Does Sadness Influence Investor Behavior? Evidence from Bereaved Fund Managers*

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Abstract

This study examines how sadness, a common emotional state, affects mutual fund managers' performance and behavior. We find a large decline in mutual fund return by 3 percentage points around the parental deaths of fund managers. This underperformance persists for a year, suggesting a longer-term negative impact of sadness on fund managers' cognitive ability. Additionally, the underperformance cannot be explained by alternative explanations such as limited attention due to physical distractions around parental death. We further examine bereaved managers' investing behaviors and find that bereaved managers become 1) more risk-averse, as they reduce tracking errors, shift holdings to larger stocks, and trade less actively; 2) more impatient, as they incur higher transaction costs and close their positions more quickly to realize gains; and 3) more sensitive to losses, as they are more likely to eliminate stocks following large negative returns. These findings are consistent with the effects of sadness documented in the psychological literature. Our results indicate that personal emotions can significantly influence investors' performance and behaviors.

Keywords: Parental Death, Sadness, Emotions, Mutual Fund, Fund Performance

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1. Introduction

How do emotions affect investor performance and behavior? Despite the burgeoning literature on the relation between emotions and decision making in general (Lerner, Li, Valdesolo, and Kassam, 2015), there has not been much progress on the link between emotions and investment behavior since earlier work on daylight-related effects (e.g., Saunders, 1993; Hirshleifer and Shumway, 2003; Kamstra, Kramer, and Levi, 2003). Drawing on recent findings in psychology, we consider how *sadness*, a common incidental emotional state, affects the performance and behavior of mutual fund managers who play a key role in modern financial markets and price formation process.

We focus on sadness because its impact on human cognitive process has been studied extensively (e.g., Pham, 2007). Results from experiments demonstrate that sadness influences human cognitive processes (e.g., misattribution of information and biased memory retrieval), which could manifest in behavioral biases related to loss aversion and time preferences. In this paper, we study the effects of sadness on mutual fund managers in a unique exogenous setting that avoids reverse causality: parental death events.

The setting of parental death has several distinctive advantages. First, parental death events are inevitable life experiences, and people generally grieve over parental death. Indeed, imagining the death of a loved family member is a standard method to induce sadness among subjects in experimental studies.[1] Second, prior research has documented large and relatively long-term negative emotional effects of filial bereavement on adult children (Umberson and Chen, 1994; Marks, Jun, and Song, 2007; Leopold and Lechner, 2015). Third, these longer-term emotional consequences of parental losses allow us to distinguish sadness from the effects of limited attention due to temporary physical distractions associated with parental loss (e.g., arranging and attending

[1] Gross and Levenson (1995) compare audience reactions to clips from various movies to understand how to elicit emotional responses in a laboratory setting. They report that the two clips that elicit the most sadness emotion from their subjects are: (1) a boy crying at his father's death (from "The Champ") and (2) a deer's mother shot dead by hunters (from "Bambi"). The former clip is widely used in experimental studies to elicit sadness from laboratory subjects, e.g., Lerner, Li and Weber (2013). Another common approach to induce sadness in laboratory setting is to instruct participants to imagine the death of someone they loved by providing specific instructions, e.g., picturing the loved one's last moments, details about his or her final words, etc. (Fox, Knight, and Zelinski, 1998).

funerals). Since physical distractions tend to be fairly short-lived, any long-term systematic changes in fund managers' performance and investment decisions are more likely to be due to impaired cognitive ability.

Our analyses start with examining the effects of parental death on mutual fund performance. Prior work suggests that the impact of sadness on cognitive ability depends on the degree of sadness. Mild sad moods seem to trigger more systematic, data-driven, and analytical reasoning consistent with logical rationality,[2] possibly because sad moods send a warning signal to the individual that the situation is problematic and therefore requires a more vigilant form of processing (Schwarz, 2002). However, more intense states of sadness seem to interfere with reasoning and rigorous processing of information (Conway and Giannopoulos, 1993; Hartlage, Alloy, Vazquez, and Dykman 1993; and Silberman, Weingartner, and Post, 1983). Since parental bereavement tends to elicit intense sadness,[3] we expect the intense sadness to negatively affect fund managers' performance, leading to declines in fund returns during and after parental losses of fund managers.

We construct a sample of 1,195 U.S. mutual funds for the period 1999−2013 that are actively managed by those who have experienced parental deaths. We obtain the data on mutual fund managers from Morningstar, and then identify parental death events experienced by these fund managers using the LexisNexis Accurint database, which contains a broad set of personal information collected from over 37 billion U.S. public records. The managers affected by these parental death events represent the underlying population reasonably well, consistent with the exogenous nature of parental death events.

