School Feeder Patterns: Overview and Impacts

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In the following report, Hanover Research discusses the process by which public school students transition from one level of K-12 education to the next. The report begins with a general overview of the academic and social impacts of school transitions before analyzing the different pathways by which lower level schools may feed into the next tier of schooling.

HANOVER RESEARCH

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EXECUTIVE SUMMARY

INTRODUCTION

In this report, Hanover Research analyzes the various pathways for transitioning students from elementary to middle and from middle to high school. The report begins with a general discussion of the transition process and its effects on students, before discussing three feeder models and the impacts of each.

KEY FINDINGS

- **The body of literature on feeder patterns does not address the relative prevalence of different types of structures**. Research more commonly focuses on the academic and socio-emotional impacts of student transitions and, by extension, how different types of feeder patterns may impact outcomes. While anecdotal evidence suggests that many districts implement pure transition pathways when redrawing attendance zones – primarily because linear transitions may be considered less disruptive – there is no clear evidence to suggest that one type of feeder pattern is significantly more common than another.

- **Researchers tend to agree that, *in general*, pure feeder patterns are the least disruptive to students' academic and social stability**. However, research assessing the comparative impact of different feeder structures on student outcomes suggests that transitions do not affect all students in the same way, and that there is no 'one size fits all' feeder approach. Researchers note that transition pathways *alone* do not determine students' academic and socio-emotional development; rather, the effects of a specific pathway are typically impacted by factors such as students' previous academic performance and existing levels of social integration.

- **Research suggests that low-achieving students can benefit from mixed or divergent pathways, while average- to high-achieving students typically benefit more from linear pathways.** Linear pathways reinforce existing social structures and patterns of achievement, benefiting high-achieving students – at the expense of their lower-achieving peers, some argue. Conversely, mixed or split pathways reconfigure social relationships, giving underachievers a second chance at academic success.

- **Districts with mixed or split feeder pathways can help to mitigate the potential negative impacts associated with these structures by developing targeted orientation programs.** Langenkamp, who has written extensively on the subject, notes that districts with mixed middle-to-high school pathways in particular may "benefit from designing orientation programs that create a new sense of community in the high school among the many incoming cohorts."[1]

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[1] Langenkamp, A.G. 2009. "Following Different Pathways: Social Integration, Achievement, and the Transition to High School," p. 13 (Author manuscript; final edited version published in *American Journal of Education*, November 1; 116 (1): pp. 69-97). http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2906826/

SECTION I: THE IMPACT OF TRANSITION ON STUDENTS

Regardless of the type of feeder model employed by a school district, transitioning between schools is difficult for many students. Students advancing from one level of education to the next face more difficult coursework and stricter grading standards at each level of schooling. School becomes progressively more impersonal, academically challenging, and socially complex as students move from elementary to middle to high school. Many students find larger, more bureaucratic schools alienating and can become detached from, or even at odds with, the educational goals of their school. [2] Decreasing levels of parental supervision, particularly after a child's transition to high school, can also contribute to feelings of detachment. [3] Socially, the transition to each new level of school can disrupt peer networks, as students may be tracked into different classes or different schools than their friends. Students are also exposed to older peers, who may transmit anti-social values and behavior.[4] Some research has found that children may experience a decline in positive relationships with teachers from elementary to middle school.[5]

> *The transitions from elementary to middle school and from middle school to high school pose academic, social, and emotional challenges for students.*

The difficulty of the transition process impacts several areas of student's academic and psychological well-being. Research has consistently found declines in academic achievement and self-esteem between elementary and middle school.[6] Studies of individual schools have also found an increase in disciplinary infractions in the first year of middle school. The transition process may also expose students to new risk factors, such as drug abuse or

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[2] Lee, V.E. and Julia B. Smith. "Effects of School Restructuring on the Achievement and Engagement of Middle-grade Students." *Sociology of Education.* July, 1993. Retrieved from JSTOR.

[3] Neild, R.C. "Falling Off Track During the Transition to High School: What We Know and What Can Be Done." *The Future of Children.* Spring, 2009. p. 58. http://futureofchildren.org/futureofchildren/publications/docs/19_01_04.pdf. Neild cites the work of Schiller (see note 59) and Falbo et al., noting that the transition to high school is often the point at which parents elect to grant their children greater autonomy. See Falbo, T., Laura Lein, and Nicole Amador. "Parental Involvement during the Transition to High School*." Journal of Adolescent Research*, 16, 5 (2001): pp. 511–29. Available through SAGE Journals.

