The Effects of Combinations of Changes in Parental Jobs, Partnership Statuses, and Residence On Children's Educational Attainment: An Exploratory Analysis

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Abstract

Socioeconomic status, household composition, and residence are not necessarily stable across childhood. Changes in parental employment, relationship status, and residence have been shown to affect children's educational attainment. Less studied is the fact that these events can occur in combination: one event could prompt another, or families could experience more than one of these disruptive events independently. Using data from the Panel Study of Income Dynamics (PSID), I confirm that job loss and gain, partner loss and gain, and residential moves have a negative effect on children's high school completion, and college attendance and completion. I then show that combinations of events lead to an increased negative effect. Finally, I show that, generally, an increased number of disruptive events has a progressively negative effect on educational outcomes. These findings suggest that event combinations matter for children; this should be considered when examining the impact of disruptive events in isolation.

Introduction

"When it rains it pours." "Bad things come in threes." "After the storm, the sun comes out." Idioms expound on combinations of important events; whether or not they hold true is generally unproven. There are indeed events that often occur together in people's lives, where one event prompts another event (e.g., a residential move following a divorce (Weitzman 1995),

or a job loss leading to a divorce (Charles & Stephens 2004; Sayer, Allison, England & Kangas 2011)), or where families experience more than one of these events independently. Research usually focuses on one life event, such as divorce, a move, or job loss; such studies have given us great insights into the dynamics and consequences of such events. However, these events often combine with each other, meaning that someone might be experiencing several such changes within the same year or two. The aim of this paper is to examine potential trigger event combinations, explore how common these combinations are, and see what those combinations mean (in contrast to the events taken one by one) to children's educational outcomes.

Treating each event separately matters, because it allows research to focus and delve more in-depth into each event's meaning in the life course. Indeed, we know what we know about disruptive life events because of this literature. However, it gives a disconnected view of each event, as if we were to pluck the event out of its "environment:" the life course. Each event occurs in the life course as part of a series of events. Disruptive events can, and often are, coupled together. When analyzing each individually, this does not allow for a view of this connection. If each event matters, surely the connection between or combination of events matters as well – or does it? Prior research does not currently answer this question.

This paper focuses on high school graduation, college attendance, and college completion for the children of parents who experience disruptive life events. Of course, there are many educational outcomes that occur between birth and high school graduation that could be measured, such as grades, disciplinary actions, or grade retention. I choose to focus on high school graduation, college attendance, and college completion, because those are educational transitions that matter for children experiencing the same disruptive events in their own relationships and employment. Indeed, I show the impact of such educational milestones on

parents' event experiences in this paper as well. If parents' disruptive life events decrease the chances of children reaching educational milestones that then increase children's chances of experiencing the same life events, this creates a pathway for affecting intergenerational mobility.

A big challenge in this project is that trigger events are not qualitatively equivalent. We cannot say that divorce has the same value as a residential move, or is half its value, for example, since this is subjective and relies on many other factors in a person's life. As such, this paper does not measure some sort of absolute "value" of each event and does not compare the events in this way. Rather, it looks at the likelihood of events occurring and combining, and then attempts to compare the effects of events on children's educational attainment. The former task means evaluating how often disruptive events occur and then how often they occur within close time proximity of each other rather than occurring as one event with no other disruptions in that time frame (time proximity will be addressed in the Methods section). The latter task involves choosing likely combinations of events and seeing what happens to children's educational attainment if their parents experience those combinations rather than stand-alone events. Again, effect comparison is a tricky endeavor; I measure the effect on children's educational attainment of each parental life event as well as likely combinations. I try a variety of models to see what the most logical and methodologically sound ways might be to quantitatively examine event combinations. From there, I draw cautious conclusions about what my results may mean more generally for families experiencing more than one disruptive event within a year.

Literature

As Werner and Smith (1992) point out, in psychology "the intercorrelations among a number of concurrent stressors in children's lives and possible common antecedents…are often

overlooked in such investigations" (154). Indeed, research on families suggests that instability and change are more to blame for negative effects on children rather than the family statuses themselves (McLanahan 1988; Wu & Martinson 1993), over and above the negative effects of income changes (Wu 1996). The negative effects of family instability affect children across all levels of income (Ryan, Claessens & Markowitz 2014). In other work (Simon Thomas, n.d.) I have found that the time a single mother spends unemployed is unrelated to the effects on their children's educational attainment; rather, it is the job loss itself that matters. Clearly, there is something about disruptive events that matters over and beyond concrete consequences such as income changes. However, no research to date has focused on disruptive events in a more general or combinatory way.

Previous research shows that disruptive events indeed matter for children's educational attainment, usually negatively. Parental divorce (Amato 2000; Amato & Keith 1991; Brown 2010; Fomby & Sennott 2013; Garfinkel & McLanahan 1986; Rhodes & Hoey 1994; Seltzer 1994; Sweeney 2011; Werner & Smith 1992), remarriage (Brown 2010; Jaffee, Moffitt, Caspi & Taylor 2003; Fomby & Sennott 2013; Sweeney 2011), residential moves (Burdick-Will et al. 2011; DeWit 1998; Ingersoll, Scamman & Eckerling 1989; Jelleyman & Spencer 2007; Pettit & McLanahan 2003; South, Haynie & Bose 2007), and job loss (Brand & Simon Thomas 2014) all negatively affect children, both educationally, socially, and emotionally. Divorce can lead to residential moves (Swartz, Hartman & Mortimer 2011; Weitzman 1995) and, of course, remarriage, which could exacerbate already negative consequences; divorce also negatively affects family income (Tach & Eads 2014). Partner status changes in general can lead to

changes in child care, which is disruptive for young children (Crosnoe et al. 2014).[1] Parental job loss means lower rates of high school and college completion for their children (Brand & Simon Thomas 2014).

Recent research shows that instability in families is generally detrimental to children's education, such college completion (Fomby 2013) and behavior (Ryan, Claessens & Markowitz 2014), and other outcomes such as union formation, childbearing, entry into the labor force (Fomby & Bosick 2013), and adolescent behavior (Fomby & Sennott 2013). Parental income shocks also negatively affect children's educational attainment (Hardy 2014). However, a recent report by the Urban Institute (2014) points out that though instability is seen as negative, there could be changes that create a form of instability but ultimately lead to better outcomes, such as a residential move when a parent gets a better job. Importantly, they also state that "the frequency or repetition of the experience of instability for children is an important consideration; a single experience of instability seems likely to have a different effect on children than repeated incidences of instability" (2). In an overview of related research, they refer to such repeated instances as a "cascade of instability,"[2] in which one event prompts another event. (They call for policies which, in addition to responding to the event effects, also aim at halting this cascade effect.)