We find strong evidence that parental deaths are associated with substantial declines in fund performance, both around and following the parental death event. A fund whose manager experiences filial bereavement ("bereaved fund", henceforth) experience an average decline in fund alpha of 1.1 percentage points over a four-month event window [-2, +1] surrounding the parental death, where month 0 is the parental death event month. This point estimate is obtained from a difference-in-difference ('diff-in-diff') analysis where monthly returns of

[2] Specifically, sad moods have been found to increase the care with which people process substantive information in persuasion (Bless, Bohner, Schwarz, and Strack, 1990; Sinclair, Mark, and Clore, 1994), decrease the reliance on general knowledge structures such as scripts and stereotypes (Bless, Schwarz, Clore, Golisano, and Rabe, 1996; Bodenhausen, Kramer, and Suesser, 1994), increase the ability to estimate covariation from scatter plot data (Sinclair and Mark, 1995), reduce the susceptibility to halo effects (Sinclair, 1988), reduce fundamental attribution errors (Forgas, 1998), and increase the transitivity of preferences (Fiedler, 1988).

[3] See, for example, Birtchnell (1975), Horowitz et al. (1981), McHorney and Mor (1988), Sanders (1979, 1980), Scharlach (1991), Umberson and Chen (1994), Marks et al. (2007), Leopold and Lechner (2015).

a bereaved fund during the event window is measured relative to peer funds and then compared with that in the four-month window [-6, -3] immediately preceding the event window. This diff-in-diff approach controls for both cross-sectional difference in fund and managerial characteristics as well as time-series patterns in mutual fund returns in general. This performance decline is robust across various measures of fund returns such as raw fund return, four-factor fund alpha, and five-factor fund alpha that also controls for the liquidity factor.

We also observe that this underperformance persists for up to twelve months following the parental death, which cannot be explained easily by limited attention caused by short-term physical distractions. For example, compared to the pre-event window, bereaved funds underperform by about 1 percentage point in the four-month immediate post-event window [+2, +5] and another 1.2 percentage points in the longer-term post-event window of [+6, +12]. This prolonged nature of fund underperformance is more consistent with the long-term negative emotional effects of filial bereavement rather than limited attention caused by temporary physical distractions around parental deaths. In total, bereaved funds experience about 2.1% lower abnormal returns over the 8-month period around and subsequent to parental deaths (i.e., [-2, +5]), and 3.3% lower abnormal returns over the entire 15-month window (i.e., [-2, +12]).

To further distinguish between sadness and limited attention, we directly examine whether one particular type of major physical distractions, namely selling real estate properties after parental deaths, could explain our results. Although most types of physical distractions associated with parental death tend to be temporary and therefore cannot drive our long-run results, real estate sales can take a long time and potentially cause a long-lasting limited attention effect. Using the Lexis Nexis Accurint database, we find that only about 20% of the parental death events are followed by the sales of parents' real estate properties. The majority of these sales are completed shortly after the death events, and sales completed more than one year after the death events exist for only 5% of the sample death events. Additionally, the average transaction price is $375,000 (before mortgage loan repayment, distributions among siblings, taxes, and agent fees), which is unlikely to have a prolonged distraction impact on a typical fund manager. Moreover, excluding these real-estate related observations from our main sample does not affect our inference. In fact, the negative effects of parental deaths are slightly

stronger when these observations are excluded, which indicate that our results are unlikely to be driven by physical distractions.

We also conduct a cross-sectional analysis to examine whether the negative effects of parental death are stronger when the death is less anticipated (Leopold and Lechner, 2015). We expect the impact of unexpected parental death to be stronger, especially in the short-term Event window. Since we do not directly observe the reasons leading to parental deaths, we proxy for less anticipated parental death using the bereaved manager's age at parental death.[4] Our results indicate that the negative impact of parental death is substantially stronger for younger managers (i.e., those below the median age of all fund managers). On the other hand, this additional negative impact on younger managers seems concentrated around the four-month event-window (i.e., [-2, +1]) and does not persist into the post-event window, consistent with the expectation that the incremental negative effects of relatively unexpected parental death on performance are relatively short-lived.

We next conduct a simple placebo test using *index* funds managed by bereaved managers in our sample. Our working hypothesis is that the decline in fund performance is caused by the negative impact of parental death on fund managers' cognitive abilities. This effect should be muted for index funds as managing these funds involves mostly passive decisions. Consistent with this expectation, index funds managed by bereaved managers do not experience any decline in performance upon and after parental deaths. This stark contrast between index funds and actively managed funds supports our hypothesis that the decline in performance for the actively managed funds is caused by the reduced cognitive abilities associated with parental deaths.

Since the psychological literature provides rich lab evidence on how sadness affect people's behaviors, we further examine whether the changes in fund managers' investing behaviors around parental death are consistent with the psychological consequences of sadness. Our analyses and predictions are guided by the findings of various experimental studies discussed below.

First, a number of studies suggest that risks are perceived to be higher under negative moods than under positive moods (e.g., Johnson and Tversky, 1983; Wright and Bower, 1992). As such, we predict that sadness induced by parental death will reduce bereaved fund managers' risk-taking propensity. We find that the returns

[4] The results are similar when we use parent's age of at parental death as the alternative proxy.

of bereaved funds exhibit lower tracking errors following parental death, suggesting that bereaved managers behave more like quasi-indexers. We also find that bereaved managers shift their holdings from stocks with smaller market capitalization to larger cap stocks, consistent with fund managers allocating a larger fraction of their portfolios in "safer" assets. Finally, we find that bereaved funds turn over their portfolios less frequently: Portfolio turnover rate declines by about 8.33 percentage points in the event window, or about 20 percent of the pre-event turnover rate. These results are in line with a recent study by Goetzmann, Kim, Kumar, and Wang (2014) who find that bad mood induced by weather can make institutional investors become more conservative.