[4] Seidman, E., et al. "The Impact of School Transitions in Early Adolescence on the Self-System and Perceived Social Context of Poor Urban Youth." *Child Development.* April, 1994. p. 519. Retrieved from JSTOR.

[5] Wigfield, A., Susan L. Lutz, and A. Laurel Wagner. "Early Adolescents' Development across the Middle School Years: Implications for School Counselors." *Professional School Counseling.* Fall, 2011. pp. 114-115. http://emdfall2011.pbworks.com/w/file/fetch/45940300/Early%2520Adol_Wigfield.pdf, citing Lynch, M. and Dante Cicchetti. "Children's Relationships with Adults and Peers: An Examination of Elementary and Junior High Students." *Journal of School Psychology*, 35 (1997). pp. 81-99. Available through ScienceDirect.

[6] See, e.g., Alspaugh, J.W. "Achievement Loss Associated with the Transition to Middle School and High School." *The Journal of Educational Research*. September, 1998. p. 20. http://montessoriprivateacademy.com/wp/wp-content/uploads/2012/12/outcomes-of-middle-school-and-high-school-transitions.pdf

bullying, at a particularly vulnerable stage of their physical and emotional development.[7] At least one study has found that students may be more likely to cheat on their schoolwork after the transition from middle to high school.[8]

The impact of transitions varies across different student populations. Students who are already behind academically face increased challenges during the transition to high school in particular, and tend to be at a high risk of falling off track during ninth grade, decreasing their chances of on-time graduation.[9] In a 2007 study focused on the academic and social expectations of high school among at-risk rural youth, Stein and Hussong cite two central studies on high school expectations: one, focused on a sample of primarily white, middle class high school students, found that those students tended to worry about the "academic and logistic challenges of high school," as opposed to social challenges;[10] the second study, focused on a sample of at-risk, minority adolescents, found that those students were concerned with academic and logistic challenges but also with peer and teacher relationships and feelings of detachment.[11] Stein and Hussong note that these studies serve to highlight "the potential for differences in high school expectancies in youth from different contexts."[12]

> *The impact of transitions may differ across student populations.*

Psychological research finds that students' expectations surrounding transition tend to be self-fulfilling, so that students with negative expectations will likely find the transition process more difficult.[13] In Benner and Graham's study of students in several Los Angeles schools, African American and Latino youth reported greater adjustment difficulties after the high school transition than their white counterparts.[14] In a separate study, Akos and Galassi similarly noted that "gender and race tend to play a role" in transition outcomes; in

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[7] Maclin, C. and Julieta Monteiro-Leitner. "Planning for the Elementary to Middle School Transition: An Experience in Progress in a Rural Midwest Middle School." *National Forum of Applied Education Research Journal*, 17, 3 (2004). pp. 4-6. http://www.nationalforum.com/Electronic%20Journal%20Volumes/Maclin,%20Cindi%20Planning%20For%20the%20Elementary%20to%20Middle%20School%20Transition.pdf

[8] Anderman, E.M. and Carol Midgley. "Changes in Self-Reported Academic Cheating across the Transition from Middle School to High School." *Contemporary Educational Psychology*, 29 (May, 2004). p. 512. https://dst.sp.maricopa.edu/DWG/STPG/JuniorACE/Shared%20Documents/HS%20transition%20readiness/Academic%20Cheating%20across%20transition%20from%20MS%20to%20HS.pdf

[9] Neild, Op. cit., p. 60.

[10] For full study, see Akos, P., & John P. Galassi. "Middle and High School Transitions as Viewed by Students, Parents, and Teachers." *Professional School Counseling*, 7, 4 (April, 2004). pp. 212-221. Available through EBSCOHost.

[11] For full study, see Newman, B.M., et al. "Experiences of Urban Youth Navigating the Transition to Ninth Grade." *Youth and Society*, 31, 4 (2000). pp. 387-416. Full text available at http://alcottschool.net/ourpages/auto/2013/8/25/47968487/Experiences%20of%20Urban%20Youth.pdf

[12] Stein, G.L. and Andrea Hussong. "Social and Academic Expectations about High School for At-Risk Rural Youth." *American Secondary Education,* 36, 1 (Fall, 2007). p. 61. Retrieved from JSTOR.

[13] Ibid.

