other youth, parents, teachers, museum educators, and former tween program participants were not included in the focus groups. In addition, with the exception of the Redlands focus group, the tween focus groups took place in schools, not museums. The settings may have biased the results.

LITERATURE REVIEW

As education has become increasingly integral to the purpose and mission of museums in America, institutions have strived to reach out to new and previously underserved audiences. One audience that is still largely overlooked by museum educators is tweens. Tweens are a largely misunderstood population segment in the United States, and this remains true in museums. While the world of commercial advertising has, in the past decade, realized the significance of the tween age group as consumers, museums have largely failed to realize the significance of tweens as museum-goers and program participants. This literature review attempts to demystify the tween age group for museum educators through examination of psychological and neurological theory and the practical applications of these theories.

The primary purpose of this review is to assess the relevant literature of the past century, the time in which the concept of teens and tweens first developed, using a thematic structure of five sections. The first section addresses the development of adolescent and early adolescent research in the field of psychology, focusing on the debate over the nature of adolescence, adolescent cognitive development and identity formation, and the emergence of the idea of a separate "early adolescent" stage. The second section examines recent discoveries in the field of neuroscience

that pertain to the development of the tween brain, especially the apparent

proliferation and subsequent loss of gray matter during this time, the

continued growth of white matter, and the effects of experience on brain

development. While these first two sections deal primarily with theory, the

remainder of the literature review looks at the applications of these

theories. The third section reviews popular parent and teacher guides for

dealing with tweens and the fourth considers the ideas of youth

development with tweens. The final section focuses on museum

programming for tweens and raises questions for further research.

Adolescent and Early Adolescent Psychology

The study of adolescence and early adolescence, the specific

developmental stage in psychology which relates to "tween-hood," is

relatively young. Adolescence as a concept emerged around 1900, but

early adolescence was not widely accepted until the 1980s. Adolescent

research can be divided into two distinct phases, the first approximately

from 1900 to 1970 and the second from 1970 to the present. The first

phase was largely descriptive and theoretical. It laid the foundations for

the more scientific methodologies used during the second phase.

Psychologist Laurence Steinberg describes this first period of research as

"characterized by grand theoretical models that purportedly pertained to

all facets of adolescent development." Steinberg argues that the gap

between theory and empirical research was huge.[2] This early research period centered around the debate between the "storm and stress" and the "stability and continuity" views of adolescence. Psychologists also focused on cognitive development and identity formation.

The scientific study of adolescence was initiated in 1904 when G. Stanley Hall published his work *Adolescence*. He believed that adolescence was universally and inevitably a time of internal turmoil and conflict, or "storm and stress."[3] Sigmund Freud further developed Hall's ideas of storm and stress, reasoning that "adolescence is marked by turmoil and turbulence because unconscious prohibitions are raised against releasing tensions brought about by puberty."[4] He described the narcissism of adolescents and introduced the idea of the "adolescent rebellion" against society. Anna Freud continued her father's work, describing adolescence as a "developmental disturbance."[5] The Freuds developed and worked within the psychoanalytic view, which holds that human development from birth to adulthood is beset with challenge and crisis.

Peter Blos later worked within this Freudian model to describe five phases of development, including a second phase called "early adolescence." He describes the signs of early adolescence as lessened identification with parents, increased identification with peers, intense (but often transitory) involvement with causes, infatuation with hero figures,

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and investment in a relationship with an opposite sex peer.[6] Erik Erikson is another psychologist who worked within the storm and stress view of adolescence. He believed in the psychosocial model, that psychological development occurs because the individual must adapt to the demands and expectations of society. Erikson believed that the life-long journey of identity formation involved meeting crises and making commitments. He created the eight ages of man, each marked by a developmental crisis. He saw the crisis of adolescence as being "identity versus confusion." The resolution of this crisis would come by "achieving fidelity to one's commitments, while retaining diversity on one's approach."[7] Erikson is responsible for contemporary notions that adolescents face a crisis over identity due to changes in internal and external environments.

In the second half of the twentieth century a new movement in psychology produced psychologists who argued against the storm and stress theory of adolescence. These psychologists, who include behaviorists such as Albert Bandura, focus on observable behavior rather than speculation about unconscious motivation. They argue that people develop behavior from observing and imitating how others behave. Bandura does not support the storm and stress theory, but rather contends that adolescence is marked by "stability and continuity." Adolescent behaviors emerge from childhood behaviors. If childhood is stable, then

adolescence will be stable. Because behavior is learned by observation, parents have a substantial influence over the transition of stable children into stable adults. Bandura maintains that the few adolescents who are antisocial attract the attention of adults, leading them to make invalid generalizations that all adolescents cause problems and create turmoil.[8]

Researcher Daniel Offer's long term studies of high school students throughout the United States support Bandura's arguments. Offer has found that the great majority of adolescents are relatively stable and well adjusted: "the normal American teenager sees him or herself as a competent individual who is able to resolve the problems that come his way during the adolescent years, without too much pain, suffering, doubt, or indecision." Offer agrees with Bandura that disturbed adolescents have molded psychologists' view of the developmental period. Studies of normal adolescents support the stability and continuity theory, rather than the storm and stress theory.[9] While the debate between these two theories continues today, the stability and continuity theory has gained wider acceptance.

Over the past fifty years, psychologists have come to consider cognitive development and identity formation to be the most important adolescent achievements. Cognitive processes account for many adolescent changes in critical areas, such as social relations, moral

reasoning, self-identity, career and occupational interests, coping skills, and intelligence. Jean Piaget is the pioneering psychologist in cognitive development. Piaget conceived of four stages of cognitive development that illustrate the increasing coherence between mind and reality. Early adolescents are transitioning between Piaget's final two stages: the concrete operational stage and the formal operational stage. Children in the concrete operational stage organize information around concepts, categories, or things that are visible and identifiable. They can use simple logic for concrete situations. Adolescents in the formal operational stage have the ability to reason about abstract concepts without visible representations. For example, formal operators, and not concrete operators, have the ability to consider competing points of view and keep those points of view in mind while examining an issue. [10] Piaget's work has inspired many researchers of adolescent development, especially his notion of formal operations.

In addition to cognitive development, identity formation is a focal point in adolescent research. A pioneer in this field, James Marcia, attempted to map the journey adolescents undertake to form identity. He identifies four qualitatively distinct forms that identity takes, or four identity statuses: identity foreclosure, identity moratorium, achieved identity, and identity diffusion. Identity foreclosure occurs when children

make commitments without exploring alternatives. Commitments are often based on parental ideas and beliefs that are accepted without question. Identity moratorium occurs when early adolescents begin to question ideas and beliefs and actively explore alternatives. This is often followed by achieved identity, when adolescents have explored and committed to important aspects of their identity. Some adolescents become overwhelmed by the task of identity development and neither explore or make commitments. They are in an identity diffusion status, in which they may become socially isolated and withdrawn.[11]

Gerald Adams and Harold Grotevant took Marcia's ideas and developed a standardized instrument to measure identity status.[12] This instrument has been much utilized by psychologists since the 1980s to conduct in-depth scientific studies. One significant example of such a study was Janice Streitmatter's 1989 research into the relationship between academic performance and identity status. She concludes that students with better developed identities focus more on environmental cues and conduct formal operations better.[13] Her studies and others have indicated that supportive parents, schools, and communities that encourage exploration foster identity achievement. Identity achievement is important because it is associated with higher self-esteem, increased critical thinking, and advanced moral reasoning.

As an important part of early adolescent identity, David Elkind describes the egocentrism of this group as a combination of two phenomena: an "imaginary audience" and a "personal fable." The imaginary audience refers to early adolescents' belief that they are at the center of everyone else's world and that people are constantly judging them. The personal fable refers to early adolescent exaggerated beliefs about their own uniqueness. Elkind comments: "Note the difficult situation for the early adolescent who assumes an imaginary audience and a personal fable: no one understands, but everyone is paying attention, probably to criticize." This egocentrism is the root of their extreme self-consciousness.[14]

Robert Selman has also looked at identity formation and has described the development of interpersonal understanding and levels of social cognition. How an individual perceives social reality determines the stage of interpersonal understanding. During early adolescence, the fourth level of interpersonal understanding, "true third person perspective," is achieved. These individuals "simultaneously see themselves as both actors and objects, simultaneously acting and reflecting upon the effects of action on themselves, reflecting upon the self in interaction with the self."[15] The development of interpersonal understanding varies among individuals—individual early adolescents can be higher or lower on the scale.

Towards the end of the 1970s, the idea of a distinct developmental period known as early adolescence began to become widely argued. In her classic 1974 paper, Beatrix Hamburg made a compelling case for viewing the early adolescent period as a distinct period of the life course.[16] About the same time, Hershel Thornburg describes the six developmental tasks of early adolescents: 1) become aware of their physical changes, 2) assimilate knowledge into problem-solving strategies, 3) learn new gender roles and social roles, 4) develop friendships, 5) achieve increasing independence, and 6) realize their proclivity to identify with stereotypes.[17] Later, Thornburg directly addresses the question of whether early adolescence is a stage of development. He argues that early adolescence is a distinct stage, but that it had not been previously recognized because it is a transitional stage, rather than a stable stage. Transitional stages are social phenomena: "they exist because of the changing nature of the social structure and the evolution of the individual life structure in relation to it." Thornburg describes the physical, cognitive, and social development of early adolescents, as individuals experiencing a unique transitional period of life.[18]

Thornburg was part of the surge of interest in adolescence and early adolescence that has occurred since the late 1970s. This surge has corresponded to a more scientific second phase of research. Research on

growth and development during adolescence has expanded at a remarkable

rate since Thornburg's initial work, especially during the 1990s.

Researchers in the 1980s to the present have conducted scientific studies

that test the theories developed during the first phase of adolescent

research. The themes of these studies revolve around cognitive

development, identity, and self-esteem. This era produced numerous

studies exploring such issues as the importance of peer culture, the rise of

drug and alcohol use, and the impact of divorce on an adolescent's self

concept.[19] While immensely valuable to psychologists and society, these

studies remain outside the scope of this project. However, the growing

number of studies that look at the application of psychological theory in

youth development practices will be addressed in the fourth section of this

literature review. The past one hundred years of psychological theory and

research have produced a myriad of studies which attempt to describe the

often baffling characteristics of adolescent behaviors.

Adolescent and Early Adolescent Neuroscience

While the previous section of this literature review described how

psychologists have used observation to develop theoretical models of

adolescent development, this section details the biological basis of

behavior—the science of the brain that explains the behaviors described

by psychology. The past decade has seen surprising new discoveries in the

field of neuroscience in this realm. Neuroscientist Linda Spear describes how neuroscientists have begun to view the period of adolescence differently:

> The focus of research is gradually changing, with the recognition that the brain of the adolescent differs markedly from the younger or adult brain, and that some of these differences are found in neural regions implicated in the typical behavioral characteristics of the adolescent.[20]

While it had been formerly believed that the brain no longer underwent physical changes after the first few years of life, new research has shown that in fact the brain goes through dramatic and crucial changes during adolescence. This new understanding is combined with years of neurological research to offer a more complete picture of human brain development.