Second, the findings of a recent experimental study by Lerner, Li, and Weber (2013) indicate that sadness causes impatience in financial decisions, prompting individuals to realize gains more quickly in a laboratory setting. This suggests that a sense of loss triggers an urgency to obtain potentially rewarding replacements. We thus examine fund managers' decision to eliminate a winner stock from fund portfolio. Elimination of a stock is a cleaner measure of manager's active decision relative to merely adjusting the stock's weight in the portfolio that can be due to other considerations such as fund flows, liquidity, taxes, and portfolio rebalancing. Consistent with sadness introducing impatience, we find that after parental death fund managers are more likely to eliminate past winner stocks, especially extreme winners, from their portfolios. As a second test of impatience, we examine bereaved funds' transaction costs because impatience would result in suboptimal executions of trades and therefore higher transaction costs. Since we do not directly observe mutual funds' transaction costs, we utilize the return gap measure, which is the difference between a fund's actual return and its hypothetical return based on portfolio holdings. Kacperczyk, Sialm, and Zheng (2008) propose this measure and identify transaction cost as a major component of the measure. We find that bereaved funds display more negative return gap, particularly in the event window, consistent with bereaved funds incurring higher transaction costs. The increased transaction costs cannot be attributed to more frequent trading by bereaved managers as our previous results indicate lower turnover. In short, our findings on stock elimination and transaction costs are consistent with bereaved fund managers becoming more impatient in their trading decisions.

Finally, a large body of evidence indicates that incidental affective states such as sadness tend to distort

people's perceptions and beliefs about objects in an assimilative fashion.[5] Specifically, depressed subjects are more likely to recall negative words and facts compare to other participants (Williams, Watts, Macleod, Mathews, 1997; Bower and Forgas, 2001). Depression also tends to be accompanied by attentional bias for information with negative emotional valence (Williams, Mathews, and MacLeod, 1996). We thus examine whether bereaved fund managers are more sensitive to loser stocks in their portfolios due to their biased attention and memory retrieval. We find that after parental death fund managers are more likely to eliminate loser stocks, especially big losers, from their portfolios. These results are consistent with bereaved fund managers exhibit a heightened sensitivity to negative events following sad real-life incidences as posited by existing experimental studies.

To sum up, we document persistent declines in mutual fund performance after fund managers' parental deaths, consistent with a longer-term negative impact of sadness on fund managers' cognitive ability. Analyses on the changes in fund managers' investment behaviors reveal that bereaved managers become more risk-averse, more impatient, and more sensitive to losses. These findings are consistent with the effects of sadness documented in the psychological literature.[6]

This paper contributes to the literature of behavioral finance in two ways. First, we show that sadness, a common emotional state, can have a large influence on investors. Our paper uses the unique setting of parental deaths and shows that emotions can have large effects on professional investors' performance and behaviors. We find strong evidence of underperformance of mutual fund managers who experience parental death and that the changes in bereaved managers' behavior are consistent with the documented impact of laboratory-induced sadness in experimental settings. We believe that our results based on institutional investors should be generalized to average investors who lack financial sophistication, experience, and resources. Our findings therefore help enhance the understanding of how emotions affect investors' behaviors more generally. To this end, our study extends the literature on investor mood and financial markets (Saunders, 1993; Hirshleifer and

[5] See, for example, Isen, Shalker, Clark, and Karp (1978), Isen and Shalker (1982), and Mayer, Gaschke, Braverman, and Evans (1992).

[6] Note that it is difficult to attribute the findings that managers become more impatient and more sensitive to losses to physical distractions after parental death events.

Shumway, 2003; Kamstra et al., 2003; Zheng, Yuan, and Zhu, 2001; Goetzmann, Kim, Kumar, and Wang, 2014).

Second, the evidence in this paper also contributes to the nascent literature on the effects of personal experience – as opposed to common knowledge – on risk attitudes. While typical economic models assume that individuals incorporate all available historical data in forming their beliefs regarding risky outcomes and consequently their risk preferences are relatively stagnant, the psychology literature suggests that individuals weigh the knowledge obtained through personal experience much more heavily than that obtained otherwise (e.g., Hertwig, Barron, Weber, and Erev, 2004). As personal experience differs among agents, their risk preferences can differ significantly given common knowledge, resulting in different investment behaviors. For instance, Malmendier, Tate, and Yan (2011) find that corporate managers who experienced the Great Depression in early childhood tend to shy away from external financing, while Malmendier and Nagel (2011) report that investors who experienced low stock market returns in their lifetime invest less in the stock market. Our study has two unique features compared to those studies. First, we examine the performance of the *same* agent before and after an exogenous life experience, which is not susceptible to the typical endogeneity and omitted variable concerns that can be pervasive in cross-agent settings. Second, the personal experience analyzed in this study, namely parental death, is an inevitable event in the course of people's lives as opposed to life experiences that are unique to only some people.