[14] Benner, A.D. and Sandra Graham. "The Transition to High School as a Developmental Process among Multiethnic Urban Youth." *Child Development*, 80, 2 (March/April, 2009). p. 368. http://www.statmodel.com/download/cdv80.pdf

their study of one high-performing school district, they found that Latino students reported the transition from elementary to middle school to be more difficult that their Caucasian and African American peers in the same school.[15]

Research suggest that overall, students with stronger peer ties at the beginning of a transition manage the process better than their less socially adept peers.[16] Malaspina and Rimm-Kaufmann note that less socially competent students are more likely to experience disciplinary problems during the transition from elementary to middle school, for instance.[17] By contrast, students involved in extracurricular activities have more positive experiences of the transition and also tend to exhibit higher GPAs and levels of attachment to school.[18] Some researchers have suggested that there may also be a gender gap in the impact of transitions, with girls experiencing greater emotional distress as a result of the transition process than boys.[19]

Other life stressors interact with the school transition process. Simmons, et. al. have found that multiple stressors, such as school transition, geographic relocation, and physical development have a cumulative effect on the GPA, participation in extracurricular activities, and reported self-esteem of adolescent girls. [20] Hines reports that children of divorced parents face more difficulties transitioning to middle school, and that this effect is particularly pronounced in boys.[21]

> *For some students, the transition to a new school can be an opportunity for a fresh start in their academic or social lives.*

For most students, the drop in performance as a result of transition is temporary. Students eventually adjust to the new school environment and their grades and self-esteem recover. However, for some students, transitions can have serious and permanent consequences. The transition to high school has become an academic "bottleneck," with many at-risk

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[15] Akos, P. and John P. Galassi. "Gender and Race as Variables in Psychosocial Adjustment to Middle and High School." *The Journal of Educational Research.* November, 2004. p. 105. Retrieved from JSTOR.

[16] Newman Kingery, J., Cynthia A. Erdley, and Katherine C. Marshall. "Peer Acceptance and Friendship as Predictors of Early Adolescents' Adjustment across the Middle School Transition." *Merrill-Palmer Quarterly*. July, 2011. p. 230. Retrieved from JSTOR.

[17] Malaspina, D. and Sara E. Rimm-Kaufmann. "Early Predictors of School Performance Declines at School Transition Points." *Research in Middle Level Education Online*, 31, 9 (2008). p. 11. http://www.amle.org/portals/0/pdf/rmle/rmle_vol31_no9.pdf

[18] Akos, P. "Extracurricular Participation and the Transition to Middle School." *Research in Middle Level Education Online,* 29, 9 (2006). p. 5. http://www.amle.org/portals/0/pdf/rmle/rmle_vol29_no9.pdf

[19] Newman, J.E. "Exploring Early Adolescents' Adjustment across the Middle School Transition: The Role of Peer Experiences and Social-Cognitive Factors." The University of Maine. 2003. p. 20. http://digitalcommons.library.umaine.edu/cgi/viewcontent.cgi?article=1051&context=etd

[20] Simmons, R.G., Richard Burgeson, Steven Carlton-Ford and Dale A. Blyth. "The Impact of Cumulative Change in Early Adolescence." *Child* Development, 58, 5 (October, 1987). pp. 1224-1228. Retrieved from JSTOR.

[21] Hines, M.T. "Adolescent Adjustment to the Middle School Transition: The Intersection of Divorce and Gender in Review." *Research in Middle Level Education Online*, 31, 2 (2007). pp. 7-8. http://www.amle.org/portals/0/pdf/rmle/rmle_vol31_no2.pdf

students failing to earn enough credits to move to the tenth grade. Research suggests that students who fail the ninth grade have a very low chance of graduating from high school.[22] For some students, however, transitions can actually be beneficial. Weiss and Bearman find that certain groups of students have higher grades after transitioning from eighth grade to high school than similar students who remain in the same school through ninth grade. They theorize that high school may offer a "fresh start" for adolescents who have previously been held back or have had difficulty integrating with peers.[23]

In the same vein, Dauber, et al. argue that students are placed on an "academic trajectory" by their course assignments, but that these trajectories can be disrupted by the transition to middle school. When placing students in advanced, standard, or remedial courses, middle schools rely on previous academic performance as measured by grades and test scores. Middle school placements reflect standardized tests more than elementary school grades, so students who scored well on standardized assessments but whose classroom performance was poor may be assigned to a higher level track. These students will then have the opportunity to compensate for their previous underperformance. This opportunity means that students whose aptitude as measured by standardized tests surpasses their observed classroom performance might benefit from the transition to middle school.[24]

The transition process can also provide students with a "fresh start" socially. Some adolescents who were socially stigmatized in middle school can reinvent themselves during the transition and experience higher levels of social engagement in high school. An observational study conducted at a mid-size (~400 students) Midwestern high school in the late 1980s, for instance, found that high school offered a more diverse and less hierarchical array of activities and social groups than its feeder middle school, which had been dominated by a single exclusive and bullying clique. This diversity created opportunities for previously excluded students to find a social niche. Many students reported increased self-confidence and more positive peer relationships as a result of the greater social diversity in high school.[25]

The opportunity for social reinvention has significant benefits for students both during and after high school. A recent analysis of Wisconsin Longitudinal Study data found that students with more friends – those with "skill in building positive personal and social relationships" – tend to be more successful in terms of wage outcomes as adults.[26] Reducing

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[22] Neild, Op. cit., pp. 55-58.