Though schooling is mandatory until a student reaches an age between 15 and 18, depending on the state in which they reside,[3] high school diplomas were reached by

[1] I underscore the idea of disruption or shocks in children's lives here rather than the notion of parents both working or single mothers working. Recent research shows that it is not the amount but rather the quality of time spent with children that affects their wellbeing (Hsin & Feife 2014).
[2] http://blog.metrotrends.org/2014/09/children-thrive-instability/?utm_source=iContact&utm_medium=email&utm_campaign=UI%20Update&utm_content=Sept+2014+-+1st+Thursday
[3] http://nces.ed.gov/programs/digest/d08/tables/dt08_165.asp

approximately 90% of the U.S. population in 2013. College attendance does not definitely lead to a 4-year college degree; in fact, only 34% of the U.S. population was a Bachelor's degree holder in 2013 (U.S. Department of Education, National Center for Education Statistics, 2014). However, high school diplomas are necessary for the vast majority of jobs in the U.S., and college degrees lead to significantly increased incomes, especially over a lifetime of employment (Borgen & Rumbaut 2011). Thus, these are crucial milestones, which also provide a protective effect against job loss (Brand & Simon Thomas 2014; Kogan, Unt & Saar 2002) and marital instability (Furstenberg 1995). If disruptive events for parents create a situation in which children are more likely to experience the same events via educational mechanisms, this provides strong evidence for an intergenerational pathway of disadvantage.

There is ample precedent to hypothesize that my findings will show that parental disruptions have negative effects on children's educational attainment. How combinations of events affect children compared to single events remains generally unknown, though the research can be brought to bear on this issue predicts a negative effect. The effect of experiencing multiple events could be simply additive or multiplicative. Alternately, additional events could not matter to those whose lives are already unstable; there could be a point at which another added event does not make a difference from the effects of events already experienced. Generally, instability is seen as being negative for children, however, and I expect my results to confirm that finding.

Data

I use the Panel Study of Income Dynamics (PSID) for this analysis. The PSID began in 1968 and continues to add data every two years. The study began with a sample of 18,000

individuals in 5,000 families, and it is still growing as family members are added, creating a sample by 2011 of over 80,000 individuals. The PSID contains detailed information about job changes, partnership status, and residential location. It also contains, at a detailed level, all the covariates that are necessary for this analysis, such as race/ethnicity and income.

I use a subset of the trigger events that DiPrete and McManus (348, 2000) use. Though these authors look at different outcomes, I believe these events capture a set of instability and change in socioeconomic status for parents and hence their dependent children, which is appropriate for this analysis. The employment events are: (1) work to no work, (2) entry into self-employment, or (3) no work to work, and the relationship events are: (1) add partner, and (2) lose partner. I also include a third set of events: moving to a new residence, which makes use of a question in the PSID where respondents are asked in they have moved in the previous year. This gives me a total of five events to analyze.[4] There are many more events that could be considered disruptive to families; this list is by no means exhaustive. This analysis is meant to provide a starting point with some of the most important trigger events for families, and then this line of thought can be continued into other events, such as health-related changes (e.g., severe illnesses or death in families).

I measure educational outcomes for children following Brand and Simon Thomas (2014) as high school completion by age 19, college attendance by age 21, and college completion by age 25. I analyze mothers' and fathers' events separately, following recent arguments that both parents' class origins matter for children and must be taken into account when analyzing intergenerational mobility (Beller 2009). The PSID's use of head of household predominantly

[4] DiPrete and McManus also include changing jobs with the same employer, changing employers but keeping a similar job, and changing partners as events. I have eliminated these events because I believe that the shock of those events is likely to be more nuanced and more complex to disentangle the effects on children.

uses the male in the household as the head, though changing this method in other years; due to this inconsistency, I find it untenable to choose one parent as the main person whose disruptive events matter to children. Rather, I analyze mothers and fathers in and draw conclusions from separate models.

Methods

The questions I answer in this paper are:

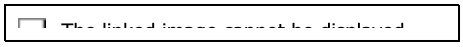
- *How often are events found in combination with one another? Which combinations are most common (i.e., which events are often experienced in the same family within a short time frame?*
- *Do certain event combinations lead to lower educational outcomes for children than others? Also, do any of these combinations of events lead to positive educational outcomes for children?*
- *Is a higher count of events worse (in terms of children's educational outcomes) than a lower count?*

To code events, I look at subsequent analysis years and create dichotomous variables. Prior to 1996, this means every year is included; post-1996, data is available for every other year. For the "work to no work" variable, I look at employment in two adjacent years and see if there is a change from employed to not employed; if this is the case, the "work to no work" variable is coded as 1 rather than 0. (If one year's variable relevant to the event variable is missing, the event variable itself is coded as missing for that individual.) The other events are coded in a similar way. Thus, the events variables are coded as ever having experienced the event, with the boundaries being the time of the survey (1968-2011) and the child's age (0-17 years old).

To code events combinations, I created a variable for two events occurring in the same year or in subsequent years. Since the idea is to see if certain events lead to others, I coded the most likely scenarios: losing or gaining a partner and then moving, and losing or gaining a job and then moving. More complex is the potential connection between losing or gaining a job and losing or gaining a partner: these events could be ordered and combined in various ways, and indeed, many have interesting theoretical implications.

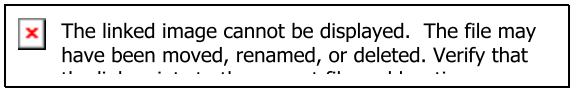
I limit my sample to children who were at least 19 years old by the latest survey date (in 2011). I also look only at parental events that occurred when their surveyed child was between 0 and 17 years old; events that occurred prior to that child's birth and once the child was 18 years old are not included in my analysis. There is a chance that some children are also parents with surveyed children in the sample; I do not exclude these cases.[5] I correct for families who have multiple children included in the survey by clustering.

I use linear regressions models to see which covariates significantly predict incidences of disruptive events in mothers' and fathers' lives. Linear regression models take the form of:



where *y* is the probability of the disruptive event, β is the set of covariates being examined in this model, α is the constant, and the other β's signify the set of coefficients for each variable. I examine the β coefficients to see which covariates significantly predict events.