In the 1980s and 1990s, neuroscientists outlined a model of brain development which showed that synapses start to form before birth, rise to adult levels at birth, increase to twice adult levels through childhood, stay there for a period of time, and then fall to adult levels. A number of studies led to the formation of this model. Peter Huttenlocher conducted studies on the brains of children from autopsies and counted the number of synapses in brains of different ages. Pasko Rakic counted synapses and outlined brain development in rhesus monkeys. Harry Chugani used PET scans of children's brains to measure their glucose levels as an indication

of brain activity.[21] While these studies supported the proposed model of early brain development, none looked at the development of adolescent brains.

The pioneer in this field of adolescent neuroscience is Jay Giedd, who has conducted the first long-term study of brain development in normal (those not diagnosed with psychological disorders) children through MRI scans. He has shown that brain growth does indeed occur during early adolescence. Giedd has detected continued growth of gray matter, the outer layer of the brain. This growth occurs in a number of key areas of an adolescent's cerebral cortex, including the parietal lobes, which are associated with logic and spatial reasoning, and the temporal areas, which are linked to language acquisition and use. He has discovered complex, ongoing growth in the frontal lobes, the area right behind the forehead. This area, also known as the prefrontal cortex, is the brain's "police force," the area that plans ahead and resists impulses. Giedd has found that the prefrontal cortex continues to grow until peaking at puberty, when it begins to shrink down to adult levels. Essentially, gray matter rises in volume in early adolescence far beyond adult levels and then goes back down to a stable amount. The frontal lobes are the last area of the brain to stabilize, sometimes not until past the age of twenty. This may explain adolescent impulsive, uninhibited behavior. Giedd also argues that

because of the dramatic changes in the brain during adolescence, this period is a neurological "critical" period, a "stage of development when the environment or activities of the teenager may guide" the pattern of brain growth during adolescence. [22]

While Giedd has revealed the proliferation of gray matter at the beginning of adolescence, other researchers have been looking at the subsequent loss of that gray matter, the "pruning" of the brain down to adult levels. Paul Thompson and Elizabeth Sowell have documented striking gray matter loss after the age of sixteen, particularly in the frontal lobes. They estimate that the average teenage brain cuts back seven to ten percent of its gray matter between ages twelve and twenty, with some smaller regions losing as much as fifty percent. For example, the caudate, a motor-control section of the brain, prunes nearly twenty percent of its gray matter during early adolescence, first blossoming from around eight to eleven years of age, and then reaching mature levels, after a massive loss of tissue, around thirteen. This "pruning" in the adolescent brain is connected to the fine-tuning of important brain functions, including inhibition control and working memory.[23]

Another neuroscientist interested in adolescent development, Francine Benes, has studied the growth of the white matter in the brain during this period. She has looked at the development of myelin, white

matter that insulates the neuron cells and allows for much greater functionality of brain cells. Myelin grows primarily during early childhood. However, Benes has found that the neurons of adolescent brains are still being enveloped in myelin. In fact, she found that myelin increased one hundred percent during adolescence. The main area of the brain where Benes found the myelin growth is the tissue connecting two crucial brain areas, the cingulated gyrus and the hippocampus. The connection between these two regions is related to the quick reactions to historical, contextual thought. The cingulated gyrus controls the basic gut reactions while the hippocampus controls reactions based on memory. If the connections between these two regions are not optimal in adolescents, this may explain their impulsive, unpredictable emotional responses. Benes found that girls' brains myelinate faster than boys, which may explain why girls appear to reach emotional maturity before boys. Myelination has both advantages and disadvantages. Myelinated neurons are more efficient, but also more rigid and resistant to change.[24]

The idea that the brain continues to change during adolescence may be new, but looking at how experience can cause the brain to grow and change has been a focus in neuroscience for a number of years. Marian Diamond has conducted ground-breaking research with rats, demonstrating how experience can mold the brain. Her experiments

demonstrate that a group of rats with toys and other stimulation have more brain growth than a group of rats without any stimulation. She concludes that experience could change the fundamental structure of the brain. Also using rats, William Greenough furthered Diamond's research. He has shown in various studies that complex environments make rat brain synapses and dendrites increase, regardless of age, although changes in younger brains are generally more impressive. Greenough describes the difference between "experience-expectant" and "experience-dependent" changes in the brain: the former will happen as long as normal environmental conditions are met, while the latter depend on the specific experiences of the individual. For example, the normal development of the language regions in the brain based on normal conditions is experience-expectant, whereas a specific experience such as learning to play the violin will change the motor regions of the brain in an experience-dependent way. Much of basic brain development is driven by genes, but many connections develop and thrive simply because they are used more frequently.[25]

Neuroscientists have also studied the effects of the changing adolescent brain on emotions. Deborah Yurgelun-Todd has observed where in the brain adolescents process emotions compared to adults. In adults, emotions are processed in the frontal cortex, but Yurgelun-Todd's

research shows that early adolescents process emotions in the amygdale, one of the key areas for instinctual reactions. She concludes that early adolescents are processing emotions in a different part of their brains than adults because the connections in the frontal cortex have not been fully formed. [26] Another study by Robert McGivern supports these findings. He has found that as children reach puberty, the speed at which they can identify emotions drops by as much as twenty percent. Their reaction times remain slow during adolescence, returning to normal around age eighteen. McGivern concludes that this reflects the relative inefficiency in the frontal circuitry of the adolescent brain as it undergoes remodeling. In other words, because of the continued growth and change in the prefrontal cortex during adolescence, teens do not process emotions quickly or in the same way as adults.[27]

Another area that interests neuroscientists is the risk-taking tendencies of adolescents. An inclination toward risk-taking has been linked to dopamine, a neurotransmitter related to the pleasure-and-reward circuit of the brain.[28] When dopamine connects with dopamine receptors in the brain it causes a feeling of satisfaction. Dopamine levels decline through childhood to adulthood, but adolescents still have higher levels than adults.[29] Linda Spear has discovered that while dopamine continues to decline in other parts of the brain, it actually increases in the prefrontal

cortex in adolescents. As it increases in this late developing region, the brain seeks to maintain a balance and decreases dopamine levels in the rest of the inner reward circuit of the brain. Spear argues that this may cause teenagers to need more stimulation through risk-taking activities in order to achieve the same satisfaction as an adult. [30] Researchers like Spear and the others mentioned above have opened the window into studying the adolescent brain. This review uncovers just the tip of the iceberg in understanding the immense changes in the brain that occur as humans move through their second decade of life and how these changes impact tweens' behavior, emotions, and impulses.

Practical Guides for Dealing with Tweens

The findings of psychologists and neuroscientists have been put to practical use in popular guides written for parents and teachers. These guides differ from academic literature in that they directly address the fears and misconceptions adults often have about tweens. While the guides can be useful, they can also contribute to the misperceptions about the age group. A quick search on amazon.com reveals an astounding number of guides targeted to adults on the topic of raising children. As tween-hood became more widely recognized as a separate and unique developmental stage in the 1990s, guides for specifically dealing with tweens started appearing. Some have daunting titles, such as *The Everything Tween*

Book: A Parent's Guide to Surviving the Turbulent Pre-Teen Years and

The Tween Years: A Parent's Guide for Surviving Those Terrific,

Turbulent, and Trying Times.[31] It appears that parenting tweens is a

frightening task, but there is plenty of advice out there.

One of the earliest guides is *Early Adolescence: Understanding the*

10 to 15 Year Old by Gail Caissy. Designed for parents and teachers, this

guide provides excellent detailed descriptions of tween reactions to their

new mental skills. Caissy explains that younger children view something

in terms of how it affects them, but tweens begin to conceptualize and to

think in more abstract terms. They can visualize and form ideas in their

minds without having to see things in front of them. They begin to form

ideas on their own and rely less on adults for opinions, information, and

judgments: "Having lost the simple ordered conception of the world they

had in childhood, early adolescents are trying to clarify their view of the

world." Tweens question their values and begin to see a whole range of

problems previously unknown to them. They begin to analyze these

problems, but because they cannot yet see how complex the problems are,

they offer simple solutions to complex problems and cannot understand

why adults have not found these solutions yet. According to Caissy, the

most important task for tweens is the achievement of identity:

> During this process, the early adolescent's perception of himself (self-concept) undergoes tremendous reorientation as he begins to assess himself from an entirely new perspective. During the process of discovering who they are and their role in the world around them, early adolescents are in constant inward turmoil, experiencing much confusion, many paradoxes and many emotional ups and downs.

Their developing self-concept and self esteem is derived from self-competence, their ability to do things independently and successfully. Caissy also has advice for teachers. She contends that tweens cannot concentrate for long periods of time and that learning situations need to be broken into smaller chunks of time. Tweens need to be actively involved in their learning, not just observers. Tweens are very curious, especially about their current interests. They are beginning to philosophize about life and enjoy having discussions with adults about their experiences.[32]

Another informative guide is Charlene Giannetti's *The Roller-Coaster Years: Raising Your Child through the Maddening Yet Magical Middle School Years*. Like Caissy, Giannetti describes many of the common characteristics of tweens. Tweens exhibit a roller-coaster of emotions, fluctuating between feeling invincible, optimistic, confident, happy, despondent, angry, and hopeless all in one day: "It's normal for most [tweens] to vacillate and this means many spend time fretting, mooning, fuming, or licking wounds." She argues that tweens are natural worrywarts: "a landmark study of seven to twelve year olds revealed that

children had, on average, eight items on their worry agenda. The concerns of these otherwise psychologically healthy youngsters were so redundant and commonplace that the psychologists concluded fretting was perfectly normal." The classic worries of tweens include social anxiety, a parent dying, divorce, school, bodily injury, the future, gender woes, and racial inequality. However, tweens can still look at the world with wide-eyed wonder, a "wonderful blend of naïveté and budding sophistication." She goes on to describe how tweens are fascinated by the outside world and how it affects them and those around them. They believe they can make a difference and begin to focus on the problems and injustices they see. They can be sympathetic and, with guidance, can begin to see and meet other people's needs.[33]

The two guides discussed above use much more dramatic language than the academic literature of psychologists and neuroscientists discussed in the previous sections. While this language reflects the common feelings of fear and frustration that many adults have towards tweens, the language also continues to feed these feelings of fear and frustration. While the guides are based on valid academic research, the way in which they present their information may serve to further misconceptions, rather than to change them.