[23] Weiss, C.C. and Peter S. Bearman. "Fresh Starts: Reinvestigating the Effects of the Transition to High School on Student Outcomes." *American Journal of Education.* May, 2007. p. 411.
http://steinhardt.nyu.edu/scmsAdmin/uploads/002/636/Weiss%20and%20Bearman%202007.pdf

[24] Dauber, S.L., Karl L. Alexander, and Doris R. Entwisle. "Tracking and Transitions through the Middle Grades: Channeling Educational Trajectories." *Sociology of Education*, 69, 4, (October, 1996). p. 302. Retrieved from JSTOR.

[25] Kinney, D.A. "From Nerds to Normals: The Recovery of Identity among Adolescents from Middle School to High School." *Sociology of Education*, 66, 1 (January, 1993). p. 34.
http://www4.ncsu.edu/~kaemerso/documents/Project3NerdsArticle.pdf

[26] Hsu, T. "Popular Kids in High School Get Higher Paychecks Down the Line, Study Says." *Los Angeles Times*. October 22, 2012. http://articles.latimes.com/2012/oct/22/business/la-fi-mo-popular-pay-20121022. For full study, see

social isolation and forming close friendships significantly reduces students' risk for serious mental health problems.[27] Reducing isolation also provides physical health benefits that have been shown to last into adulthood.[28]

In addition, research has shown that students with supportive peer networks are more interested in school than those without supportive peers.[29] Social engagement has been found to increase adolescents' connectedness with school.[30] In turn, attachment to school lowers students' risk for a variety of risk factors, including substance abuse, delinquency, and academic failure.[31] Overall, research suggests that more connected students are more likely to attend college.[32]

The positive impact of strong peer networks and social integration is also prevalent in the literature on transition pathways more specifically, which Hanover explores in the next section. Much of this literature draws on the life course perspective, a multidisciplinary orientation which "posits that social ties both influence and are influenced by life transitions."[33] In this vein, much research on the impact of specific feeder systems recognizes that feeder structures *alone* do not determine a student's response to transition; rather, student outcomes tend to be determined by their feeder pattern in conjunction with other factors, such as previous academic performance and pre-existing social ties.

Conti, G. et al. October 2012. "Popularity" (working paper). National Bureau of Economic Research. http://www.nber.org/papers/w18475

[27] Hall-Lande, J.A., Maria E. Eisenberg, Sandra L. Christenson, and Dianne Neumark-Sztainer. "Social Isolation, Psychological Health, and Protective Factors in Adolescence." *Adolescence*, 42, 166 (Summer, 2007). p. 267. http://facweb.northseattle.edu/lchaffee/PSY100/Journal%20Articles/Hall-Lande%20et%20al%202007.pdf

[28] Allen, K.A. and Terence Bowles. "Belonging as a Guiding Principle in the Education of Adolescents." *Australian Journal of Educational and Developmental Psychology*, 12 (2012). p. 111. http://www.newcastle.edu.au/Resources/Research%20Centres/SORTI/Journals/AJEDP/Vol%2012/V12_allen_&_bowles.pdf

[29] Wentzel, K.R. "Social Relationships and Motivation in Middle School: The Role of Parents, Teachers, and Peers." *Journal of Educational Psychology* 90, 2 (1998). p. 205. http://psycnet.apa.org/journals/edu/90/2/202/

[30] Monahan, K.C., Sabrina Oesterle, and J. David Hawkins. "Predictors and Consequences of School Connectedness: The Case for Prevention." *The Prevention Researcher.* September, 2010. p. 5. http://www.pitt.edu/~adlab/People%20pics%20and%20links/Publications%20page/Predictors%20and%20Consequences%20of%20School%20Connectedness.pdf

[31] Catalano, R.F., Kevin P. Haggerty, Sabrina Oesterle, Charles B. Fleming, and J. David Hawkins. "The Importance of Bonding to School for Healthy Development: Findings from the Social Development Research Group." *Journal of School Health*, 74, 7 (September, 2004). pp. 255-256. http://www.jhsph.edu/departments/population-family-and-reproductive-health/_archive/wingspread/Septemberissue.pdf

[32] Babcock, P. "From Ties to Gains? Evidence on Connectedness and Human Capital Acquisition." *Journal of Human Capital.* July, 2008. p. 14. http://www.econ.ucsb.edu/papers/wp04-10.pdf

[33] Benner and Graham, Op. cit., p. 357. Citing Elder, G.H. "The Life Course as Developmental Theory." *Child Development*, 69, pp. 1-12. Available through JSTOR.