I use logistic regression models to estimate effects of parental events on child educational outcomes. Logistic models take the form of:



(1)

[5] Examining these cases only as its own study is a possibility for future work, though sample sizes would likely be quite limited, even using data from a study as large as the PSID.

where *p* is the probability of reaching an educational milestone (completing high school, attending college, or completing college), β is the set of covariates being examined in this model, α is the constant, and the other β's signify the set of coefficients for each variable. Each educational outcome is a separate model; each event is considered in a separate model as well. I analyze mothers' and fathers' events in separate models to be able to examine potential differences in parental influence. Covariates for all models include the child's sex and race, whether the child was born in the South, mother's and father's high school completion, and mother's and father's college completion. For the models with mothers' events, I include a covariate signifying if mother was married when child was born; for models with fathers' events, I use a similar covariate for fathers. For the models that include the events of job loss or job gain, I use covariates signifying if the parent in question worked in manufacturing or trade in the year their child was born. I use a clustering correction (by family ID) to take into account families with more than one child in the survey.

I then run multiple logistic regression models with a variable signifying if the mother/father experienced a specific combination of events within one year; these models follow an identical structure to the models containing a variable for a single event. I also run models including these combination variables and the single event variables within each model rather than separately. However, the coefficient for the combination variable in both these sets of models describes the difference between child outcomes for those whose parents experienced two specific events in one year and *everyone else*. That means the comparison group contains those who experienced either of the events included in the combination as well as those who experienced no events. This is not necessarily a clear comparison, so I next turn to other ways to model these combinations.

The covariates indicating which events occurred are time-varying: in each year of a child's age, a parent can experience event A, event B, or both events A and B. Thus, these combinations cannot easily be generalized in one variable as they repeat over time (e.g., a parent experiences event A in 1985 and events A and B in 1992); also, over time the categories are not mutually exclusive. Thus, I run logistic regression models for each child age, from age 1 to 17, for mothers and fathers separately, with a categorical variable coded as 0 for no events occurring, 1 for event A occurring, 2 for event B occurring, and 3 for events A and B occurring in that year. However, I cannot summarize results from all these models.[6] Instead, I create overall variables for each of the categories in the categorical variable, and then I use those variables as dummies in logistic regression models (i.e., three dummies in each model, one for combination of events, and one for each event separately).

My concern for these models, however, is that they ignore that once events are summarized, they can occur more than once during childhood. To solve this, I next run models for event counts. First, I look at single events but instead of including a dummy variable (1 is event was experienced, 0 if not), I instead include a variable for the count of times the event occurred for the mother/father. Second, I use this strategy to look at the effect of a count of event combinations. Third, I put the count variables for single events and combination events into the same model.

Results

Analysis of events

[6] In other work I discuss trends by child age using these models (Simon Thomas 2015a); this paper is focused on overall results.

I first focus on exploratory analyses. Given the lack of coverage in the literature on how these life events might combine, my initial work involves seeing how often events occur, and then how often events occur in close time proximity to the same person. To start, I look at the frequency of event occurrence in respondents' lives. Disruptive event occurrence is not rare. As shown in Table 1, besides the percentage of parents entering self-employment (which is low at 0.53% for mothers and 0.44% for fathers), the frequency of events ranges from just over 14% for partner gains and job losses to nearly 60% for residential moves; fathers are slightly more likely to lose jobs compared to mothers (17.96% vs. 14.87%), but for other events mothers' and fathers' events are similar in likelihood. With a sample size of 15,792, this gives a more than adequate number of respondents for analysis; it also makes it likely that respondents will experience more than one event during their children's childhood years.

Linear regression models show which covariates have significant bearing on disruptive event occurrence. Figure 1 lists the factors which have a significant effect on each outcome, split into mother and father models. Black mothers are more likely to lose jobs, gain jobs (likely because they also lose them, this points to job churn), and lose partners. They are less likely to enter self-employment, which confirms recent research (Hipple 2010). The same factors are true for Black fathers.

Educational covariates are mixed in significant effects: if the father is a high school graduate only or a college graduate, this lowers the mother's chances of losing a job, gaining a job, losing a partner, and gaining a partner. If the mother is either a high school graduate or a college graduate, she has less chance of losing a partner, compared to those with neither educational attainment. Additionally, when the father is a high school grad only, families are less likely to experience a residential move. Either parent being a college graduate leads to a

lower chance of job loss, partner loss, and partner gain for fathers. If the mother is a college graduate, that leads to a lower chance of job gain, partner loss, and partner gain for fathers.

Mothers and fathers who are married when their child is born are less likely to lose a partner and gain a partner. They are also less likely to experience a residential move. However, they are more likely to experience a job loss.

To take a look at combined events, I examine events occurring in a span of two years. For events prior to 1997, this means combining two years of the survey together; for events post-1997 this means events occur within a survey time which covers two years in itself. Besides evening the analysis, since the PSID reports every two years post-1997, this also allows for greater sample sizes and more time for events to combine. In some exploratory analyses which I do not show here, I find that events are more likely to combine within a year, but sample sizes remain small prior to 1997; combining years together allows me to examine a large set of people while still allowing events to occur in close proximity time-wise. Ordering of events is unknown: for example, the combination of losing a partner and losing a job is equivalent to losing a job and losing a partner.

Combinations of disruptive events are also not uncommon (see Table 2), with frequencies ranging from 1% to just over 15% - again leaving out self-employment, in this case in combination with losing a job. Given the low sample sizes of this category of event combinations, I will not analyze effects from this event combination on child outcomes. The combination of an employment event or a relationship status events combining with a residential move is clearly much more common than employment and relationship status events combining with each other. Partner loss or partner gain combined with a residential move is the most

experienced combination of events, followed by job loss or job gain combined with a residential move.

To further examine how many respondents experience event combinations, Table 3 shows the frequency of event combinations occurring *given that the first listed event occurred*. Thus, of those respondents who lost a partner, 64.91% (for mothers) and 67.49% (for fathers) also moved in the same year. For those respondents who gained a partner, 72.75% of mothers and 73.90% of fathers also moved in that same year. To underscore the impact of this, it means that the majority of children whose parents experienced a relationship or employment event also experienced a residential move. For job loss and job gain, these combined percentages are 44.82% for mothers and 47.27% for fathers, and 43.59% for mothers and 47.01% for fathers, respectively.

Percentages for other event combinations, experiencing the second event given that the first occurred, are between 2% and 14%. Particularly, of those respondents who lost a job, nearly 12% of mothers and nearly 14% of fathers also lost their partner. Overall, this indeed points to greater instability for many respondents than simply looking at one event in isolation, and again points to a need for further investigation into event combinations as opposed to looking at the effects of events in isolation.