Furthermore, this study links the personal experience literature to the mutual fund performance literature. Whereas previous studies on mutual funds explore various fund- or manager-characteristics that drive fund returns, our study underlines the negative effects of sad experiences in fund managers' personal lives on fund performance.[7] To the extent that our results are generalizable to other events, the negative effects aggregated across various sad personal experiences should contribute to the well documented fact that actively managed mutual funds fail to deliver superior performance relative to passive benchmarks (e.g., Jensen, 1968; Fama and French, 2010).

[7] For instance, Lu, Ray, and Teo (2015) document that hedge funds earn lower returns upon the marriage and divorce of hedge fund managers.

The rest of the paper is organized as follows. Section 2 introduces data and methodology. Sections 3 and 4 perform analyses on fund returns and fund strategies, respectively. Section 5 concludes.

2. Data and Methodology

2.1. Mutual Fund Sample

We construct our sample of mutual funds by combining the CRSP Survivorship Bias Free Mutual Fund Database, Thomson Financial CDA/Spectrum holdings database, and Morningstar Mutual Fund Database. We take the following steps. First, we obtain mutual fund data from the CRSP Survivorship Bias Free Mutual Fund Database and restrict the sample to actively-managed domestic equity mutual funds.[8] Second, we merge the CRSP sample with the Thomson Financial CDA/Spectrum holdings database using the MFLINKS file based on Wermers (2000) and available through the Wharton Research Data Services.[9] Third, we obtain information of mutual fund managers from Morningstar, which reports the name of each manager for a fund, their start and end dates with the fund, and information about the manager's educational background and employment history. We then merge the Morningstar mutual fund data with the CRSP/Thomson sample from the second step using fund tickers.[10] This approach generates 8,529 unique mutual funds as identified by CRSP_FundNo (the CRSP identifier).

To make the search on fund managers manageable, we drop inactive managers that stopped managing a mutual fund before 1999.[11] Specifically, we require a fund manager to manage at least one of the sample funds in the post-1999 period. After this filter, we have 2,047 fund managers with available information on education

[8] We follow the procedure in Huang, Sialm, and Zhang (2011) and select funds with the following Lipper objectives: CA, CG, CS, EI, FS, G, GI, H, ID, LCCE, LCGE, LCVE, MC, MCCE, MCGE, MCVE, MLCE, MLGE, MLVE, MR, NR, S, SCCE, SCGE, SCVE, SG, SP, TK, TL, UT. If a fund does not have any of the above objectives, we select funds with the following Strategic Insights objectives: AGG, ENV, FIN, GMC, GRI, GRO, HLT, ING, NTR, SCG, SEC, TEC, UTI, GLD, RLE. If a fund has neither the Lipper nor the SI objective, then we use the Wiesenberger Fund Type Code to select funds with the following objectives: G, G-I, G-S, GCI, IEQ, ENR, FIN, GRI, HLT, LTG, MCG, SCG, TCH, UTL, GPM. If none of these objectives are available and the fund has a CS policy or holds more than 80% of its value in common shares, then the fund will be included. We also drop a fund if its index fund flag is non-missing.

[9] Specifically, we require the sample funds from the CRSP Mutual Fund Database to have WFICNs in the MFLINKS file.

[10] A small number of ticker matches have different fund names between Morningstar and CRSP. We manually screen these matches and confirm that they are valid. The differences in names are due to reasons such as fund issuers versus fund management companies, or mergers of financial companies.

[11] We choose the year of 1999 as some of our analyses use daily fund returns which are available only after 1999.

background and employment history.

2.2. Identifying Parental Deaths

We identify the events of parents' death using the LexisNexis Accurint database, which contains a broad set of personal information by linking over 37 billion U.S. public records. The search takes three steps. For the first step, we identify a mutual fund manager in the LexisNexis Accurint database using the information on name, approximate age (based on the year of university graduation), and employment history.[12] We are able to identify 1,839 fund managers, where each manager is linked to a LexID, which is the unique personal identifier in LexisNexis Accurint for all their databases.

For the second step, we identify parent(s) of a manager in the LexisNexis Accurint database. For each manager, we use the LexID to retrieve a list of relatives, which contains for each relative the name, year and month of birth, age (age at death for a deceased person), and the current address. Relatives of a person are defined as those who ever lived at the same address as the person and share the same last name. We identify parent(s) of a fund manager from the list of relatives according to the age of manager and the age of parent(s). For the majority of the fund managers, there are exactly one male and one female from the list of relatives that fall in the age range of parents. A small number of fund managers' lists of relatives have only one or no person that fits the age range of parents.[13]

For the third step, we identify the events of parental death of managers. In the list of relatives, a red mark "D" next to the name of a relative denotes a deceased person. We then search the death record of a deceased parent using the name, year and month of birth, zip code or state of the last address, and age at death. From the death record we collect the exact date of death for the deceased parent. Using this approach, we identify 471 fund managers with at least one parental death.

[12] Often, a manager's education information includes only the graduate degree which is associated with a wide age range. When necessary, we search the year of college graduation from various sources online, such as LinkedIn and Morningstar fund management pages. When necessary, we also use the state of a manager's current residence (from LinkedIn) to narrow down the potential candidates. To be conservative, for most cases we require an identified manager to have at least one employment record in the LexisNexis Accurint database to match the employment history in Morningstar.