SECTION II: TRANSITION PATHWAYS

This section provides an overview of three types of transition pathways – linear, pyramid, and split – and summarizes research related to the impacts of each. Discussion centers primarily around the potential effects of each type of transition pathway on students' academic achievement and socio-emotional development.

LINEAR PATHWAY

In a linear or "pure" pathway, students transition with the majority of their feeder school class and make up the majority of the destination school class. As a result, students already know most of their classmates in the new school. In many cases, existing social relationships and friendships transfer to the new school more or less intact. Pure pathways are also referred to as *uniform pathways* or *linear transitions*. This pathway is seen when a single middle school feeds into a specific high school or when a single elementary school feeds into a single middle school.

Figure 1: Linear Pathway Model

Elementary
School

↓

Middle School

↓

High School
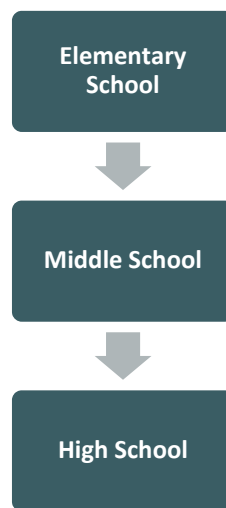
Research indicates that in some contexts, pure pathways can protect students from many of the central disruptive impacts of transition from one school level to the next. In a study of transitions to and from California elementary schools, for instance, Scala et al. argue that linear transitions minimize the disruption of students' social relationships. They find that "As social integration is a crucial component of continued academic success and persistence, eliminating or reducing the need for students to renegotiate social relationships when entering a new school may be beneficial."[34]

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[34] Scala, J., Patrice Fabel, and Tom Parrish. "New Beginnings: Transitions to and from California Elementary Schools." American Institutes for Research. September, 2012. p. 3. http://cacompcenter.org/wp-content/uploads/2013/02/ES-Transition-Report-FINAL.pdf. This finding builds on the previous research of Robert F. Marcus and Joanne Sanders-Reio. See "The Influence of Attachment on School Completion." *School*

When middle school social structures transfer more or less intact to high school, studies have shown, students may face less competition for status, and the academic benefits which accrue to students with strong social ties are largely maintained.[35] However, low-achieving students may not experience the same benefits, insofar as their performance may impact tracking or because they may maintain relationships with other underperforming students, negatively impacting their motivation. Such students may actually benefit from reconfigured social structures.[36]

> *Linear pathways may make planning transitions easier for parents, students, and teachers.*

In some cases, linear transition pathways have been shown to benefit ethnic minority students in particular. In a study on high school transition among multi-ethnic urban students, Benner and Graham found that the academic achievement and school connectedness of African American and Latino students dropped significantly when transitions resulted in "ethnic incongruence" – that is, "declines in the percentage of same-ethnicity peers."[37] In districts in which a split feeder pattern would reduce the representation of a given ethnic group at the destination school, students of the potentially underrepresented group may thus be better served by a linear feeder pattern.

Linear transitions may also make it easier for students and parents to understand the transition process. If all students from one school feed into a single destination school, parents and students will know which school they will transition into when they initially enroll, and can plan accordingly. Some school districts – for instance, Pennsbury School District in Bucks County, Pennsylvania – have worked to maintain pure transition pathways in school reconfigurations to minimize stress for students and parents.[38] Pittsburgh Public Schools recently adjusted its feeder patterns to a linear pathway in order to "make it easier for parents to know their child's feeder schools."[39]

In addition, teachers and administrators may find it easier to coordinate linear transitions. Schools across a linear feeder pattern can cooperate to create a unified K-12 educational

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Psychology Quarterly, 16, 4 (2001). pp. 427-444. Available through APA PsychNET.

[35] Langenkamp, A.G. "Academic Vulnerability and Resilience during the Transition to High School: The Role of Social Relationships and District Context." *Sociology of Education*, 83, 1 (January, 2010). p. 2. Retrieved from JSTOR.

[36] Ibid., p. 14.

[37] Benner and Graham, Op. cit., p. 368.