Perhaps the most influential guide for raising tweens was published by Peter Benson in 1998: *What Kids Need to Succeed: Proven, Practical Ways to Raise Good Kids*. In contrast to the other guides discussed previously, Benson's goes right to the source by listening directly to tweens and presents information more positively. His recommendations are based on a series of national surveys of hundreds of thousands of sixth to twelfth graders conducted between 1989 and 1997. Benson concludes that the difference between troubled youth and those leading productive and positive lives can be distilled into forty "developmental assets" (see Appendix E for a complete list of the assets). These assets "are resources upon which a child can draw again and again. And they're cumulative, meaning that the more a young person has them, the better." The first twenty are external assets: "things in the young person's environment that support, nurture, and empower him or her, set boundaries and expectations, and make constructive use of his or her time." The second twenty are internal assets: "attitudes, values, and competencies that belong in the head and heart of every child." Benson's developmental assets are significant to this study because they were drawn directly from youth voices and have been influential in shaping recent youth development programs. For example, they were used during the

evaluation of the Museum Youth Initiative programs in California, discussed in the final section of this literature review.[34]

Youth Development Practices

Based on the theoretical foundations laid by psychologists and neuroscientists, practices and theories of youth development have abounded in recent decades. Unlike the parent guides discussed above, the portrait this research paints of tweens is positive. Psychologist Laurence Steinberg argues that one of the defining features in the field of current adolescent research is "the idea that the adolescent period provides the ideal time within life to study the bases of positive human development. The study of adolescent development is now characterized by a synthetic interest in basic and in applied concerns about youth development."[35] The belief, in both the fields of psychology and neuroscience, in the plasticity of adolescents provides the theoretical basis for the view that all young people possess strengths and the potential for positive development. Steinberg recognizes that the field has come "to place a premium on community-based, change-oriented methods both to study development and to evaluate the efficacy of programs and of policies designed to alter the course of adolescent life for the better."[36]

The National Collaboration for Youth provides this valuable definition for youth development:

> …a process which prepares young people to meet the challenges of adolescence and adulthood through a coordinated, progressive series of activities and experiences which help them to become socially, morally, emotionally, physically, and cognitively competent. Positive youth development addresses the broader developmental needs of youth, in contrast to deficit-based models which focus solely on youth problems.

Rather than simply seeking to prevent young people from engaging in dangerous behaviors, youth development additionally aims to mobilize communities to create positive goals and safe outcomes for all youth. According to the National Collaboration for Youth, effective programs have three main characteristics. First they are youth-centered, with staff and activities that engage young peoples' diverse talents, skills and interests, build on their strengths, and involve them in planning and decision-making. Second they are knowledge-centered: building on a range of life skills, activities show youth that "the joy of learning" is a reason to be involved, whether in sports, clubs, arts, or community service. Activities provide opportunities to connect with a wide array of adult and peer mentors. Youth development programs are also care-centered. They provide family-like environments where youth can feel safe and build trusting relationships with adults and with one another. [37]

These current goals and descriptions of ideal youth development programs are the products of decades of experimentation with youth development. Beginning with the Affective Education movement in the

1960s, there has been a remarkable proliferation of youth development

programs with self-esteem enhancement goals. Many psychologists, such

as David DuBois, Lily Dow Velarde, and Nancy Deutsch, have examined

the goals and effectiveness of these youth development programs. DuBois

describes the primary goal of youth development to be "to promote

healthy development and thus prevent negative outcomes such as serious

emotional disturbance, delinquent behavior, and academic failure." He

argues that early adolescents in particular are at risk for steep declines in

self-esteem from earlier high levels. DuBois has found that youth

development program are most successful when they target not just

general self-esteem, but esteem in specific areas or domains of adolescent

lives. His research has indicated that it is possible to significantly enhance

the self-esteem of youth through intervention. So-called "at risk" youth—

either due to individual vulnerabilities or because of environmental

circumstances—show greater responsiveness to youth development

programs. Most significantly, DuBois has found that programs are more

effective when informed by relevant theory and research.[38]

The Adolescent Social Action Program (ASAP) in New Mexico is

an early example of a youth development program which successfully

applies the psychological theories of identity formation to facilitate self-

esteem growth. Velarde has assessed this program, which has been active

since the early 1980s, and explains that the success of ASAP stems from:
"(1) including adult role models that help shape young people's identity;
(2) providing opportunities for young people to practice 'adult'
experiences in a safe and nurturing environment; (3) bridging the
adolescents' past real-life experiences to create solutions to future
problems; and (4) creating a sense of belonging and purpose through
school and community-based projects." Verlarde argues that youth
development efforts based on cognitive, behavioral, normative, and social
skill approaches have shown effectiveness in reducing tobacco, alcohol,
and drug use. These are in contrast to the "scared straight" approaches,
which studies have shown to be ineffective. [39]

The Boys and Girls Clubs of America is another well-established
youth organization based on the principals of youth development. It has
been often studied and used as a model for other programs. Deutsch has
examined specifically the relationships youth develop with these clubs as
"home-places." She argues that the social climate of a youth organization
is important to its ability to attract tweens and support their development.
Research has shown that places play a role in the development of an
individual's identity and self-esteem. Tweens use favorite places to gain a
feeling of control, autonomy, and overall sense of self. They use them to
regain a sense of balance when experiencing threats to their self-esteem.

Because early adolescence is a time when youth separate from families, the desire for new supportive places is particularly strong. Youth development organizations can become the perfect spaces away from family for tweens to establish such supportive and healing "home-places."[40]

Tweens in Museums

These ideas of creating safe and supportive spaces for tweens through the youth development model have taken root in the development of after-school and other programs throughout the country. The safe and educational spaces of museums are a natural fit for this model. Two trends have paved the way for this type of programming: the rising capacity of museums to design and deliver high-quality education programs and the growing recognition by education experts and reformers of the importance of after-school time. Museums bring a number of unique assets to the after-school opportunity, including creative staff, educationally rich settings, and collections of objects with great pedagogical power.

While museum efforts to engage tween audiences exist throughout California, literature in the museum field that pertains specifically to tweens is sparse. Recently, articles about slightly older teenagers in museums have begun to appear, even making the cover of the

September/October 2005 issue of *Museum News*, the bimonthly

publication of the American Association of Museums.

Between 2000 and 2004, the James Irvine Foundation funded the

Museum Youth Initiative (MYI) in California. MYI represents an

excellent example of youth development theory applied to the museum

setting for tween audiences. The project supported ten museums around

the state to develop after-school programming. Two-thirds of the

participants were middle-school students. The goals of MYI were "to

improve student achievement in the classroom and to help participating

museums institutionalize youth development principles, become learning

environments that provide academic enrichment, and sustain high-quality

program practices and resources over the long term." The key findings

from an evaluation of the MYI programs are that museums "can play a

value-added role as effective informal learning organizations" and that

museum after-school programs are "able to help student thinking skills

and behaviors." The report also contends that the after-school programs

created a ripple effect on the internal culture and capacity of the museums

themselves. According to Robert McKernan of the San Bernardino County

Museum, participation in MYI "has been a vehicle to increase the

professional staff's awareness of what an education center, and museums

in general, can do for the community."[41]

According to the report, two central principles proved to be especially important to the success of MYI programs: the application of a youth development approach and linking programs to in-school curricula. MYI sought to bring greater structure and grounding in youth development theory to museum after-school programs through a foundation of seven youth development objectives, based on the youth development theories outlined in previous sections of this literature review. The first objective was to have clear and consistent communication with the youth participants and their families about program goals, guidelines, and activities. The next was to provide safe and accessible facilities for program activities. The programs endeavored to involve the youth participants in program planning and to structure activities around hands-on, active learning. Another objective was to have consistent and knowledgeable staff to provide supervision and mentoring, with a low museum staff to participant ratio. The final objective was for programs to conduct regular staff program reviews and adjustments. While MYI was not solely targeting tween audiences, the majority of program participants were tweens, and the lessons learned from the project are relevant for museum educators looking to engage such audiences.[42]

The aforementioned cover article in *Museum News* surveys innovative museum programming for teens throughout the county. While

its author, Deborah Schwartz, looks at programs that engage teenagers, many of her observations apply to younger tween audiences. She argues that "teens, if we allow them, have the potential to provide our museums with the fresh perspective and energy required by each new generation as it reinvents and finds the significance of its own cultural patrimony." This is certainly also true of engagement with tweens. Schwartz goes on to describe the successes in teen programs at a number of institutions around the country, including the Andy Warhol Museum in Pittsburgh, the Walker Art Center in Minneapolis, the Whitney Museum of American Art, the Brooklyn Children's Museum, and her own institution at the time, the Museum of Modern Art.

In discussing these programs, Schwartz offers guidelines for developing museum programs for youth audiences. These guidelines, while based on experiences with teens, all apply to programming for tweens as well. Schwartz strongly recommends that staff members be authentically interested in teens. She has found that the artifacts in museum collections are ready catalysts for adolescent curiosity and learning. Schwartz says that teens like to be with peers in social situations and they like to follow their own ideas. Teens respond to structured situations in which expectations are high and clear. "Behind-the-scenes"

approaches are meaningful to teens. Lastly, teens need to be able to follow their interest in museums over an extended period of time.[43]

Summary

Psychological and neurological theory has advanced in the past century to explain and describe tween behaviors, such as cognitive development and identity formation. These theories have been applied by authors who have written guides for parents and other adults to help them understand and support the development of their tweens, offering such pertinent advice as "allow tweens the freedom to explore on their own, but with the support of parents and teachers not far in the background." However, the language in some of these guides perpetuates negative stereotypes about tweens. Psychological and neurological theory supports the idea that early adolescents are highly vulnerable and moldable, thus efforts have been made to intervene during this developmental period and support positive growth. Youth development programs and organizations are an important venue for supporting tween development. A logical place to offer these programs is in museums, as museums already have the capacity to offer excellent educational programming and to provide safe spaces for tweens to explore and grow. There exists a gap in the literature regarding the application of youth development programming for tweens in museum settings. The MYI program was for all school-aged children

and Schwartz's article addressed teenagers. Specific research surveying museum programs for tweens is required. The goal of this project is to begin to fill this gap.

FINDINGS

This section reports the findings from the primary research: twelve interviews with professionals who work with tweens and eight focus groups with eighty-three tweens. The interviews are discussed first, followed by the focus groups.