It is possible that one event prompts another event, although their close proximity in time could also be coincidental; I cannot determine which event occurs first when they occur in the same survey year. Regardless of reason or order of coincidence, the fact remains that parents, and hence their children, are subject to the effects of both events within the same year.

Analysis of event effects on child outcomes

The next step, then, is to see how single events affect child outcomes. Effects of disruptive events on children's educational outcomes are shown in Tables 4a and 4b; Table 4a does not include control variables in the models while Table 4b does. For these models, events are coded as 1 if they ever occurred during childhood, 0 if they did not occur, and missing if information is missing from survey year to survey year (i.e., cannot see a change in status over time). It is important to note that this means whether the person experienced the event in question or not for a specific event's variable, they could also have experienced other events at any time, in the case of these models. The comparison group includes everyone who did not experience the event in question (excluding those with missing information).

Without control variables (Table 4a), losing or gaining a job for mothers and fathers has a positive effect on child's high school graduation. Losing or gaining a job for mothers has a positive impact on child's college attendance; for fathers, the impact is slightly negative but insignificant. The impact of mother's job loss or gain on child's college completion is insignificant; for fathers the effect is significantly negative. A parent's loss or gain of a partner has a negative impact on all outcomes, though these effects are not significant for high school completion (except for father's partner gain). Moving has a positive effect on high school completion and college attendance but a negative effect on college graduation. Self-employment has a positive impact on all outcomes, very strongly so for college graduation. Given the absence of controls in these models, these last two findings point to self-employment and single residential moves being generally more common for workers with higher incomes and/or occupational status (Hipple 2010).

Once control variables are added (Table 4b), mothers' and fathers' job loss, job gain, partner loss, and partner gain, all have negative effects on children's educational outcomes, with

effects becoming increasingly negative from high school completion to college attendance and then college completion. The effect of residential moves is insignificant for high school completion and significantly negative for college attendance and completion. Adding control variables makes the effects of self-employment insignificant.

These results are not surprising and generally confirm prior research. It is interesting that job gain and partner gain have similarly negative effects compared to job loss and partner loss, which perhaps points to the negative implications of any instability for children (Brown 2010), even if the eventual outcome seems qualitatively positive. In addition, gaining a job implies that prior to the job or partner gain, the respondent was unemployed or divorced/unmarried; perhaps the negative effects are residual effects from those states rather than an effect of those changes directly.

Table 5 shows the effects of event combinations on the same child educational outcomes, again with the effects for mothers and fathers shown separately. It is important to note that this model shows those who experienced an event combination compared to everyone else; that is, respondents in the comparison group could have experienced one or both events, but not in the same two years, or no events. It can be easily seen that the effect of a parent experiencing two disruptive events within a two-year span is overwhelmingly negative for children's educational outcomes. Effects tend to be higher for college completion compared to high school completion and college attendance.

The lower half of Table 5 contains event combinations that are less common, compared to combination in the top half of the table. Combining relationship and employment events with residential moves happens quite regularly, as discussed earlier. Combining relationship and employment events with each other happens less frequently, and so the power of the analyses is

considerably less. Even so, I report the findings for comparison, with the caveat that sample sizes can be quite small, and I draw cautious conclusions.

Comparing Table 4b and Table 5, for employment events combining with residential moves as well as employment events combining with relationship events, effects are greater for event combinations compared to the effect of single events. There is no additive or multiplicative pattern; the effects are simply larger. For example, when a mother loses her job, her child has, on average, a 17% lower chance of college completion, holding other factors constant; for fathers' job loss, this value is 27%. When a mother experiences a residential move, her child has, on average, a 25% lower chance of college completion, holding other factors constant; for fathers, this value is 19%. However, when a mother experiences a job loss combined with a residential move, her child's chances of college completion are 32% lower compared to children whose mothers did not experience this combination of events. For fathers, the effect of these combined events is 36%.

For partner loss and gain combining with residential moves, the pattern of combinations compared to single events is less consistent. For partner loss and residential moves, effects on high school completion and college attendance are more strongly negative for the combination of events compared to single events, following the pattern of other combined events. However, for college completion, the single event of losing a partner is worse for child outcomes compared to losing a partner and a residential move. Generally, gaining a partner is slightly worse than gaining a partner and moving, though effect sizes are very similar. In other words, there does not seem to be a lot of difference in terms of educational effects of partner gain compared to these gains in combination with moving.

In order to gain more information about how events work in combination, next I create models containing each events variable as well as the combination variable for those two events. Thus, each model now has three explanatory regressors rather than having a separate model to determine each coefficient. This allows the model to take more of a life course perspective by accounting for the experience of single events as well as combinations of events (at different times in the survey) rather than treating these experiences as completely separate. Table 6 reports the results for these models. Indeed, the combination of job loss and a residential move, and job gain and a residential move, lead to a power probability of high school graduation, college attendance, and college graduation, compared to the effects of those single events. Losing a partner and moving is worse than each of those events in isolation for child's high school graduation and college attendance (losing a partner alone is very slightly worse for mothers here). However, the probability of child's college attendance is lower for just losing a partner compared to losing a partner and moving.

The pattern changes when a parent gains a partner and moves; this combination of events is not worse than those events taken alone. In fact, simply gaining a partner has a more substantial negative effect on all educational outcomes except, by a very small difference, college attendance when mothers experience the partner gain. What is interesting about this group of respondents is that this is the most common combination of two events of all considered in this analysis. Nearly 73% of mothers and 74% of fathers (see Table 3) who gain a partner also move to a new home. It is possible that since the move is normative, it is expected and therefore moving does not lead to a worse effect for children. It is also possible that the move signifies a better situation, where the new partnership means a new home with appropriate space for everyone, compared to gaining a partner within the same space as was previously inhabited.

In the next group in Table 6, gaining a job and gaining a partner in the same time span, the combination of events is increasingly negative across educational outcomes, compared to single events – interestingly, only for mothers. For fathers, the effects of the combination of these two events are nearly zero and insignificant or, for college attendance, substantially positive. This suggests that these events present a unique situation in which mothers influence their children's educational decisions in quite different ways than fathers do. It is possible that this points to fathers not being coresidential with children when in the position to gain a new partner (i.e., separated from the child's mother), and therefore the partner gain and job gain lead solely to more financial security and little instability in every-day life for children.