[38] See, e.g., Taylor, S. and Elliott H. Lewis. "Parent Advisory Council Middle School Reconfiguration." Pennsbury School District. December, 2013. Slide 5.
http://www.pennsbury.k12.pa.us/pennsbury/QUICK%20LINKS/Middle%20School%20Reconfiguration%20Committee/MSRC%20Presentation%20to%20Parent%20Adv%20Council%20-%20Dec%204,%202013.pdf

[39] "District Proposes New Feeder Patterns Based on District Realignment Plan." Pittsburgh Public Schools. October, 2011. p. 1.
http://www.pps.k12.pa.us/site/handlers/filedownload.ashx?moduleinstanceid=2166&dataid=3027&FileName=News%20Release-%20District%20Proposes%20New%20Feeder%20Patterns%20Based%20on%20Realignment%20Plan.pdf

experience and inculcate a common school culture.[40] In Jackson Public Schools in Jackson, Mississippi, teachers and administrators in the same feeder pathway "work together to isolate trends in instruction and make decisions within the feeder pattern to better serve the needs of students." Teachers share data, evaluate the effectiveness of programs, and work to foster a sense of community and family involvement throughout a child's K-12 academic career.[41]

PYRAMID PATHWAY

In a pyramid or mixed pathway, students transition with the majority of their middle school class but do not make up the majority of their high school class. This model is common when multiple middle schools feed into a single high school or multiple elementary schools feed into a single middle school. Langenkamp has highlighted the unique nature of this model in the transition from middle to high school, insofar as "middle school social ties are maintained, but there is also the opportunity to make new friends with students from other feeder middle schools."[42]

Figure 2: Example Pyramid Pathway Model
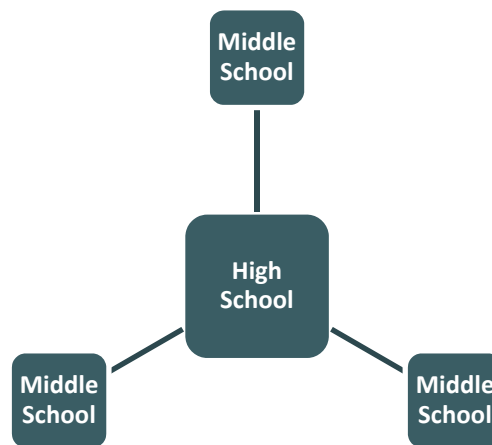
In an ex post facto study of 48 school districts,[43] Altsbaugh found a statistically significantly greater elementary to middle school drop in achievement on standardized tests in school

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[40] Scala, et. al., Op. cit., p. 9.
[41] See "JPS Feeder Patterns." Jackson Public Schools. December, 2013.
http://www.jackson.k12.ms.us/content.aspx?url=/page/feederpatterns
[42] Langenkamp (2009), Op. cit., p. 6.
[43] The first group of 16 districts included schools with K-8 and 9-12 grade configurations, with only one elementary school and one high school; the second group included districts with one elementary school, one middle school, and one high school employing a linear transition pathway; the third group of 16 included districts which each had two to three elementary schools, one middle school, and one high school, employing a pyramid transition pathway. Altsbaugh cautions that the small sample size may have impacted statistical significance testing.

districts using a pyramid transition model than those with a linear pathway. Notably, K-8 schools – in which students were *not* in transition from grades 5 to 6 – actually exhibited achievement gains as compared to both the districts with a linear pathway and those with a pyramid pathway. However, the analysis did not find a statistically significant difference between pathways when assessing the transition from middle to high school.[44]

According to the National Association of School Psychologists, merging multiple elementary schools into a single middle school can have a negative impact on students' perceptions of their own academic abilities – which in turn may result in a drop in performance. Niesen and Wise have theorized that this trend may be due to a disruption in perceived academic ability. Students in elementary school form a general impression of their academic ability relative to peers, for instance; changing the composition of the peer group may "cause students to spend more time worrying about where they stand academically as well as socially with their expanded peer group," to the detriment of academic self-esteem.[45]

In a study published in 2009, Langenkamp examined the impact of transition pathways on students' academic performance in the first year of high school, and how pathways interact with students' levels of social integration in school (as measured by "teacher bonding, popularity, and extracurricular participation").[46] Langenkamp focused on the three pathways explored in this section: linear (uniform), pyramid (mixed), and divergent.[47] Results of this research indicate differing outcomes by transition pathway: Langenkamp notes that "students with higher middle school achievement who follow the divergent pathway [to high school] earn lower first-year GPAs than those in the uniform pathway," suggesting that a divergent pathway poses greater challenges for high-achieving students.[48]

Langenkamp's research also found that levels of social integration can influence the outcomes associated with a student's transition pathway. In both the uniform and mixed pathways, for instance, "students who [were] more bonded with their teachers" exhibited higher first-year high school GPAs; in the uniform pathway and the divergent pathway, "greater popularity [was] associated with a higher first-year GPA, while in the mixed pathway, [popularity] fail[ed] to produce a similar predicted boost."[49] In summarizing the results of the study, Langenkamp notes that across all feeder pathways, "all measures of middle school integration [were] associated with better academic adjustment [GPA]."[50] When examining segmented outcomes, however, impacts differed. She writes:[51]

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[44] Alspaugh, Op. cit., p. 22.