Interviews

The majority of interviewees felt that museums are appropriate, if not ideal, settings for engagement with tweens. Matt Reno, Director of Operations at the Aim High for High School program for middle school students in San Francisco, felt that museums have a number of unique qualities from which tweens could benefit, including specialized expertise that teachers do not possess and the capacity to provide excellent hands-on learning experiences. Museums provide a connection to the real world that students do not find in the classroom.[44] Most interviewees also agreed, however, that museums in general do not do enough to engage the tween audience, at least not with programming. While museums, especially science museums, design their exhibits with a sixth or seventh-grade target audience, their programming is typically targeted at younger elementary and sometimes older high school audiences. Middle schoolers often fall through the cracks. Mary Moran, the coordinator of Renaissance Academy's after-school program in San Jose, believed that tweens often

get bored at museums and act out. Tweens do not see how what is in museums applies to their lives.[45]

Characteristics of Tweens

All of the interviewees provided detailed and vivid descriptions of tweens from their own experiences. All agreed that tweens are a challenging age group to work with, but also a fun and rewarding one. Rachel Cox, manager of the Mexican Museum's after-school art program, described tweens as "contrary and difficult," but at the same time "open to learning and exploring new ideas and very eager for creative expression."[46] Ted Robertson, a Biology Education Specialist at the Lawrence Hall of Science, agreed that tweens are challenging to manage, but that they are "fun to work with and full of energy."[47] Vivian Altmann, the Director of the Children's Outreach Program at the Exploratorium, held that because of their enigmatic quality, tweens are a very compelling group to work with. She was impressed by what tweens are able to do and produce: "They can do some pretty advanced stuff. If you get serious, they get serious." She said that tweens respond well to challenges and high expectations. They will rise to the occasion, they just need focus.[48] Additionally, interviewees loved tweens' wonderful imaginations and how tweens are still willing to play.

Confirming psychological and neurological studies discussed in the literature review, many of the interviewees emphasized how diverse and unpredictable this age group is, as compared to younger children and older teenagers. Tweens are undergoing vast changes mentally and physically and each tween is at a different stage developmentally. The range within one group can be quite large between more mature and less mature tweens of the same age. Reno commented that while in many ways "a fourth grader is a fourth grader," the same cannot be said of a middle schooler—each tween is developing at their own pace. This makes trying to reach students individually in a group situation difficult.[49] Aekta Shah, Middle School Programs Coordinator at the Crissy Field Center, concurred that one can make no assumptions about tweens and that each one is very unique. There is huge variation within the age group, as sixth graders are vastly different from eighth graders and have different needs.[50] Tweens are changing very rapidly and constantly. It can be different day to day or week to week on how they will react to something. To further complicate the situation, within each individual there additionally exists a complex and unpredictable dichotomy of maturity and immaturity. For example, Robertson explained how tweens are trying to assert their independence from their parents, but at the same time may get extremely homesick when away on a backpacking trip for a few days.[51] The mixture

in each individual of child-like and adult-like characteristics and behaviors is probably the defining attribute of tweens, along with their status as being "in limbo" between childhood and teen-hood. Nancy Kirkwood, Museum Youth Club Coordinator at the San Bernardino County Museum, described tweens as "past the kids-on-the-playground stage, yet not young adults, although they think they are young adults." [52]

Interviewees observations mirrored some of the research findings in the literature. As Robertson explained, tweens are forming their identities and trying to find their way in the world. This tends to make them very self-centered.[53] They are deciding what type of person they want to be and how they can communicate this to peers in what they wear or how they act. Reno said that he believes that tweens feel like they are constantly under a microscope, that people are always watching and judging them.[54] This means that while tweens are forming their individual and unique identities, they do not want to obviously individuate themselves from others. Tweens are learning how to behave properly and require good role models to follow. They are full of potential and have many life paths ahead of them. Moran thought one of the main challenges for adults who work with tweens is to help the tweens to see the many options that are before them.[55] Shah believed one of the main goals should be to empower the tweens to make well-thought-out decisions for

themselves. Naomi Stein, coordinator of the Lawrence Hall of Science's

Teens Exploring and Achieving in Math and Science (TEAMS) program,

commented how this is the perfect time to expose tweens to things you

want them to be doing as adults.[56]

Another predominant tween characteristic stressed in my

interviews is tweens' desire to be loved and needed. They want to have a

place to which they belong. Kirkwood illustrated how much her Museum

Youth Club members at the San Bernardino County Museum want to be

useful and to do things that are important: "If I say, 'I need volunteers …'

I see a sea of hands before I can get the rest of the sentence out. And most

of them will even volunteer for something they don't like doing if it is

something that is obviously important." This helps to make them open to

new experiences. Kirkwood commented that while on the surface tweens

put on that they do not want to try anything new, underneath they are

really "into" new experiences.[57] It is not hard to get tweens excited about

something, especially if they can see how it relates to their own lives.

Margie Ryerson, counselor at Joaquin Moraga Intermediate School, found

that tweens have open minds with fewer preconceptions and prejudices

than older teens. They are more willing to ask questions.[58] Tweens still

respect authority, another trait that often disappears by full-fledged teen-

hood. Kirkwood said that tweens tend to be very loyal once a relationship has been established.[59]

Adults who work with tweens have observed that the gender divide between girls and boys first becomes really noticeable and significant with tweens. Tweens start to care about their gender roles, and differences between the genders become more distinct. Reno, from the Aim High program, found girls to be much more focused and boys to be very high energy.[60] Altmann noticed that girls tend to be more social and are more likely to base decisions on what their friends are doing. For example, girls tend to sign up for her Exploratorium summer school class in groups of at least three, while boys sign up individually based more on their own interests. She too found that girls are able to be more focused and do better with tools than boys, who cannot seem to stand still.[61] Many of the interviewees pointed out the importance of peer groups and peer pressure in the lives of all tweens. Ryerson believed the main difference between middle-schoolers and younger students is their obsession with what their peers are thinking about them. This can completely distract them from anything else going on around them.[62] Tweens are always looking for approval from peers and adults. They are trying hard to impress others, but they do not really know how.

Many of the interviewees addressed the fact that tweens sometimes make bad decisions and get themselves into trouble. John Chovan, a social studies teacher at Ruth O. Miller Middle School in Bloomington, noticed that tweens often have feelings of invincibility, believing that nothing bad will happen to them.[63] Wendy Derjue-Holzer, Director of the Field Trip Program at the Exploratorium, noticed that many tweens have not yet developed a conscience about doing the right thing—they need adult supervision to help them make the right decisions. These observations confirm the literature review findings which indicate that tweens have not established moral boundaries yet—they have no clear internal sense of right and wrong.[64]

Programming for Tweens

The interviewees drew from their experiences with tweens to provide suggestions for successful programming. Many stressed the importance of programming for tweens outside of school, either after school, on weekends, or during the summer. Interviewees liked the idea of multi-session after-school programs, where participants can build relationships with museum staff over time. For example, Kirkwood's Museum Youth Club at the San Bernardino County Museum meets once a week after school for two-and-a-half hours. Three groups of twenty to thirty participants from two different middle schools each meet a different

day of the week. The participants generally join the club at the beginning of their seventh grade year and can continue until they finish eighth grade, when they have the option to return to the program as teen leaders. Shah, whose Junior Ecologist Program at the Crissy Field Center also meets regularly every week after school, felt it is important to provide something safe for tweens to do after school, especially in urban environments where they can really get themselves into trouble.[65] In addition to their after school program, the Crissy Field Center offers summer programs for tweens to help keep them positively engaged during the long months away from school. As tweens are naturally exploring, experimenting, and asserting their independence, they can get caught up in dangerous and self-destructive behaviors, such as drugs or gangs. By providing something safe and positive for tweens to do outside of school, museums can help them avoid such negative behaviors.

Altmann emphasized that after-school programs should not be "super-academic" and tweens should be intrinsically motivated to participate. During her summer school program at the Exploratorium, which is held in collaboration with the Aim High program, middle school students are trained to use hand tools and simple machinery and to wire circuits in order to build large and complex projects, such as zoetropes, spectroscopes, kaleidoscopes, toy cars, mechanical insects, robot arms,

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and kites. To make science more personal and relevant for tweens, it is important for them to incorporate artistic elements into their projects. In the past, these summer school groups have created a series of live webcasts for the Exploratorium which were entirely tween written, produced, directed, and performed. Echoing other interviewees and the literature on youth development, Altmann commented that it is important for tweens to have a prolonged interaction with the museum, as it takes a while for tweens to become comfortable in their new environment, about a week with this summer program.[66]

All of the interviewees who work in after-school settings recognized that transportation is a critical issue for these programs—vans for program use are essential to success. Tweens and their families often cannot provide their own transportation, especially if the museum is trying to reach low income communities. Both the San Bernardino County Museum and the Crissy Field Center have a van they can use to pick up participants after school and bring them to the museum.

Interviewees pointed to the advantages of museums partnering and building long term relationships with other community organizations. For example, Stein has partnered the Lawrence Hall of Science's TEAMS intern program with a variety of Berkeley organizations, such as the local YMCA. Members of the Berkeley YMCA have participated while

TEAMS interns have tested newly developed interpretive tools on the museum floor. One advantage Stein has found in such partnerships is that they can provide an excellent recruitment tool, especially to reach underserved audiences. She has been able to diversify the TEAMS program by finding new recruits through the partner organizations.

An idea that many interviewees emphasized is that successful tween programs carefully balance structure with flexibility. The interviewees agreed that programs cannot have too much structure—they cannot have fixed schedules without the flexibility for the tweens themselves to make suggestions and changes. Tweens want to have input into what activities they will do. A program cannot be all pre-planned for them. Within specific activities, they need the freedom to explore a topic on their own and follow their own related interests. They do not want to follow "boring" step-by-step instructions. After-school program coordinator Moran held that too much structure will cause tweens to rebel and "completely not do what they should."[67] Successful programs involve tweens in the planning processes. Many interviewees believe tweens should be given responsibility and quite a bit of latitude to make decisions in their program. This process builds tweens' confidence, encourages teamwork, and leads to the tweens respecting one another.

While achieving the goal of involving tweens meaningfully in the planning process requires much flexibility on the part of program staff and the museum, it also requires a good framework to set the tweens up for success. They should be given the opportunity to be an adult without all the responsibility. For example, at the Exploratorium, tweens put together live webcasts, from conception to final product. While completing this complex and creative "adult" project, the tweens are supported in the background by staff ready to step in whenever needed. But there is no set script of how the project will develop. The tweens themselves plan and execute the project, with the advice and guidance of teen and adult supervisors.