Moving to the combination of gaining a job and losing a partner, losing a partner alone overshadows the combination of events in all categories except for mothers and high school graduation. Losing a job and losing a partner looks very similar, though the combination of events for mothers is worse in effects on both high school graduation and college attendance. Losing a job and gaining a partner for mothers is worse than those events singly for high school and college completion; for fathers, this combination of events is worse for high school completion only.

Though tests of multicollinearity do not show a problem with combining single event and combined event variables in one model, the question remains as to what happens if categories are more mutually exclusive. In Table 6, the categories overlap: that is, those who have lost a job are included in both the losing a job and the losing a job and residential move categories. Thus, I create a categorical variable coded as 0 for no events occurring, 1 for event A occurring, 2 for

event B occurring, and 3 for events A and B occurring for each child age from 1 to 17 years old.[7] Then, I create dummy variables based on each of these categories, and I create an overall variable (across years 1 to 17) for each category that takes the value of 1 if the dummy variable for that category was ever noted as 1 and 0 if it was ever 0. I then run models similar to the ones reported in Table 6, but using these dummy variables instead. Results are shown in Table 7. Notable in this table are the dashed areas with missing values. Those results were omitted due to perfect prediction of failure. Thus, particularly for college completion, event combinations predict failure of attainment. Also important in this table is the low number of statistically significant values, which makes it difficult to draw conclusions about patterns across any category.

However, for some cases it is indeed true that the combination of events for parents leads to a lower probability of attaining the educational categories for children as compared to the single events. Specifically, losing a job and moving for mothers leads to a much lower probability of college attendance for children; for fathers, these events in combination lead to a lower probability of college completion for children. Gaining a job and moving is worse in combination for all situations except for fathers and child's high school completion.

Gaining a job and gaining a partner in the same time span appears positive for fathers for high school completion and college attendance, whereas it is strongly negative for mothers. It is negative for fathers for college completion. Gaining a job and losing a partner is worse in combination for high school completion and college completion for both mothers and fathers, and also for college attendance for fathers. The last two groups have several omitted categories, indicating perfect failure. For those cases, if we consider them to be highly negative, it does

[7] The results for each age category are used to look at patterns across childhood in other work (Simon Thomas 2015a).

appear that the combination of events is worse than single events in the vast majority of event comparisons.

A higher count of events might also matter for effects on children. See Appendices I and II for a breakdown of the counts of events and event combinations during childhood; though it is not uncommon for parents to experience an event twice during their child's childhood years, more than twice is unlikely, except for residential moves, which can happen more often. Event combinations can also occur more than once during childhood, though unsurprisingly to a lesser extent than single events.

In Table 8, I show that more disruptive events in childhood lead to increasingly negative consequences for children.[8] For mothers and fathers, an increased count of events leads to a lower chance of graduating high school, attending college, and graduating college, with an increasingly negative effect across outcomes. These findings imply not just that disruptive events have negative implications for children, but also that these events often combine and lead to increasingly negative effects. Therefore, it is clear that instead of considering one disruptive event in isolation, it is critical to also consider the context of other events.

To find out more about specific event counts, I reran the models for single events, but this time including with a variable indicating how many times the event occurred rather than simply whether or not the event occurred. Table 9 shows coefficients for a variable signifying event counts over childhood for each single event; compared to prior analysis of single events (Table 4b), results are quite similar. Losing a partner has a more negative effect when we consider counts for all educational outcomes, as does moving for high school completion. Effects are

[8] To test the assumption that the impact of events changing as the count increases, I also ran models to examine the results of each additional event in isolation. Each event was still increasingly negative with similar value, so those results are not included.

more highly significant, however, for the vast majority of outcomes. In Table 10, results show that event combination counts increase effect sizes for all event combinations, though for many combinations the difference is slight. All effects of event combination are still negative, and comparing single events to combinations of events in tables 9 and 10 follows the same pattern as comparing tables 4b and 5.

Finally, Table 11 shows results for models including count variables for event combinations and single events in the same model. Note that the count of combinations in these models indicates occurrences of those two events occurring within a two-year time span, as previously, so the count of event combinations is not inflated compared to single events simply because it considers two events. The events must occur within the same two years to be considered an event combination. These models overwhelmingly show that parents' experiences of combinations of events lead to a lower probability of their children attaining all three educational outcomes.

There are a few notable exceptions, however. Losing a partner for mothers has more highly negative effects on college completion compared to losing a partner and moving. Gaining a partner and moving is not worse in combination for college completion, as only gaining a partner is worse. Gaining a job and losing a partner does not have more negative effects on college completion compared to the single event of losing a partner. Overall, the results are close to those in Table 6, and the patterns are close to those in Table 7. Using a count reflects both the event and the possibility of these events occurring multiple times, however, so this seems closest to the true experience of these factors for families.

Discussion

To summarize, I return to the questions posed at the start of this paper. *How often are events found in combination with one another?* Combinations are surprisingly frequent, particularly when considering the proportion of parents who experience additional disruptive events given that they already experienced one disruptive event. This means that looking at the effects of just one event may be masking additional negative effects. It also means that it is unclear which effects we are viewing: e.g., are the negative effects on children following a parental divorce due to the divorce or rather the residential move that follows (or precedes) the divorce? It is difficult to tell. *Which combinations are most common (i.e., which events are often experienced in the same family within a short time frame?* It is clearly most common to combine a residential move with either an employment or a partnership change event. Relationship and employment status changes do not combine often, though it does happen to some respondents.

Do certain event combinations lead to lower educational outcomes for children than others? It is difficult to compare across sets of events, and combinations of events seem generally within the same range of effect size. Combinations clearly matter, however, and across coding methods and models, parents' experience of two contemporaneous events leads to a lower probability of their children attaining all educational outcomes considered compared to parents' experience of single events.

Also, do any of these combinations of events lead to positive educational outcomes for children? The combination of job gain and partner gain as well as the combination of job loss and partner gain show positive effects on the probability of children's college graduation. Gaining a job and losing a partner for fathers shows a positive effect on the probability of children's college graduation. It is important to remember that sample sizes for these event combinations are small, however, and overall, effects are overwhelmingly negative.