[13] A very small fraction of managers have more than two relatives that fit the age of parents. To be conservative, we exclude these cases.

Finally, we require the event of parental death to occur during the period when a fund manager manages at least one fund in the mutual fund sample. Our final sample contains 205 parental death events for 1,195 bereaved funds from 1999 to 2013. Table 1 reports the annual frequency of events as well as the number of bereaved funds within each Lipper objective code. Panel A of Table 1 shows that the sample events are relatively evenly distributed across years, which is consistent with parental deaths being exogenous events that are unrelated to potential omitted variables such as economy condition or stock markets. Panel B of Table 1 shows that while the sample funds fall into twelve investment objective (IOC) categories, the IOCs with the highest number of sample funds are growth funds, growth and income funds, and small-cap funds.

[Table 1 about here]

2.3. Measuring Performance

To measure performance, we obtain fund monthly returns from CRSP Mutual Fund database. We use four different benchmarks to control for variations in fund returns over time as well as due to return factors: (1) returns of other equity mutual funds, (2) returns of other equity mutual funds with the same investment objective as identified by Lipper (e.g., "Equity Income Funds"), (3) the Carhart (1997) four-factor model, (4) the five-factor model that includes the four Carhart (1997) factors and a liquidity factor (Pastor and Stambaugh, 2003).

2.4. Other Data Sources

Factor loadings and tracking errors are calculated using daily return data from CRSP Mutual Fund database. Snapshots of quarterly or semi-annual portfolio holdings are obtained from Thomson mutual fund holdings database. Stock variables are obtained from monthly CRSP stock database.

3. Performance Analysis

3.1. The effect of parental death on fund manager's performance

We first examine the performance of mutual fund managers around parental death events. To take into account the effects of fund-level and managerial characteristics, our analysis focuses on the *change* in fund

performance around and after the event relative to the fund's *own* performance in the period immediately preceding the event. More precisely, we measure performance in three separate four-month windows covering the year around the event: Pre-Event window [-6,-3], Event window [-2,+1], and Post-Event [+2,+5], where month 0 is the month of parental death. The pre-event window serves as the benchmark, and our analysis examines the difference between pre-event window and each of the latter two windows.

Our analysis represents a diff-in-diff analysis as the fund performance is measured *relative* to other funds. We use two different peer fund groups: (1) all equity mutual funds or (2) equity mutual funds with the same investment objective. Moreover, we control for potential variations in risk exposure across funds by subtracting the expected return of each fund as calculated using factor loadings estimated over the previous 36 months. Two factor models are used to generate estimates of expected returns: the four-factor model that includes excess market returns, size, market-to-book ratio, and past returns (Fama and French, 1992; Carhart, 1997) and the five-factor model that adds systematic liquidity (Pastor and Stambaugh, 2003).[14]

Figure 1 plots the cumulative alphas of bereaved funds around fund managers' parental death events (i.e., month 0), where alphas are calculated using the Carhart (1997) four-factor model or the five-factor model that further includes a liquidity factor (Pastor and Stambaugh, 2003) The four- and five-factor alphas are benchmarked against funds with the same investment objective. As shown in Figure 1, the bereaved funds earn negative returns relative to their peer funds starting from the two months before the parental death events. This underperformance persists through twelve months after the events. These results illustrate clearly that parental deaths of fund managers cause an economically significant and long lasting decline in fund returns.

[Figure 1 about here]

To assess the economic and statistical significance of the decline in fund return, we present in Table 2 fund returns in event window and post-event windows. The first column on each panel presents the abnormal fund returns in the benchmark four-month Pre-Event window [-6, -3], where month 0 is the event month of parental death. The second column presents abnormal returns in the four-month Event window [-2, +1], and the remaining columns present abnormal returns in the four-month Post-Event window [+2, +5], and two longer-

[14] We thank Kenneth French and Lubos Pastor for making the factor returns available.

horizon Post-Event windows: events [+6, +12] and [+13, +24]. We are particularly interested in the difference between the benchmark pre-event window and the event window or post-event window, which is reported in the bottom rows of each panel.

[Table 2 about here]

Table 2 presents the four-factor and five-factor alphas of bereaved funds relative to funds with the same investment objectives. In the Pre-Event window, bereaved funds seem to earn slightly higher alphas relative to peer funds. Consistent with Figure 1, Table 2 shows a significant decline performance decline in the Event window [-2, +1]. For example, the diff-in-diff in terms of five-factor alpha is negative 28 basis points (bps) per month, both economically and statistically significant (t-stats -2.44). The 28 bps per month corresponds to a total abnormal return of 1.1% over the four-month event window.

We also observe a significant decline in the return of bereaved funds in the post event window [+2, +5]. For example, in term of five factor alpha, the difference between the pre-event window and the event window is negative 25 bps (t-stat -2.26), corresponding to a total return of 1% in this four-month window. The remaining columns in Table 2 further extend the post-event window to twelve months after the events [+6, +12]. Consistent with Figure 1, the decline in fund return persists into the extended window. For example, the difference in five-factor alpha is negative 17 bps per month, which translates into 1.2% in this seven-month extended window. We also examine the period one year after the event [+13, +24], and find only weak evidence of continued decline in fund return. Specifically, the decline in alpha becomes marginally insignificant (t-stat of -1.61) in the [+13, +24] window.