Interviewees all agreed that tweens are most motivated to do things that are "fun." Tweens still like to play. They want interactive, hands-on learning experiences. Kinesthetic, activity-based programs are appropriate. They should be fast paced and intellectually engaging. Reno argued that tweens have great attention spans when the material is interesting to them: they will stand in line for forty-five minutes at Great America for a roller coaster without getting bored.[68]

Tweens respond well to leaders who are passionate about their subject. Many interviewees stressed the importance of not getting into "lecture mode." Tweens do not want to be "talked at." Robertson at the

Lawrence Hall of Science suggested giving a maximum of five minutes of explanation and letting tweens have free exploration time to learn. Programs should not be too short. Free exploration and activity-based learning takes time, at least two to three hours.[69] Tweens want to make an impact. They are outcome driven and want to see their results. Ryerson, a middle school counselor, said that tweens enjoy problem solving. Experiments where they can record data and make decisions are appropriate.[70] Activities should be done in small groups with a high leader to participant ratio. The Crissy Field Center's Shah felt the curriculum should be very diverse with different activities every 20-30 minutes.[71] She and Moran both emphasized the usefulness of competition and rewards in motivating participants. Interviewees all agreed that building social time into any tween program is a must. At the beginning of any group meeting, there should be time for socializing and eating snacks. This allows the tweens to get some of chattiness out of their system and focus better later during more complex activities.

The content of programs designed for tweens can be quite diverse. They have wide interests and are very curious to explore the world around them, outside of their known home and school worlds. Shah and Stein both felt that environmental education is especially appropriate for tweens because it is inherently hands-on and tweens can feel empowered to make

a difference. At the Crissy Field Center, Shah's Junior Ecologist program focuses on tweens investigating the impact humans have on the environment. They do activities such as restoring wildlife habitats, hiking the Presidio trails, and creating their own compost. Through the Lawrence Hall of Science, Stein and Robertson coordinate programs in which tweens go on backpacking trips with scientists and educators and learn about the fragile ecosystems throughout California.

Other topics appropriate for tweens include anything that relates directly to their lives. Moran has observed in her after school program that tweens are very interested in their own and their peers' ethnic culture and in pop culture. For example, they have especially enjoyed activities related to hip hop dancing and Latino traditions.[72] Xavier Cortez, the Education Program Manager for Youth and Teen Programs at the Palm Springs Art Museum, gave the example of music as being a common thread that interests most tweens. Tweens can explore their musical and artistic interests during the Palm Spring Art Museum's Teen Studio Projects, a four day summer art program led by educators and visiting artists.[73]

A number of the interviewees found that tweens respond well to working with older and younger youth. Altmann contended that the mark of a good tween program is having high schoolers there. The teens can model good behavior and the younger tweens identify with the older teens.

Teens help to bridge the generation gap.[74] Cortez said that tweens find it very "cool" to hang out with high school students. They like to have "friends" in high school.[75] Tweens respond well to working with younger elementary school students. Altmann said that tweens like to be leaders with younger children; they like to pass on their knowledge. Kirkwood agreed: "The best volunteer situations are with younger kids, because then the tweens can be the authority figure, yet get to play alongside the younger kids."[76]

Volunteering is often a good way for museums to engage tweens. Stein felt that this is a good age for learning through service to begin. She likes work-based programs for tweens that give them the opportunity to continue their relationship with the museum into their teens.[77] Altmann agreed that the idea that "someday I can work here" is a good hook for tweens. She argued that tweens like to feel a part of the museum. She recommended talking to them like they are staff, not students. They want to be "in on the secret," part of a special group. Tweens respond well to adult tasks. They think, "If you're entrusting me to do this, you must think I'm cool."[78] At the San Bernardino County Museum, Museum Youth Club members act as the most reliable and enthusiastic volunteers in the museum. Club members volunteer as animal care-givers and handlers,

Junior Interpreters in the galleries, and they sponsor bi-monthly Family Fun Days at the museum.

Many of the interviewees stressed the critical role museums as whole institutions play in engaging tweens. Unlike during standard elementary school field trips, tweens want to see beyond the galleries. They want to become involved in the core of museum work. Good tween programs allow tweens to become involved in, or at least observe, the activities of all the departments in the museum. At the San Bernardino County Museum, for example, Museum Youth Club members get to work with many of the scientists, anthropologists, archivists, and historians on a variety of projects. This requires museum staff from all departments to be knowledgeable about the tween program at their museum, to understand its goals, and to appreciate the advantages of allowing a group of tweens into their departments, laboratories, or archives. Because this level of engagement with tweens means more of the museum is involved than just the education department, museums must be well prepared for tweens with programs that are designed with a strong framework, are well staffed, and anticipate the needs of tweens. Cortez from the Palm Springs Art Museum stressed the importance of institutional commitment when museums do take on the challenge of programming for tweens. Because a good tween program allows for flexibility, it requires some risk-taking on the part of

the museum. The institution must be willing to take these risks, such as allowing a group of tweens to design and build an exhibit, and give program leaders latitude when working with tweens.[79]

An important and difficult aspect of tween programming is evaluation. Most of the interviewees from museums cited using both anecdotal evidence from program leaders and evaluations from the tweens themselves. However, Kirkwood and Altmann both pointed out the difficulties of using written evaluations for tweens because tweens have difficulty articulating what's going on with them.[80] Tweens do not really have the ability to self-evaluate. They tend to respond on questionnaires with how they feel at that exact moment, not reporting longer term trends.[81] Stein agreed that using language is not useful for tweens to express their emotions. However, she argued they are better able to express themselves pictorially or physically in an open-ended format. For example, she will ask tweens to place themselves where they are comfortable with a certain task in a series of concentric circles, with the inner most circle being completely comfortable. Through their responses, she can evaluate whether or not a participant has become more comfortable with public speaking, for example, over the course of their involvement with her program. She is experimenting currently with journaling as a useful evaluation technique.[82]

Many of the interviewees commented on how surprisingly open tweens are with adults they do not know. Kirkwood said, "You don't have to pry information out of them." Tweens have no problem telling you what they do and do not like about something.[83] These observations were confirmed during the focus group sessions, as the tweens were very forthcoming and happy to talk with an adult they had never met before. They may not have been able to express themselves very articulately, but they certainly got their points across.

Focus Groups

The tweens who participated in the focus groups represented diverse prior experiences with museums. Some of the eighty-three tweens had either never been to a museum before (two tweens in San Jose) or had not visited one since they entered middle school (most of the tweens in Bloomington). Slightly more of the tweens had visited a museum only once during middle school: four of the tweens in San Jose had been to the Tech Museum of Innovation with their school to participate in the Tech Challenge and all of the tweens in Bakersfield had been to the Kern County Museum on a fieldtrip in the sixth grade. The group of tweens from the wealthier communities of San Rafael and Walnut Creek had visited many different museums, both on fieldtrips and with their families. The tweens in Redlands were members of the San Bernardino County

Museum's Museum Youth Club and had gone on a fieldtrip to the California Science Center in Los Angeles with their school. Despite this diversity of experience with museums, the tween responses about what they like and do not like in museums and what they would ideally like to see and do in a museum were surprisingly similar. Overall, tweens were positive about museums, despite the many "boring" experiences each could relate.

What Tweens Like and Don't Like at Museums

When asked about their favorite experiences in museums, the tweens generally answered that they liked to do "fun" things. The tweens who had been to the Tech Museum enjoyed the rides like the roller coaster simulator and the games they could play together. They enjoyed the "hands-on" exhibits. Those who had participated in the Tech Challenge had enjoyed building with marshmallows and competing with other students from different schools. The tweens who had been to the Kern County Museum thought it was "kinda cool" that you could touch and feel a bunch of old things. They also enjoyed the fossils. Some of the Bloomington tweens had been to the Calico ghost town and liked the activity of panning for gold. One tween mentioned an exhibit he had seen and liked about the old versus the new world. He liked how it showed different cultures. The tweens in Redlands cited many of their experiences

as part of the Museum Youth Club as being fun, including working with the live animals ("snakes are cool!") and getting to do art projects. They enjoyed climbing on the train and the jet at the museum, although that is no longer allowed. They enjoyed the hands-on activities at the California Science Center, especially those where one could play with water and bubbles. The tweens in San Rafael and Walnut Creek had visited many of the same museums and their favorite experiences included the "do it yourself experiments," climbing on the whale and DNA strand at the Lawrence Hall of Science, and the tactile dome at the Exploratorium. They all like when they "got to play" and do "interactive stuff."

The tweens were very vocal when discussing their least favorite experiences in museums—the key term they used repeatedly was "boring." One of the main complaints concerned boring docents. The San Rafael tweens gave docents "two thumbs down, three if we could." They had recently visited the de Young Museum's Hatshepsut exhibit and really did not enjoy their docent tour. They complained that the docent skipped all the good stuff. Instead he focused on "boring stuff" like a toothpick and did not even talk about something "cool" like a giant statue. They felt like the docent was just reading the signs to them, something they could have done themselves. The San Jose tweens agreed, saying that docents talk too much. Docents don't have to go into so much detail. The Redlands tweens

compared docents to "bad teachers," saying that "blah blah blah" is all they hear. The Bloomington tweens complained that the docents talked to them like they were "too little to know anything."

The tweens criticized the many museum experiences they had that were "look, don't touch." According to the San Jose tweens, that is "boring learning" and too much like school. The Redlands tweens do not enjoy audio guides: "after a minute or so of listening the words lose meaning." A Bloomington tween complained of an exhibit where one pushes a button and the recording just "kept talking and talking." But the tweens do not like reading the labels either. Too much reading was another complaint. Many of the Bloomington tweens found the reading too hard, "too adult," for them. Many of tweens stated that they really disliked being stuck with a chaperone who does not allow them to do their own thing or chose what they want to look at. The tweens complained of too much walking, too much waiting around, and always having to be quiet. The Bakersfield tweens thought it was way too hot to be outside at the Kern County Museum, but other tweens liked being outside and away from their classrooms. In short, tweens liked museum experiences that involved physical activity, playing games, doing experiments, and building things, while they were turned off by lectures, confining tours, reading too much and listening to long explanations.

Tweens Design their Ideal Museums

When asked to design their ideal museum, the tweens drew from their own experiences with museums and became very creative with exhibit ideas. The Bakersfield tweens wanted exhibits of race cars, huge fossils, and sports stuff. They liked the idea of being able to create an exhibit themselves where they can show off their personal collections. The San Rafael tweens wanted their museum to have a giant piggy bank and a giant grasshopper that would "show how things work on the inside." They wanted an exhibit that would teach them how to make video games, both how to do the computer programming and how to build the electronics. Their museum would have virtual simulations, interactive stuff, and lots of lights, sounds and color. They would have an exhibit with a hall of weapons that would show how they were used. The Redlands tweens designed a museum that is three stories high and each floor has different "non-boring, interactive" exhibits. The first floor had live animals they could handle, the second floor had a rock climbing wall and hands-on water exhibits, and the third floor had educational video games. No adults who are lazy and boring are allowed in their museum. The Bloomington tweens wanted exhibits about sports (especially baseball), motorcycles, and Japanese anime and manga (comic book version of anime). They would like to have stuff outside, because it's boring to be inside all the

time. Their museum would be a place to hang out with their family and friends and would have a candy shop. They designed an exhibit where visitors could cover a basketball with paint and bounce it around a white room to create art.