Is a higher count of events worse (in terms of children's educational outcomes) than a lower count? My results show that this is indeed the case for many outcomes. Additionally, each disruptive event comes at an incrementally negative cost to children's educational attainment when events occur in combination generally across childhood. A caveat here is that a select group of individuals experience a very large number of events while their children are between the ages of 1 and 17 years, though the models control for likely factors (race, education, married when child was born, etc.) to address this issue. While 19% of mothers and fathers experience one event during the course of the survey, 14% and 15% of mothers and fathers, respectively, experience two events; 10% and 11% experience 3 events, and 26% and 25% experience four or more events. Events combinations can also be experienced more than once, particularly employment or relationship changes combined with residential moves. It is clear that the experience of multiple events is not rare across the life course. Therefore, the fact that additional events create increasingly negative effects is worrying for children's educational attainment. It also points to a potential group of increasingly disadvantaged families.

When thinking about the consequences for policy relating to families and children in particular, it is important to remember how differently the attainment of a high school diploma operates compared to college attendance and college graduation. High school is free and compulsory, whereas college can be quite expensive and is choice-based. Therefore, the differences in effects on the probability of high school graduation as compared to college attendance and especially college completion are not surprising. Both single events and event combinations seem to matter more for college completion compared to high school graduation and college attendance, with event combinations lead to an even lower probability of college graduation.

There are several interesting policy implications here. Firstly, since disruptive events often combine, and since the experience of these combinations leads to lower educational attainment (compared to the experience of single disruptive events), perhaps policies should first focus on stopping the cascade of disruptive events and then work on mending the consequences of events that have already occurred. Policies that allow people to keep their rented or mortgaged homes following a job loss are a great example of this sort of policy intervention. Secondly, there are some differences between mothers' and fathers' experiences of disruptive events, but largely the effects on children look quite similar, and policies should be aware of this. Thirdly, residential moves and partner losses show the largest effects on children's educational attainment. Education policy should be aware of the negative consequences that children face when they move; there should not be such a heavy toll on children when we have a national public school system (albeit with many decisions made at the state level). Additionally, partner losses and gains figure heavily in college graduation, which are findings of which financial aid officers as well as undergraduate academic mentors should be aware.

There are a number of cautions to place on my findings. It is possible that events occurring the same year are not linked in a "cascade;" I have no way of seeing reasons for events occurring within close timing of each other in the PSID. There is reason to believe that the timing of events in childhood matters, meaning that effects shown in this paper might be "diluted" by the years included; in other work, I deal with this possibility by splitting childhood into three time periods and examining disruptive event effects in each time period rather than over 17 years of childhood (Simon Thomas 2015a). Finally, this paper ignores external factors such as recessions or times of war; in other work, I delve further into the ways in which these environmental factors might come into play (Simon Thomas 2015b).

Future work should delve further into the reasons that these events might combine. Additionally, there are other disruptive events that could easily combine with these events on which I have chosen to focus in this paper (e.g., health-related events); those should be analyzed in the future.