[45] Niesen, V. and Paula Sachs Wise. "Transitions from Elementary to Middle School: Strategies for Educators." National Association of School Psychologists. 2004. p. S3-164. http://www.nasponline.org/communications/spawareness/transition_elem2mid.pdf

[46] Langenkamp (2009), Op. cit., p. 6.

[47] Langenkamp's study is based on data drawn from the National Longitudinal Study of Adolescent Health (Add Health) and the Adolescent Health and Academic Achievement (AHAA) study.

[48] Ibid., p. 9.

[49] Ibid., p. 10.

[50] Ibid., p. 11.

[51] Ibid. pp. 10-11.

Students who follow the mixed pathway receive a higher first-year GPA compared to those who follow the uniform pathway. Both the mixed and uniform pathways allow the maintenance of social relationships from middle school, yet students who follow the mixed pathway have the opportunity to make new friends among incoming students from other middle schools. The presence of opportunity in the mixed pathway appears to be beneficial for students. In addition, high-achieving middle school students who follow a divergent pathway are associated with a lower GPA in the first year of high school. These students seem to be at a disadvantage when they enter high school with few middle school peers, which is consistent with prior research.

In a study of 365 adolescent students transitioning from *elementary to middle school*, Marshall, et al. found a more limited effect of feeder pathways. In Marshall's study, students transitioning through a pyramid pathway reported a significantly higher number of friends than those transitioning through a single pathway. However, this effect emerged only after a time lag. The feeder pathway did not have a statistically significant impact on academic achievement – a finding that ran counter to the initial hypothesis that "children who make the transition to middle school from one feeder elementary school will have more positive emotional, social, and academic adjustment." [52]

Mixed pathways may also have an impact on social relationships within schools. Bishop, et al. argue that students in large middle schools with pyramid feeder patterns tend to judge one another based on stereotyped impressions of social groups formed in the first few weeks of middle school, rather than on a history of personal interaction. Students may suffer socially as a result of being assigned to a low-status social group during the transition and find it difficult to change their group assignment, particularly to a higher-status group. [53]

> *Mixed transitions are more disruptive of social structures than linear transitions.*

A later (2010) study by Langenkamp, entitled "Academic Vulnerability and Resilience during the Transition to High School: The Role of Social Relationships and District Context," found that middle school social relationships tend to have a "protective" effect on academic achievement in the first year of high school for high- or average-performing students but not for under-achieving students. Notably, she found that under-achieving middle school students are less likely to fail math classes in a mixed pathway than in linear pathway districts. She theorizes that mixed pathways reconfigure student social structures, giving

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[52] Marshall, K.C., Julie Newman Kingery, and Cynthia A. Erdley. "The Impact of Number of Feeder Elementary Schools on Adolescents' Psychosocial and Academic Adjustment." http://people.hws.edu/KINGERY/Professor_Julie_Kingery/Publications_files/SRCD%20poster%20one%20final%20 4.09.pdf

[53] Bishop, J.H., et al. "Why We Harass Nerds and Freaks: A Formal Theory of Student Culture and Norms." *Journal of School Health*, 74, 7 (September, 2004). pp. 237- 240. http://www.jhsph.edu/departments/population-family-and-reproductive-health/_archive/wingspread/Septemberissue.pdf

underperforming students who lacked positive social relationships in middle school an opportunity to form supportive relationships with new peers and teachers.[54] For these students, a merged pathway may be more likely to offer the academic and social "fresh start" identified by Bearman and Weiss.

SPLIT PATHWAY

In a split or divergent pathway, students transition with less than half of their feeder school classmates. This pathway is common in school choice environments in which students select a high school based on non-geographic criteria, or when students move between middle school and high school.[55] Divergent pathways can also develop when the boundaries of middle school and high school districts are not aligned, so that students in the same middle school are zoned to different high schools. Individual students can transition on a divergent pathway due to life changes or geographic relocation in the year of transition. Some students also enter or leave the public school system during transition years. Students who switch schools outside the normative process, due to relocation or a decision to transfer to a private or choice school during a level of schooling, can also be considered to be transitioning along a divergent pathway. These students are likely to know very few or even none of their classmates before starting at the new school.