In sum, bereaved funds experience an underperformance by about 2.1 percentage points in terms of five-factor alphas over the 8-month period of event and post-event windows [-2, +5], or about 3.3 percentage points over the 15-month period of [-2, +12]. These underperformance estimates are substantially higher than the typical annual management fee of active mutual funds, highlighting the economic magnitude of the effect of parental death on performance. This finding is consistent with the joint hypothesis that (1) parental deaths has a negative impact on mutual fund managers' cognitive ability and in turn causes large decline in fund return; and (2) the effects of parental death on mutual fund managers remain despite the large assets under their

management and contingency plans in place to ensure smooth operations.

3.2. The effect of parental death on younger managers

In this section, we provide corroborating evidence that the documented decline in fund performance around parental death is indeed linked to this event as opposed to other contaminations. Specifically, we expect larger decline in performance when the parental death is less expected due to stronger emotional impact (Leopold and Lechner, 2015). Since our data does not directly identify the reasons of parental deaths, our proxy for less-anticipated parental death is based on the bereaved managers' age at parental death, as parental death of younger managers tends to be less likely.[15] We then regress the diff-in-diff measured in Table 2 on the intercept and the *Young Manager* indicator variable that takes the value of one if the bereaved fund manager is no more than 45 years old (our sample median), and zero otherwise.

[Table 3 about here]

Table 3 presents the parameter estimates for the Event window (Panel A) and the Post-Event window (Panel B). For the Post-Event window, we choose the period of [+2,+12], which combines the window [+2,+5] and [+6,+12], for brevity. The results in Panel A show that in the Event window, the negative effect of parental death on fund performance is more severe for younger bereaved managers. For example, the coefficient on *Young Manager* dummy is −0.84% (t-stat = −3.37) in the model using 5-factor alpha. Panel B further examines the effect in the Post-Event window. Panel B shows that this effect becomes weaker and mostly insignificant in the Post-Event window, indicating that large negative emotional impact due to surprises do not last long. For robustness, we also repeat the analysis using the age of deceased parents and obtain similar results. Overall, the stronger result for younger managers confirms that the decline in fund performance surrounding parental death is linked to the emotional impact of parental death.

3.3. The effect of manager's parental death on index fund performance

To corroborate our analysis of actively managed mutual funds, we conduct a simple placebo test using *index*

[15] Leopold and Lechner (2015) document a strong age effect in the response to parental death in their sample of German adults. Younger bereaved individuals have significantly lower life satisfaction up to at least three years following parental death, relative to older bereaved individuals.

funds managed by our sample of bereaved fund managers. If, as we hypothesize, the observed lower fund returns associated with parental deaths is caused by the negative impact of the deaths on fund managers' cognitive abilities, then we expect this effect to be relatively muted (or does not even exist) for index funds as managing these funds involves mostly passive decisions.

We classify a fund as an index fund when the index fund flag is non-missing in CRSP. As this flag is available only from 2003, we use a name-based classification prior to 2003: a fund is classified as an index fund if its name contains "index" or "idx". We identify 63 index funds that are managed by 13 of our sample fund managers during the parental death events. We then follow the same approach as in the previous section to examine the change in excess fund return (benchmarked to funds with the same objective code) around the parental death events.

In a stark contrast to actively managed mutual funds, these index funds do not experience any decline in fund returns upon and after the parental deaths. As probably expected given the nature of their index strategy, our analysis indicates that index funds do not display substantial abnormal performance around parental deaths. In particular, the average monthly fund returns around parental death events [-1,2] are about 7 basis points *higher* than other funds with the same objective. The contrast between index funds and actively managed funds supports our hypothesis that the relative decline in performance for the actively managed funds is caused by the more substantial negative effect of parental deaths on the more challenging task of managing such funds.

3.4. Sadness or Distractions?

One may argue that our finding of the decline in fund performance is caused by limited attention of fund managers due to physical distractions associated with parental loss. For example, a manager could be distracted by the duties of arranging funerals or other events associated with parental death. This alternative explanation is not likely to fully explain our results because the physical distractions associated with parental death are typically temporary whereas we observe a persistently inferior performance that lasts for at least one year after the parental death.

We nevertheless examine a major physical distraction that could last for a long time after parental death: selling the parents' real estate properties. Specifically, if the majority of our sample managers need to sell the

houses of deceased parents, and this process drags for a long time, then the distractions associated with the real estate sales can lead to the decline in fund performance even in the long-term window through limited attention. The LexisNexis Accurint database allows us to identify real estate properties, and we use this information to gauge the probability of real estate sales for our sample managers and whether these real estate sales can explain our findings.