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Figures & Tables

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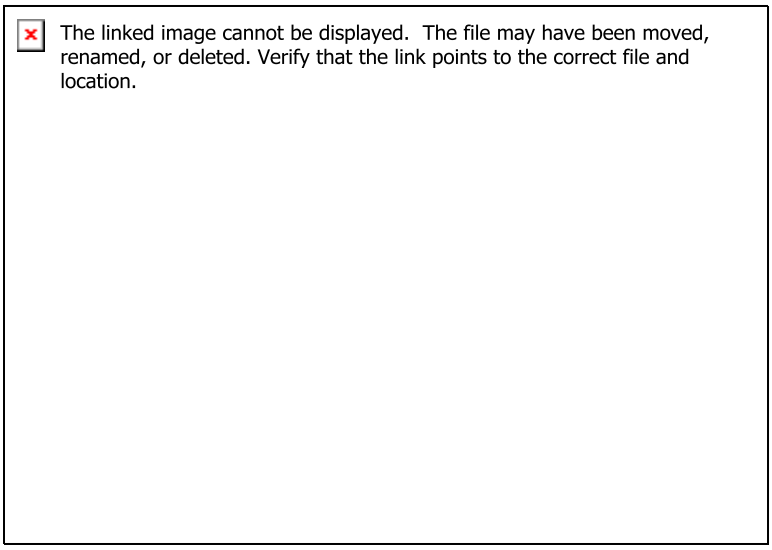
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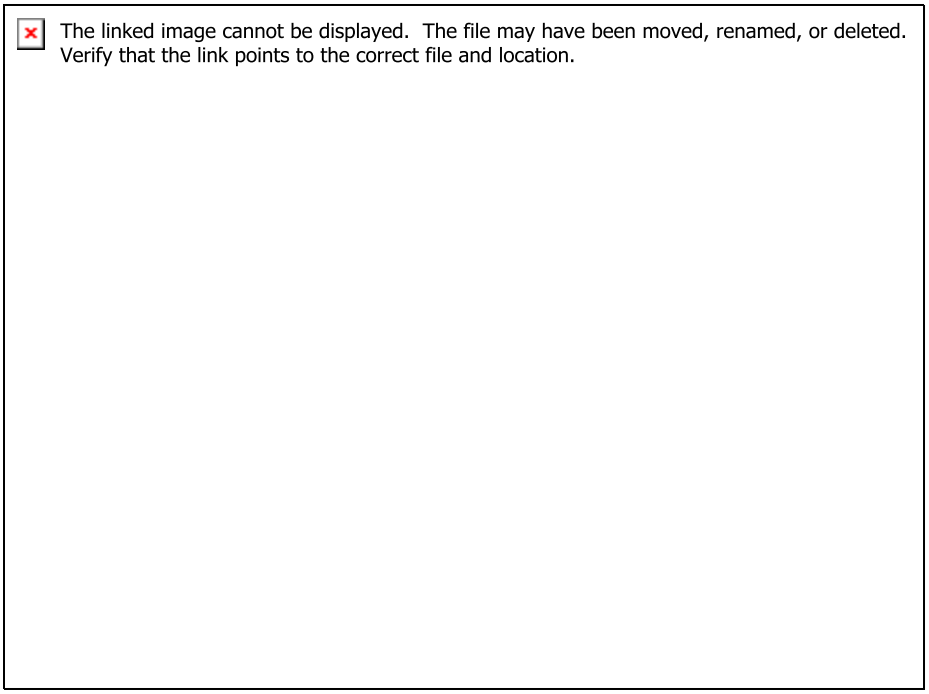
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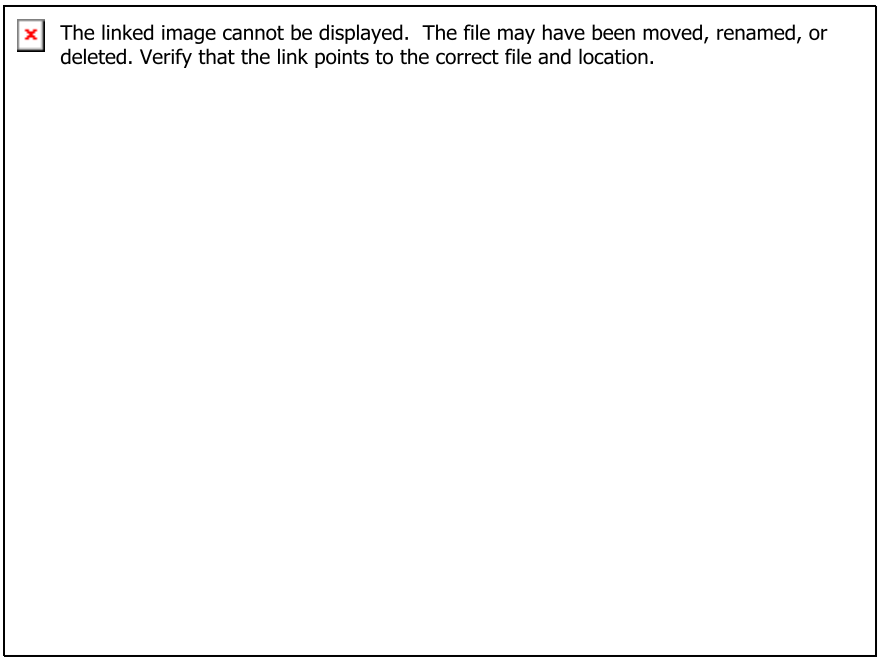
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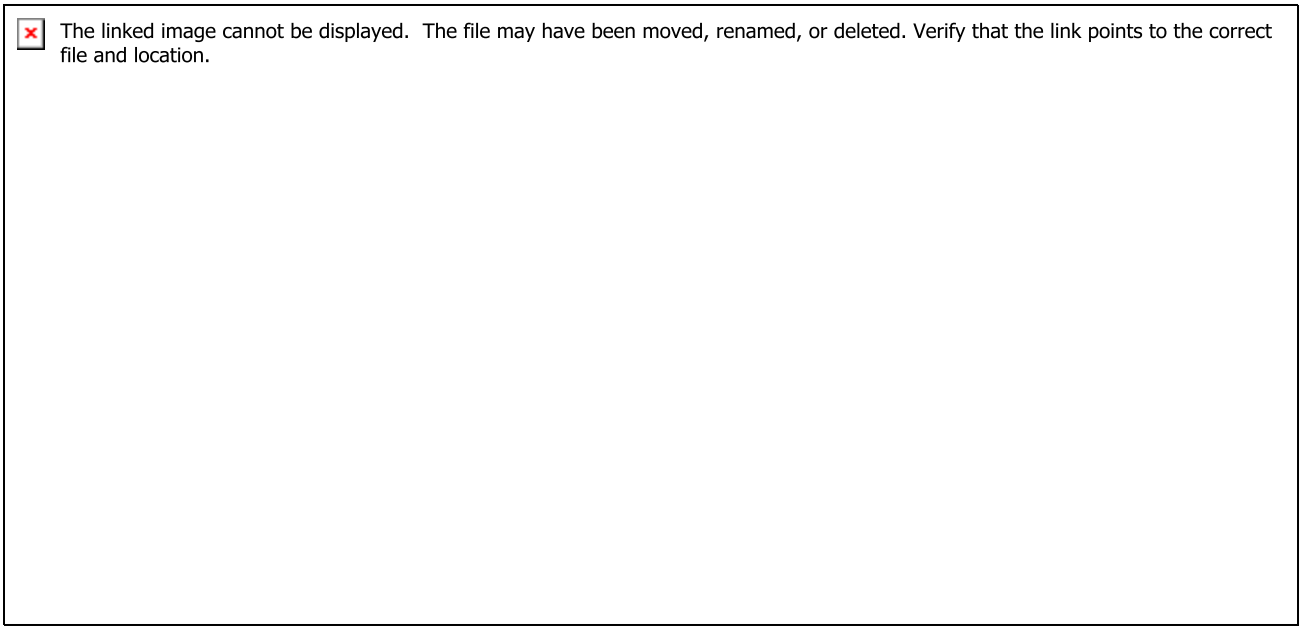
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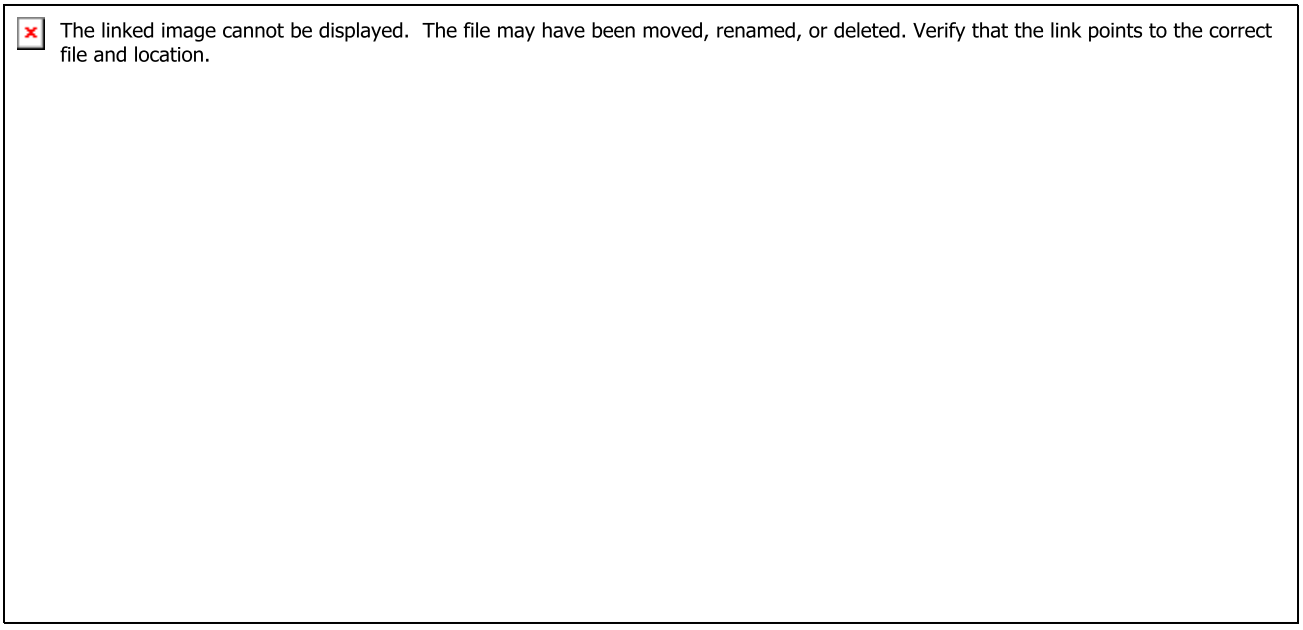
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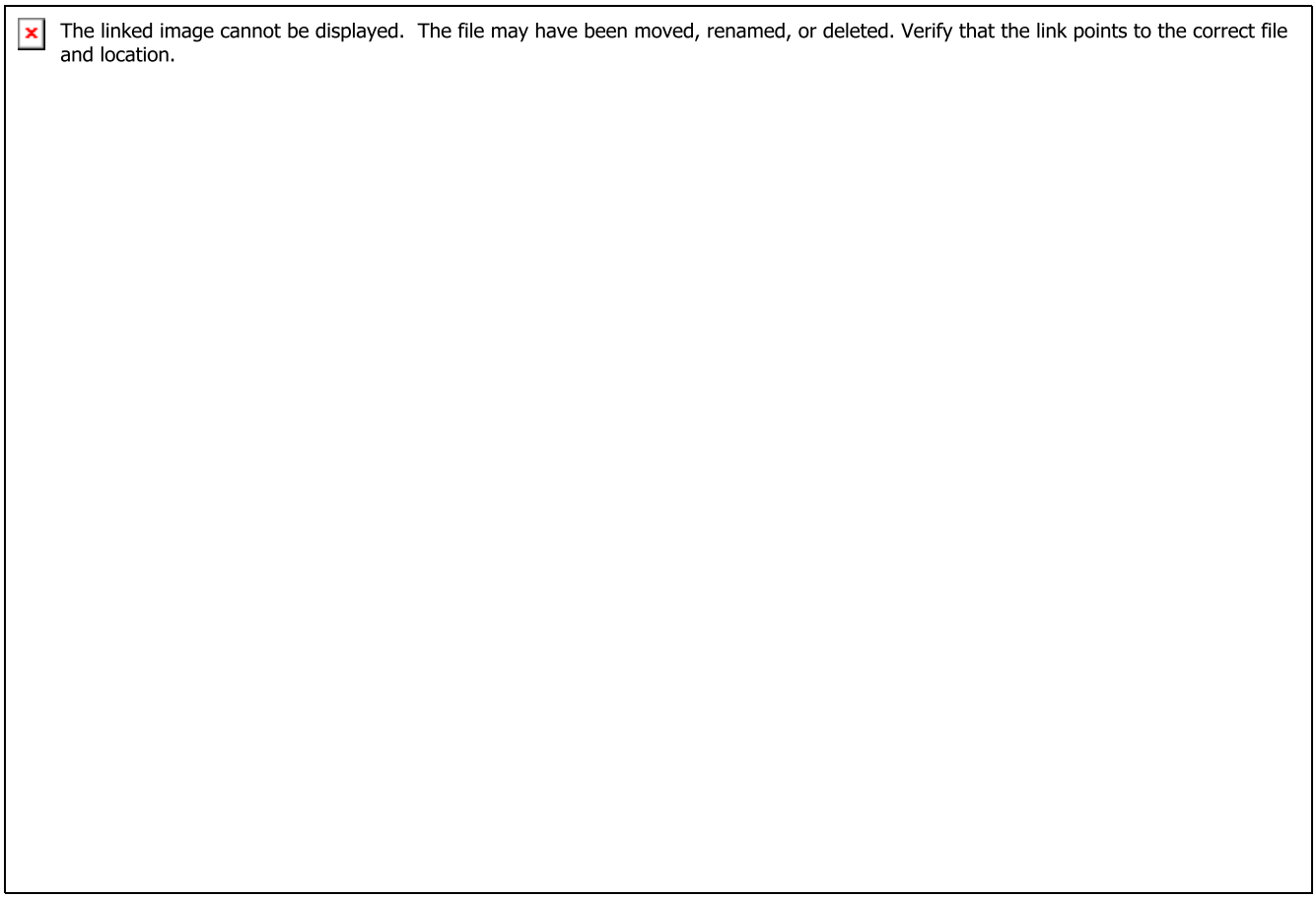
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Table 6:

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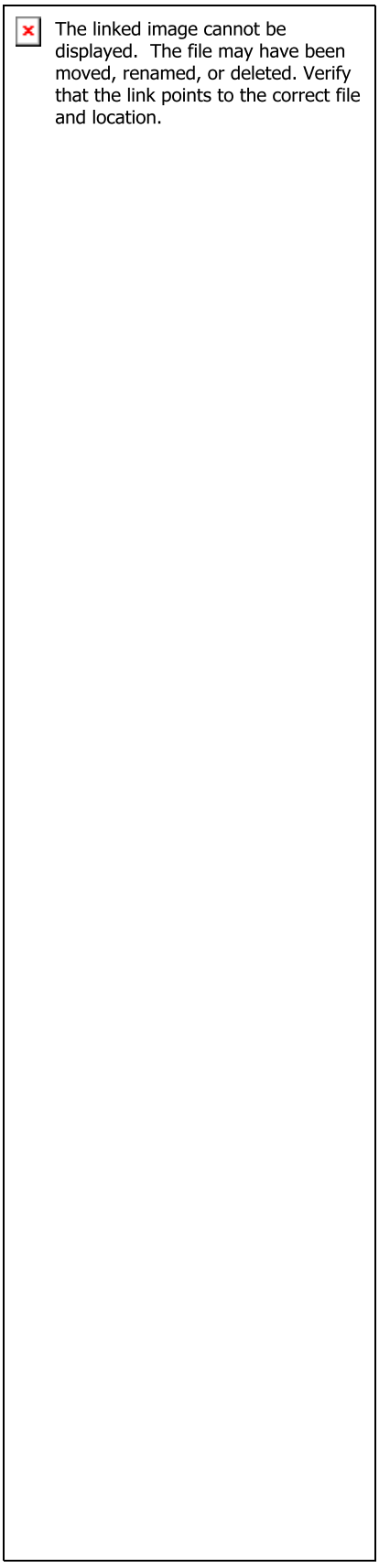
Appendices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