The tweens discussed things they would like to do at a museum, like play in exhibits, touch objects, interact with animals, create art, build things, and generally get messy. When visiting a museum, the Bloomington and Walnut Creek tweens wanted to be able to choose their own groups, explore without a chaperone, and not have to be quiet. They wanted to be able to discuss what they were seeing with their friends. Some tweens were interested in getting a behind-the-scenes view of a museum, especially the Redlands tweens who wanted to meet the scientists and artists. They were interested in doing things that they care about, like the world and the environment. They commented on how much they like working with high school students. Echoing the observations of the interviewees, they said that they find high schoolers much more active and interesting than adults.

Tweens' Favorite Leisure-Time Activities

When asked about what types of activities they like to do outside of school, the tweens' overwhelming response was sports. Almost all of the tweens were involved with at least one sport, including football,

basketball, baseball, soccer, gymnastics, and cross-country running. The tweens enjoyed hanging out with their families and friends, playing video games, going to school dances, and going to the movies. A few of the tweens were involved with scouts, music or dance lessons, and church activities. Some went to after-school programs other than the Museum Youth Club, but those mainly involved tutoring and they went unwillingly. Many of the tweens spent a lot of time helping out at home and babysitting their younger relatives. Most of them complained about this, but a few got paid and they enjoyed that aspect.

The tweens' main response to why they enjoy doing their extracurricular activities was because they are "fun." They said that it is better than being at home, which is boring. Some said their parents are boring and others complained about always having to help out and watch little kids. They liked opportunities to hang out with their friends outside of school. Sometimes they see certain friends from different schools only at a specific activity, like church group or dance class. They were interested in activities that allow them to meet people from different schools. Social time was very important to them. They did not want too much adult supervision; they wanted to be trusted. They liked the fact that the sports and other activities they are involved in have no homework. Many of the tweens said they were involved in activities because their

parents made them or because they had been doing it for years. Some said they did it because they were good at it or enjoyed the competition.

The interviews and focus groups painted a reasonably cohesive picture of who tweens are and what they want and need from museum programming. They are a challenging and unique age group, but are filled with energy and creativity.

CONCLUSIONS

The literature review and primary research indicate that there is a natural fit between museums and tweens. Tweens themselves like the idea of museums and museum learning. They are natural explorers at this stage of their lives and museums can be the perfect settings for tweens to be exposed to new ideas and ways of thinking. However, there are things about museums that tweens don't like: "boring" lecture tours, hands-off exhibits, and adults who treat them like little kids with nothing important to contribute. Too often, tweens find what they don't like in museums. The tween age group is a great audience for museums, but museums are not doing enough to reach and sustain tweens. Museums need to examine tweens and their needs in order to better engage this important and underserved audience.

From the information on tweens gathered during this study, a comprehensive picture of the tween age group emerges. As children reach their tween years, they undergo a barrage of physical and emotional changes. They begin to develop a sense of self and seek information from their environment on how to define themselves. They are forming their own unique identity and they want to be recognized as individuals. However, their sense of self is very fragile. Tweens have low self esteem and are concerned with how they fit into peer groups. Tweens seek to

exert greater control over their environment and gain independence from their caregivers, but they lack confidence and need outside support and validation. They start to take on more responsibilities and make decisions about their lives. Achievement and success become important to tweens. All the while, the dramatic physical changes their bodies experience can be distressing. Simply, tweens feel like self-conscious, inexperienced teens.

This self-consciousness is more problematic due to adults' stereotypes about tweens. While the professionals interviewed for this project were extremely knowledgeable and adept at working with this audience, the language in some of the popular literature and museum literature indicates that tweens are often portrayed in a far more negative light than they deserve. Deborah Schwartz's observation in *Museum News* summarizes this misconception: "twenty years ago, the teen audience was perceived by most museum programmers to be difficult and unruly, treated suspiciously by museum security staff, and in the main, written off by museum educators."[84] Yet, it is important to acknowledge that tweens are experiencing a difficult transitional stage of their lives as their brains and minds are rapidly expanding and shaping themselves. While their needs become more complex and challenging, what tweens have to offer museums also expands and intensifies. An effective relationship between

tweens and museums can be mutually beneficial for both parties: tweens need the support center and creative outlet a museum can provide, and museums can profit greatly from the enthusiasm and dedication tweens can offer.

As tweens move into Marcia's identity moratorium status and Piaget's formal operations stage, they need the social and intellectual stimulation that places such as museums have the potential to provide. Tweens are developing higher-order thinking skills and forming their identities. They are developing their own interests and expressing themselves through activities. As tweens assert their independence from their families and seek more experiences away from school, out-of-school time becomes critical for tweens. Museums have the potential to serve as "home-places" where tweens can feel comfortable to explore and learn about themselves and the wider world. Museums have the opportunity to provide tweens with programs to encourage positive development during this experimentation phase.

While tweens may seem to many museum educators a daunting audience, they have many wonderful characteristics to bring to a museum. Museums can benefit greatly from their youth culture, new ideas, optimism, and endless energy. Tweens are not only imaginative and creative, but can also be very precise and driven when working on projects

that they care about. Their naiveté can allow them to think outside-the-box in a way many adults cannot. Tweens can accomplish amazing "adult" projects, such as the web casts at the Exploratorium, when given the proper support and focus. Tweens want to be trusted and treated like adults, and when this occurs, they can rise to high expectations and standards and be valuable assets to an institution. Additionally, tweens can represent potential revenue sources for museums, as parents of tweens are constantly looking for safe and productive activities for their children outside of school.

While it is evident that tweens are potential assets for a museum, they still represent a particularly challenging age group with specific programming needs. Those who work with tweens must be accommodating, patient, and understanding. Programs must be well designed and structured to accommodate tweens. Tweens want to have "fun" in museums and they enjoy learning in an active, hands-on manner. They still enjoy playing, but also like to do activities that they see as purposeful and productive. They are especially interested in topics they can relate to their own lives. Tweens like to be able to explore something on their own and not just follow step-by-step instructions. They do not want a controlled experience. Thus, programs targeted to tweens need to

have a strong framework, but be flexible enough to allow tweens to follow their own interests and develop their own ideas.

Museums and tweens both hold great potential for one another; however, it is museums' responsibility to make use of this potential. There is much that museums can do to better serve the tween audience. How museums can accomplish this will be addressed with specific recommendations in the next section.

RECOMMENDATIONS

Museums and tweens may be a good match in terms of what each has to offer and to give; however, in order for museums to establish a meaningful relationship with the tween audience, they must be prepared with appropriate programs run by well-trained and enthusiastic staff with access to sufficient resources. What tweens really need and want from museums may appear to be a tall order. However, there are many strategies that would help museums better engage tweens. These strategies include: 1) revisiting field trip curriculum, 2) developing programs that allow for prolonged engagement, 3) conducting better audience research, and 4) becoming "tween friendly."

Tween-Appropriate Field Trip Curriculum

The majority of tweens visit museums chiefly on school field trips. Therefore changes to field trip programs will affect the largest numbers of tweens. While a single visit with a large school group is not the ideal way for a tween to interact with a museum, in reality most tweens primarliy interact with museums under these circumstances. Therefore, museums must make it a priority to revisit their field trip curriculum in order to craft better and more meaningful experiences for tweens. This means that museums must move their field trip programs away from lecture tours toward self-guided exploration. The primary research clearly indicates that

lecture tours are inappropriate for this age group. They waste time and resources for the museum. Tweens must have the opportunity to explore on their own, without feeling like they are following an inflexible and "boring" prescribed path.

An effective strategy is to allow tweens to explore the museum galleries on their own, in small groups, with a goal-oriented task, perhaps competitive, to help give them focus. One such task could involve critiquing the museum's exhibits in order to learn about how museums convey information to their visitors. Then students could design and develop an exhibit for their own school library with content connected to their classroom curriculum. At a museum with the appropriate resources available, instead of creating an exhibit, students could develop and record a podcast or webcast. Tweens also enjoy the opportunity to prototype museum exhibits or programs. They like being helpful and have their opinions valued. They can serve as important resources for museums that are developing exhibits or programs which would include tweens as potential visitors and participants.

It is important that supervision and guidance from adults during a tween field trip is sensitive and not overbearing. While exploring on their own in small groups, tweens do not need a constant chaperone or docent guide. However, supervision is still critical, as tweens can make poor

decisions and if provoked by peer pressure can cause damage to collections and facilities. An effective way to supervise tweens without appearing controlling is by having discovery carts with interpreters, either museum staff or volunteers, scattered throughout the galleries. The interpreters would have hands-on objects and activities to help simultaneously engage and supervise tweens.

School field trip programs for tweens should be aligned to the middle school classroom curriculum as well as to tweens' developmental needs. Tweens want content that they can relate to, such as that which they are already studying at school. Teachers need for museum visits to directly relate to their classroom curriculum and state standards in order to justify them to administrators. Pre-visit materials should be improved to aid in making these explicit connections between classroom learning and the real objects tweens encounter in the museum. If students are prepared and excited about what they will see, they will enjoy and learn much more from their visit. Museums should not be afraid of tween school group visits, as they can be very rewarding experiences for all involved, as long as the museum and the visiting students are well prepared for the experience.

Programs for Prolonged Engagement with Tweens

While improvements in school field trips would enhance tween museum experiences, the most effective way for museums to address tweens is through prolonged engagement in the form of regular after-school, weekend, or summer programs where tweens have genuine input into their role at the museum. Such programs should involve multiple long visits to the museum over months or even years, since it takes a while for tweens to become comfortable and productive in the sometimes intimidating museum environment. Opportunities for tweens to continue their involvement with the museum after they "outgrow" a tween program should be available, such as paid internships for high school students. Any programs for prolonged engagement with tweens should be grounded in youth development theory, as discussed in the literature review. Peter Benson's Developmental Assets (see Appendix E) have been used by museum educators successfully in developing and evaluating programs for tweens.

Tween programs should be run by well-trained staff who enjoy working with tweens. Tweens can be a challenging group and it takes someone flexible, patient, and with a great sense of humor to successfully work with them. In addition to adult museum educators, high school students make great program leaders, as tweens like working with "cool"

older teens. Teens can model good behavior and younger tweens identify with older teens. They help bridge the generation gap. Additionally, having teen program leaders is a great way to keep tween program alumni involved at the museum.

Another aspect of successful tween programs is an open relationship with parents and families. Keeping parents well informed about the program and involving them in projects helps build positive relationships between parents at tweens. It helps dispel stereotypes about tweens and builds parent confidence in their tweens. Tweens should have many opportunities to show off their work and their role at the museum to their families and friends. This also helps museums build and maintain strong ties to their communities.