The Accurint database contains the assessment and transactions of real estate properties of individuals. This information is also linked to the individual's LexID, which allows us to search for each deceased parent's real estate property transactions. From our sample events, we are able to collect information of real estate properties for 169 deceased parents, which account for over 80 percent of our sample events. Among these 169 deceased parents, only 35 death events are followed by the sales of real estate properties. Moreover, only 25 (8) events are followed by sales over three months (one year) after parental deaths. Additionally, we observe the transaction price for 13 of the sales; the median transaction price is $375,000. After accounting for agent fees, taxes, mortgage loan repayments, and distribution among siblings, this amount is unlikely to have a large influence on a mutual fund manager. Therefore, both the frequency and the amount of real estate sales suggest that on average real estate sale is unlikely to have substantial long-term impact on our sample managers.

We also rerun our main performance test (i.e., Table 2) on the subsample of bereaved managers for whom parental death events are *not* followed by the sales of real estate properties. Our result is robust in this subsample – if anything, it is slightly stronger – indicating that negative effect on fund performance is unlikely to be driven by these potentially long-term physical distractions. Therefore, the findings in this subsection further support our hypothesis that it is the negative emotion associated with parental death that causes the decline in fund performance.

4. The Impact of Parental Death on Fund Managers' Investment Behaviors

The results in the previous section are consistent with negative emotional impact of sadness on fund managers' overall cognitive ability and their investment performance. In this section, we turn to examining how sadness impacts bereaved managers' investing behaviors. Since the existing lab evidence suggests that sadness

increases risk-aversion, impatience, and sensitivity to bad experience or memory, we focus on the changes in investment behaviors of fund managers along these three dimensions.

4.1. Do bereaved managers become more risk averse?

The existing psychological literature suggests that risks are perceived to be higher under negative moods than under positive moods (e.g., Johnson and Tversky, 1983; Wright and Bower, 1992). As a result, we expect bereaved managers to reduce risk-taking behaviors. We therefore examine if parental death causes mutual fund managers to take less risk in their investing decisions.

4.1.1. Abnormal tracking errors

First, we examine bereaved funds' abnormal tracking errors around the event. We define abnormal tracking error as the difference between a bereaved fund's tracking error and the average tracking error of all funds with the same investment objective. This abnormal tracking error measure captures how a specific fund's strategy (or more precisely the resulting daily return pattern) differs from that of the average peer fund. A reduced abnormal tracking error around parental death indicates that the fund's strategy, or at least the resulting return pattern, is less different from the typical fund with the same investment objective, which is indicative of the managers becoming more passive and avoiding making active bets in attempting to pick individual stocks and generate alpha.

Empirically, tracking error of a fund is the standard deviation of daily excess returns (i.e., daily fund returns minus the average return of other funds with the same investment objective), and we estimate abnormal tracking errors over monthly interval, and then take the average over the Pre-Event window [-6, -3], Event window [-2, +1] and Post-Event window [+2, +12].[16]

[Table 4 about here]

Panel A of Table 4 presents the results on abnormal tracking errors for bereaved funds in the Event window [-2,+1]. Bereaved funds display slightly higher abnormal tracking errors in the Pre-Event window, suggesting that these funds being more active in attempting to generate alpha relative to their peers. However, bereaved

[16] Since Table 2 shows that the decline in return during the [+6,+12] window is only marginally significant, we also repeat the tests using the [+2,+5] period as post-event window and find similar results.

funds' tracking errors decline significantly in the Event window relative to their non-bereaved peers. In fact, in the Event window, bereaved funds start to have lower tracking errors than their peers. The difference in abnormal tracking error between the Pre-Event window and the Event window is -0.18% (t-stat -3.39). Panel B of Table 5 reports abnormal tracking errors of bereaved funds in the Post-Event window [+2, +12]. Similar to the results in Panel B, we also find a significant decline in abnormal tracking errors in the Post-Event window. These results are consistent with the hypothesis that bereaved managers become less aggressive in employing strategies that are distinct from their peers to generate alpha.

4.1.2. Portfolio holdings

To obtain further evidence regarding whether bereaved managers become more risk averse, we examine the characteristics of portfolio stocks held by bereaved funds using mutual fund holdings from Thomson Financial CDA/Spectrum holdings database. Specifically, if bereaved managers become more risk-averse, we expect them to adopt safer strategies by shifting their holdings to stocks with large capitalizations. As mutual funds tend to place most of their portfolio weights in relatively large stocks, our analysis focuses on stocks above the median market capitalization.[17] We divide these stocks into two categories based on their market capitalizations: the top size quartile and the second size quartile. We then calculate the fraction of each category in two portfolio snapshots of each bereaved fund: the last holding snapshot at or before the month prior to the parental death event (i.e., -3), and the first holding at or after the month following the event (i.e., +3).

[Table 5 about here]

Table 5 presents the results of this analysis. Panel A reports that bereaved funds hold disproportionate amount of large stocks during the Pre-Event window: almost 80% of their portfolio stocks are in the largest market capitalization quartile ("Large"), and about 16% of their portfolio stocks are in the second quartile ("Small"). During the Post-Event window, the "Large" proportion increases by about 1% and the "Small" proportion declines by about the same amount (or about 6% of the Pre-Event proportion). We observe a

[17] Only less than 5 percent of stocks in the average mutual fund portfolio have below median market capitalization; these stocks make up less than 2.5 percent of the average portfolio by dollar value.

similar pattern in Panel B where we examine portfolio weights rather than the number of portfolio stocks in each category. These patterns indicate that bereaved managers become more risk-averse by shifting their holdings to large size stocks.