Figure 3: Example Split Pathway Model
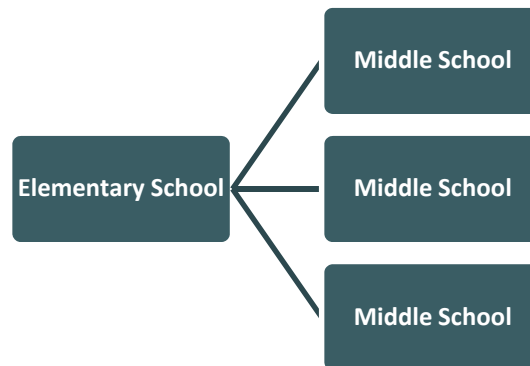
Research suggests that students following a divergent pathway experience much greater disruption of existing social relationships than other students.[56] In addition, split pathways and school choice systems can make it difficult for counselors to coordinate transition programs, as they must work with a larger number of other schools.[57] Some school districts avoid splitting feeder schools into two or more destination schools to avoid this problem.[58]

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[54] Langenkamp (2010), Op. cit., p. 12.

[55] Langenkamp (2009), Op. cit., p. 6.

[56] Ibid., p. 8.

[57] See, e.g. "Transitions to and from Elementary, Middle, and High School," p. 10. UCLA Center for Mental Health in Schools. http://smhp.psych.ucla.edu/pdfdocs/transitionstoandfrom.pdf

[58] See, e.g., Kery, T. "Recommendation for Changes to Fairfield Public Schools Middle School Feeder Pattern." Fairfield Board of Education: Facilities, Technology, and Long-Range Planning Sub-Committee. August, 2010. p. 6.

Schiller finds that transitioning to high school with fewer of one's middle school peers weakens the link between eighth grade and ninth grade performance. Based on an analysis of student data compiled by the National Education Longitudinal Study of 1988, Schiller examined a representative sample of eighth graders across the transition from middle to high school. Schiller's analysis found that under-achieving students tended to perform better in ninth grade math courses when they attended high schools with a small percentage of their middle school classmates, but that higher achieving students performed better when they attended the same high school as most of their middle school classmates. Schiller theorizes that this is due to a weakening of stratification links between schools in divergent transition patterns, as well as changes in peer relationships. [59]

Langenkamp's research has identified a similar pattern when examining the impact of "solitary educational transitions" – those that occur when a student attends a high school that is not part of his or her school district's typical feeder structure (thus transitioning without the peer cohort), or when a student transfers into a new school in the middle of high school. Focusing on a dataset compiled through the National Longitudinal Study of Adolescent Health and the Adolescent Health and Academic Achievement study, Langenkamp draws on the life course perspective to assess the impact of transition on academic performance, as measured by overall GPA and the completion of Algebra II or higher before the end of high school. The study also considers the extent to which students' previous levels of academic achievement and social ties play a role in the impact of the transition.[60]

Langenkamp's research suggests that cumulative GPAs by the end of high school are lower for mobile students (those who undertake a divergent transition pathway midway through high school). Notably, however, she finds that "at the extreme ends of the academic spectrum, transferring during high school can be either a risk (for high achievers) or perhaps somewhat protective (for low achievers)."[61] Notably, however, Langenkamp finds no evidence to suggest that the impacts of transition *on their* own are predictive of academic outcomes, and that a "consideration of both timing and context provide insight into situations where making a solitary educational transition has consequences even by the end of high school."[62] Langenkamp's analysis does point to the importance of social relationships during the transition to high school, however, noting that declines in academic achievement may result from feelings of social isolation.[63]

http://fairfieldschools.org/downloads/Facilities%20Sub-CommitteeReport_Middle%20School%20Feeder%20Pattern_August2010.pdf

[59] Schiller, K.S. "Effects of Feeder Patterns on Students' Transition to High School." *Sociology of Education*, 72, 4 (October, 1999). p. 224. Retrieved from JSTOR.

[60] Langenkamp, A.G. "Effects of Educational Transitions on Students' Academic Trajectory: A Life Course Perspective." *Sociological Perspectives*, 54, 4 (Fall, 2011). p. 501. http://creo.nd.edu/assets/60917/langenkamp_socpersp_v54.2011.pdf

[61] Ibid., p. 513.

[62] Ibid., p. 514.

[63] Ibid.

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