A program designed for tweens should allow for the tweens to be involved in the planning process. Tweens will be much more invested in a program that they help run and this will avoid the retention and sustainability issues that tween programs can sometimes face. These programs need to be well structured, while allowing tweens to follow their own ideas. Some successful tween program models that involve tweens in planning include a Tween Council, a Tweens-Behind-the-Scenes volunteer program, or a tween-run Junior Interpreter Corps.

A Tween Council could consist of a group of tweens engaged by the museum for special projects, such as sponsoring periodic family museum events or developing a special exhibition. For example, the Tween Council could develop bimonthly Family Fun Days with themes based on the special exhibitions at the museum or other appropriate seasonal events. Tweens could plan, organize, and set-up the events and then act as interpreters on the day of the event, leading visitors in hands-on activities. Tweens often respond well to working with families, especially younger children—they like to be leaders and to pass on their expertise.

In another example, the Tween Council could be involved with creating a tween-developed special exhibition. Such an exhibition could be on any number of themes, from subjects that interest specifically tweens, such as anime and video games, to topics from the museum's collection, such as Asian sculpture, historical toys, or biogenetics. Tweens could even develop an exhibit about their own culture. As a little understood population segment, they would relish the opportunity to display to museum visitors of all ages what they are all about. Tweens should be involved with all stages of the exhibition development process. They should be advised by staff from many museum departments as they chose objects to display, research exhibition content information, design exhibits and labels, create graphics and marketing, and so on. Having a Tween

Council engaged with such projects is a great way for a museum to connect with its community. The tween-run family events or tween-developed exhibitions would bring the friends and family of the tweens to the museums, possibly allowing the museum to reach new and underserved audiences.

A Tweens-Behind-the-Scenes volunteer program could provide tweens the opportunity to volunteer in many different museum departments, doing tasks such as caring for live animals or helping to plan educational programming. Similarly, a Junior Interpreter Corps could consist of tweens who enjoy interacting with visitors on the museum floor. They could be in charge of hands-on discovery carts in the galleries on weekends and during the summer, or they could lead inquiry-based tours through special exhibitions. Volunteer programs such as these would involve a large amount of ongoing training and evaluation in order to ensure tweens are comfortable and effective in their roles. Tweens would appreciate opportunities to "work" in and really become part of a museum.

Tween Audience Research

A third recommendation for museums to improve their relationships with the tween audience is to conduct better audience research with this age group. Focus groups with tweens, such as those conducted for the purposes of this study, can provide museums a wealth of

information on how they could best design exhibitions and programs to reach tweens and younger audiences. Tweens can provide valuable insights into not only what they want, but also what younger children, who cannot articulate themselves as well, want. Focus groups, or other audience research methods such as visitor surveys, should always be conducted when planning a program for tweens or when developing exhibits where they are part of the intended audience.

Tweens are very creative and have wonderful ideas to share, as well as the willingness to openly share them. While they may not have the language to articulate themselves perfectly, an adept focus group facilitator would glean valuable information from talking to them. An important strategy when talking with tweens is to ask concrete questions. Ask them to solve specific problems. For example, during the focus group sessions conducted for this study, tweens were not asked abstractly what they would like to see or do in a museum. Instead, they were asked to design their own ideal museum, with exhibits and activities, which proved far more useful and produced more tangible results. While a focus group with tweens may appear to be quite chaotic as the tweens excitedly share their opinions and ideas, a high energy situation is ideal for them to really start thinking and talking. The facilitator must know how to control their energy into an "organized chaos" with good concrete questions and tasks.

The facilitator must also know how to listen to tweens, to pull out the key details from what the tweens are saying.

Becoming Tween-Friendly

Tweens want to feel welcomed at a museum. They are accustomed to being mistrusted and unwelcomed many places they go. Even just a sign specifically greeting a visiting class at the museum's entrance would make them feel more welcomed. All the museum staff and volunteers tweens interact with should also be welcoming and friendly. Staff and volunteers should be trained in tween psychology so that they better understand how to appropriately and positively interact with tweens. It is important to dispel negative stereotypes about tweens with any museum representatives who will have significant interactions with tweens. Emphasis need not be placed excessively on discipline or misconduct— tweens understand appropriate and inappropriate museum behavior. They are more likely to respect the museum space and not make poor decisions of inappropriate behavior if they feel wanted and invested in the museum. Museums should also ensure that their amenities are tween-friendly. For example, the cafeteria and gift store should have appropriate offerings for tweens to purchase. A suitable lunch space should be provided for large visiting groups where tweens can be social without disrupting other museum visitors.

By implementing the recommendations outlined above, guided by improved audience research, museums can significantly increase their impact on the tween audience. The long term goals of any such efforts are not only to serve an audience that can really benefit from what museums have to offer, but ultimately to nurture a habit of lifelong museum going in the younger generation. By programming for tweens, museums are cultivating their future audiences.

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[81] Kirkwood, interview by author.

[82] Stein, interview by author.

[83] Kirkwood, interview by author.

[84] Schwartz, "Dude, Where's My Museum."

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APPENDIX A: INTERVIEW LIST

Name	Position	Institution	Location	Date
Vivian Altmann	Director of the Children's Outreach Program	Exploratorium	San Francisco	11/11/2005
John Chovan	Social Studies Teacher	Ruth O. Miller Middle School	Bloomington	2/24/2006
Xavier Cortez	Education Program Manager, Youth and Teen Programs	Palm Springs Art Museum	Palm Springs	4/11/2006
Rachel Cox	Manager of the After-School Art Program	Mexican Museum	San Francisco	4/8/2006
Wendy Derjue-Holzer	Director of the Fieldtrip Program	Exploratorium	San Francisco	11/11/2005
Nancy Kirkwood	Museum Youth Club Coordinator	San Bernardino County Museum	Redlands	2/25/2006
Mary Moran	Renaissance Academy's After-School Program Coordinator	CORAL	San Jose	4/10/2006
Matt Reno	Director of Operations	Aim High for High School	San Francisco	11/30/2006
Ted Robertson	Residential Camp Director, Biology Education Specialist	Lawrence Hall of Science	Berkeley	3/3/2006
Margie Ryerson	Counselor	Joaquin Moraga Intermediate School	Moraga	4/18/2006
Aekta Shah	Middle School Programs Coordinator	Crissy Field Center	San Francisco	3/24/2006
Naomi Stein	TEAMS Leader	Lawrence Hall of Science	Berkeley	3/8/2006

APPENDIX B: INTERVIEW QUESTIONS

1. In what capacity have you worked with tweens?

2. From your observations, how would you describe this age group?

3. What types of programs are appropriate for tween audiences?

4. What have you noticed to be successful when working with tweens?

5. How do/would you measure the success of a program aimed at tweens?

6. Do you think museums address the tween audience—either explicitly or inexplicitly? Why or why not?

Museum Educators:

7. Does your museum have programs that address a tween audience?

8. Can you describe these programs?

9. What are positive traits of these programs?

10. What could be improved in these programs?

Non-Museum Educators:

11. Do you have experience with museums working with tweens? Describe.

12. What were some of the positive aspects of these museums' interactions with tweens?

13. What were some of the areas that could use improvement?

APPENDIX C: FOCUS GROUP LIST

| Focus Group | Location | Date | # Participants | Grade | | | Gender | | Ethnicity | | | |
				6th	7th	8th	M	F	White	Black	Latino	Asian
1	Bakersfield	3/12/2006	15	0	0	15	6	9	13	1	1	0
2	Bakersfield	3/12/2006	15	0	0	15	5	10	14	0	1	0
3	Bloomington	2/24/2006	13	0	13	0	5	8	4	0	9	0
4	Bloomington	2/24/2006	13	0	13	0	6	7	0	3	9	1
5	Redlands	2/25/2006	7	0	6	1	1	6	1	0	6	0
6	San Jose	4/10/2006	6	3	3	0	3	3	1	0	5	0
7	San Rafael	3/5/2006	7	7	0	0	7	0	5	0	0	2
8	Walnut Creek	2/16/2006	7	0	0	7	7	0	4	0	2	1
TOTAL			83	10	35	38	40	43	42	4	33	4

APPENDIX D: FOCUS GROUP QUESTIONS

1. Have you ever been to a museum before? In middle school?

____Yes ____No   ____Yes ____No

2. Since you've been in middle school, what types of experiences have you had with museums?

____School Fieldtrips   ____Visit with family/friends
____Volunteering   ____After-school Program
____Summer Camp   ____Other

3. What does *museum* mean to you? Describe your ideal museum.

4. What has been your favorite experience at a museum? Why?

5. What has been your least favorite experience at a museum? Why?

6. What would you really like to do at a museum?

7. What types of activities outside of school do you do? Which do you like to do?

____Sports   ____Music   ____After-school clubs
____Scouts   ____Tutoring   ____Volunteering
____Theater   ____Dance   ____Church activities
____Babysitting   ____Helping at home ____Other

8. What makes you want to do an activity?

____My parents want me to.   ____My friends are doing it.
____I've been doing it for years.   ____It's fun.
____I like the people I do it with.   ____I like learning.
____To help people/to make a difference.   ____Other

APPENDIX E:
PETER BENSON'S DEVELOPMENTAL ASSETS

External Assets

Support

1. Family support

2. Positive family communication

3. Other adult relationships

4. Caring neighborhood

5. Caring school climate

6. Parent involvement in schooling

Empowerment

7. Community values youth

8. Youth as resources

9. Service to others

10. Safety

Boundaries and Expectations

11. Family boundaries

12. School boundaries

13. Neighborhood boundaries

14. Adult role models

15. Positive peer influence

16. High expectations

Constructive Use of Time

17. Creative activities

18. Youth programs

19. Religious community

20. Time at home

Internal Assets

    Commitment to Learning

        21. Achievement motivation

        22. School engagement

        23. Homework

        24. Bonding to school

        25. Reading for pleasure

    Positive Values

        26. Caring

        27. Equality and social justice

        28. Integrity

        29. Honesty

        30. Responsibility

        31. Restraint

    Social Competencies

        32. Planning and decision making

        33. Interpersonal competence

        34. Cultural competence

        35. Resistance skills

        36. Peaceful conflict resolution

    Positive Identity

        37. Personal power

        38. Self-esteem

        39. Sense of purpose

        40. Positive view of personal future

PRODUCT

Winning over Tweens:
Museum Programming for the Middle School Audience

"How about a giant grasshopper that you could climb in and see how things work on the inside?" "Why not an exhibit that teaches you how to make video games, both the computer programming part and building the actual electronics." "The second floor would have a rock climbing wall and hands-on exhibits with water and bubbles."

No, these are not excerpts from an exhibition development team's brainstorming session while designing a new museum wing. These are quotes from middle school students, "tweens," discussing what their ideal museum would look like. In 2005-2006, I conducted focus groups with over eighty tweens from throughout California as part of my master's project on museum programming for tweens. I wanted to find out in their own words who tweens are and how museums can best engage them. Here is what I learned.

Tweens are very opinionated and outspoken—they know what they like and they are not afraid to tell you. They like the idea of museums and museum learning—they're natural explorers at this stage of their lives and museums can be the perfect settings for them to be exposed to new ideas and ways of thinking. However, there are things about museums that tweens don't like: "boring" lecture tours, hands-off exhibits, and adults

who treat them like little kids with nothing important to contribute. Too often, tweens find what they don't like in museums. Museums need to examine tweens and their needs in order to better engage this important and underserved audience. Tweens do not represent a drain on museum resources, as this is an age group that can and wants to give back to the museum. Tweens represent valuable potential revenue sources for museums, as parents of tweens are constantly looking for safe and productive activities for their children outside of school.

Who are tweens? For my project, I defined them as youth between the ages of ten to thirteen—ages that generally correspond to grades six through eight in middle school. Often defined by their "split personalities," which bounce between child behaviors and attitudes and those of teenagers, tweens represent a distinct stage in development. They are caught between the innocence and playfulness of childhood and the skepticism and early maturity of teen-hood.

As children reach their tween years, they undergo a barrage of physical and emotional changes. They begin to develop a sense of self and seek information from their environment on how to define themselves. They are forming their own unique identity and they want to be recognized as individuals. However, their sense of self is very fragile— tweens have low self esteem and are concerned with how they fit into peer

groups. Tweens seek to exert greater control over their environment and gain independence from their caregivers, but they lack confidence and need outside support and validation. They start to take on more responsibilities and make decisions about their lives. Achievement and success become important to tweens. All the while, the dramatic physical changes their bodies experience can be distressing. Simply, tweens feel like self-conscious, inexperienced teens.

While psychologists have been describing and discussing tweens for nearly a century, in the past decade neurologists have made exciting new discoveries about how the human brain continues to grow and form during the tween years. According to neurologist Linda Spear, scientists have now recognized "that the brain of the adolescent differs markedly from the younger or adult brain, and that some of these differences are found in neural regions implicated in the typical behavioral characteristics of the adolescent."[1]

Essentially, neurologists have found that gray matter (the outer layer of the brain) rises significantly in volume in early adolescence far beyond adult levels and then is selectively "pruned" back down to a stable amount. Jay Giedd has found this gray matter growth in key areas of the brain, including the parietal lobes (associated with logic and spatial reasoning) the temporal areas (associated with language acquisition and

use), and, most significantly, the frontal lobes (the brain's "police force," the area that plans ahead and resists impulses).[2] Paul Thompson and Elizabeth Sowell have documented the subsequent gray matter loss. They estimate that the average teenage brain cuts back seven to ten percent of its gray matter between ages twelve and twenty. This "pruning" in the adolescent brain is connected to the fine-tuning of important brain functions, including inhibition control and working memory. The frontal lobes are the last area of the brain to stabilize, sometimes not until past the age of twenty.[3]

Neurologists have also found in tween brains the complex growth of myelin, white matter that insulates the neuron cells and allows them to function much more quickly and efficiently. Francine Benes has found that myelin doubles during adolescence, most significantly in the area connecting two crucial brain areas, the cingulated gyrus (controls basic gut reactions) and the hippocampus (controls reactions based on memory). If the connections between these two regions are not optimal in adolescents, this may explain their impulsive, unpredictable emotional responses.[4]

It is important to acknowledge that tweens are experiencing a difficult transitional stage of their lives as their brains and minds are rapidly expanding and shaping themselves. While their needs become more complex and challenging, what tweens have to offer museums also

expands and intensifies. An effective relationship between tweens and museums can be mutually beneficial for both parties—tweens need the support center and creative outlet a museum can provide, and museums can profit greatly from the enthusiasm and dedication tweens can offer.

A large part of the identity formation process tweens are going through is developing their own interests and expressing themselves through activities. Tweens need the types of experiences that museums can provide—this is the time in their lives where out-of-school time becomes critical, as tweens start exploring and experimenting in their worlds. Museums have the opportunity to provide tweens with programs to encourage positive development during this phase of experimentation.

While tweens may seem to many museum educators a daunting audience, they have many wonderful characteristics to bring to a museum. Museums can benefit greatly from their youth culture, new ideas, optimism, and endless energy. Nancy Kirkwood of the San Bernardino County Museum has noticed that her middle school Museum Youth Club members act as the most reliable and enthusiastic volunteers in the museum. Club members volunteer as animal care-givers and handlers, Junior Interpreters in the galleries, and they sponsor monthly Family Fun Days at the museum. Tweens are not only imaginative and creative, but can also be very precise and driven when working on projects that they

care about. Vivian Altmann of the Exploratorium was very enthusiastic when discussing the amazing results middle school students are capable of when given a focused and constructive task. With the right support, tweens can accomplish amazing "adult" projects, such as the series of live webcasts at the Exploratorium which are entirely tween written, produced, directed, and performed.

What do tweens themselves have to say about museum programs? Far too often the tweens I spoke to described their experiences with museums as "boring." The main complaint was lecture-style docent tours: "two thumbs down, three if we had them." They disliked too much waiting around, being quiet, and listening—essentially, not enough "doing."

Tweens' number one motivator is the opportunity to "have fun." To tweens, this means doing something new, challenging, hands-on, and social. In essence, tweens do not want an overly controlled experience. Tweens still enjoy playing, but also like activities that they see as purposeful and productive. For example, some tweens enjoyed participating in the Tech Challenge at the Tech Museum of Innovation in San Jose where they had the opportunity to build a structure from marshmallows and compete with students from other schools. Tweens like to be able to explore something on their own and not just follow step-by-step instructions. When visiting a museum, they want to wander on their

own, participate in something "behind-the-scenes," and discuss what they see with their friends. They would love the opportunity to interact with animals, create art, build things, and in general, get messy.

What tweens really want from museums may appear to be a tall order. However, there are many strategies that would help museums better engage tweens. The majority of tweens visit museums chiefly on school field trips. Therefore changes to fieldtrip programs will affect the largest numbers of tweens. Museums need to revisit their field trip curriculum and move away from lecture tours toward self-guided exploration. Lecture tours are inappropriate for this age group—they waste time and resources for the museum.

School field trip programs should be allied to the classroom curriculum as well as to tweens' developmental needs. An effective strategy is to allow tweens to explore the museum galleries on their own, in small groups, with a goal-oriented task, perhaps competitive, to help give them focus. One such task could involve critiquing the museum's exhibits and designing and developing an exhibit for their school library with content connected to their classroom curriculum. Supervision and guidance during the museum visit should not be overbearing. For example, discovery carts with interpreters scattered throughout the galleries can be quite effective. Tweens also enjoy the opportunity to prototype museum

exibits or programs—they like being helpful and to have their opinions valued. Tweens want to feel welcomed at a museum. They are accustomed to being mistrusted and unwelcomed many places they go. Even just a sign specifically greeting a visiting class would make them feel more welcomed. If tweens feel wanted and invested in the museum, they are more likely to respect the space and cause fewer disturbances. Museums also should improve their pre-visit materials for middle school students. If students are prepared and excited about what they will see, they will enjoy and learn much more from their visit. Connections should be made explicitly between their classroom learning and the real objects they will interact with.

While improvements in school field trips would enhance tween museum experiences, the most effective way for museums to address tweens is through prolonged engagement in the form of regular after-school, weekend, or summer programs where the tweens have genuine input into their role at the museum. Such a program should involve multiple long visits to the museum over months or even years, since it takes a while for tweens to become comfortable and productive in the sometimes intimidating museum environment. Opportunities for tweens to continue their involvement with the museum after they "out-grow" a

tween program should be available, such as paid internships for high school students.

Tween programs should be run by well-trained staff who enjoy working with tweens. Tweens can be a challenging group and it takes someone flexible, patient, and with a great sense of humor to successfully work with them. High school students make great program leaders, as tweens like working with "cool" older teens. Teens can model good behavior and younger tweens identify with the older teens. Teens help bridge the generation gap. Having teen program leaders is a great way to keep tween program alumni involved at the museum.

Some successful tween program models that involve tweens in the planning process include a Tween Council, a Tweens-Behind-the-Scenes volunteer program, or a tween-run Junior Interpreter Corps. A Tween Council could consist of a core group of tweens engaged by the museum for special projects, such as sponsoring periodic family museum events. They could also be involved with creating a tween-developed special exhibition. Such an exhibition could be on any number of themes, from subjects that interest specifically tweens, such as anime and video games, to topics from the museum's collection, such as Asian sculpture, historical toys, or biogenetics. Tweens could even develop an exhibit about their own culture—as a little understood population segment, they would relish

the opportunity to display to museum visitors what they are all about.

Tweens should be involved with all stages of the exhibit development

process. They should be able to work closely with museum staff from

other departments as they chose objects to display, research exhibition

content information, design exhibits and labels, create graphics and

marketing, and so on.

  A Tweens-Behind-the-Scenes volunteer program could provide

tweens the opportunity to volunteer in many different museum

departments, doing tasks such as caring for live animals. Similarly, a

Junior Interpreter Corps could consist of tweens who enjoy interacting

with visitors on the museum floor. They could be in charge of discovery

carts during weekends or interact with younger children during special

events. Tweens often respond well to working with younger children—

they like to be leaders and pass on their expertise. Volunteer programs like

these would involve a large amount of ongoing training and evaluation in

order to insure tweens were comfortable and effective in their roles.

Tweens would appreciate opportunities like these to "work" in and really

become a part of a museum.

  These recommendations for engaging tween audiences are only a

few of the many ways museums can tap the resources available to them in

the tween age group. Most importantly, by programming for tweens,

museums help themselves cultivate their own future audiences.

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[1] Linda P. Spear, "Neurobehavioral Changes in Adolescence," *Current Directions in Psychological Science* 9, no. 4 (August 2000).

[2] Jay N. Giedd, Jonathan Blumenthal, Neal O. Jeffries, F.X. Castellanos, Hong Liu, Alex Zijdenbos, Tomas Paus, Alan C. Evans, and Judith L. Rapoport, "Brain Development During Childhood and Adolescence: A Longitudinal MRI Study," *Nature Neuroscience* 2 (October 1999): 861-863.

[3] Elizabeth R. Sowell, Paul M. Thompson, Colin J. Holmes, Terry I. Jernigan, and Arthur W. Toga, "In Vivo Evidence for Post-Adolescent Brain Maturation in Frontal and Striatal Regions," *Nature Neuroscience* 2, no. 10 (1999): 859-861.

[4] Francine M. Benes, Mary Turtle, Yusuf Khan, Peter Farol, "Myelination of a Key Relay Zone in the Hippocampal Formation Occurs in the Human Brain During Childhood, Adolescence and Adulthood," *Archives of General Psychiatry* 51 (June 1994).