4.1.3. Portfolio Turnover

Our third test examines the trading activities of bereaved fund managers. If bereaved managers become more risk-averse, then we expect them to become passive and trade less actively. Since we do not directly observe the trading volume of mutual funds, we approximate a fund's trading volume using changes in their reported portfolio holdings. In particular, we calculate the fraction of fund portfolios being turned over across two reported portfolio holdings. As many funds report at semi-annual frequency, particularly in the earlier part of our sample, we use 6-month observation windows to capture changes in these funds' portfolios. We calculate portfolio turnover as the sum of absolute changes in portfolio weights for all stocks in each investor's portfolio across two holdings reports, divided by two. For example, for the Event window [–2:+3], turnover is measured using changes in portfolio holdings from the last available report *prior* to the Event window (i.e., report issued in the [-8:-3] window) to the last available report *during* the Event window (i.e., report issued in the [-2:+3] window). The Pre-Event and Post-Event turnover rates are calculated in a similar manner.

[Table 6 about here]

Table 6 presents the results of this analysis. Panel A reports that bereaved funds reduce their portfolio turnover rate from about 40% in the Pre-Event window to about 32% in the Event window. The decline in portfolio turnover is 8.33 percentage points (t-stat -9.51), or twenty percent of the Pre-Event window portfolio turnover. This effect is both economically and statistically significant. To avoid outliers in trading volume, we also examine the median of portfolio turnover in Panel A, and observe a similar reduction. In Panel B, we further examine the change in turnover in the Post-Event window, and the results indicate that the reduction in trading activities is quite persistent following the parental death event.

To summarize, in this section we find that bereaved fund managers reduce abnormal tracking errors in fund return, shift holdings to large stocks, and trade less actively. All these findings are consistent with the lab

evidence that sadness makes people become more risk averse.

4.2. Do bereaved managers become more impatient?

In an experimental study, Lerner et al. (2013) find evidence that sadness may cause impatience in financial decisions, prompting individuals to realize gains more quickly. According to their hypothesis, sadness increases impatience and creates a myopic focus on obtaining money immediately instead of later. This focus increases inter-temporal discount rates and creates substantial financial costs. We therefore examine if bereaved managers become more impatient from two perspectives, transaction costs and timing of gain realization.

4.2.1. Transaction Costs

If bereaved managers become impatient and demand immediacy, they may submit or execute trades sub-optimally and incur higher transaction costs. Since we do not directly observe a mutual fund's transaction costs, we examine the return gap proposed in Kacperczyk, Sialm, and Zheng (2008). The return gap is the difference between a fund's actual return and its hypothetical return based on portfolio holdings. Kacperczyk et al. (2008) identify transaction cost as a major component of return gap. Therefore, if bereaved funds incur higher transaction costs, they would have lower (or more negative) return gap.

[Table 7 about here]

Table 7 presents the analysis of return gap. We calculate return gap as the difference between the reported monthly fund return and the holdings return of the fund's portfolio as disclosed at the end of the previous period. Panel A reports that bereaved funds experience a negative return gap in the Pre-Event window. This negative return gap may be due to the trading costs borne by these managers so that their portfolios are poised for superior future performance. We find that the return gap becomes more negative in the Event window [-2, +1]. The difference in return gap between Pre-Event window and the Event window is 7 basis points (t-stat -2.27), both economically and statistically significant. This result suggests that bereaved funds incur higher transaction costs despite the fact that they trade less (demonstrated in Table 6).

Panels B and C of Table 7 further examine the Post-Event windows [+2, +5] and [+6, +12]. Return gap also becomes more negative in these windows, but the differences are statistically insignificant. These results are consistent with bereaved managers submitting or executing their trades sub-optimally and incur greater transaction costs, particularly during the immediate event windows.

4.2.2. Propensity of Gain Realization

If bereaved managers become more impatient with rewards, we predict that these managers should be more likely to realize gains from past winner stocks in the period after parental death than in the period before parental death. As pointed out by Lerner et al. (2013), impatience can be understood as an increase in the perceived inter-temporal discount rate. A natural consequence of over-discounting is that current gains are perceived to be more valuable (i.e., higher future values). In addition, larger gains will be perceived to be incrementally more valuable than smaller gains under over-discounting.[18] We therefore also predict that the increased propensity of gain realization for past winner stocks is greater for extreme past winner stocks.

Empirically, we find evidence supporting both predictions. We defer the discussion of these results in the next section, because there are reasons to expect that sadness may also increase fund managers' propensity of realizing losses (i.e., through increased sensitivity to bad experience and bad memories). We thus test both gain realization and loss realization in the same regressions and discuss both results in the next section.

4.3. Do bereaved managers become more sensitive to negative experience?

Existing psychological literature suggests that sadness can make people overemphasize bad experience or memories. Specifically, depressed patients are more likely to recall negative words and facts, relative to healthy

[18] A simple numerical example helps illustrate this point. Consider a fund invests $200 in an equal-weight portfolio consisting of stocks A and B at time 0. Assume that during period 1, stock A earned a larger gain of $100 and B earned a smaller gain of $10. So, the value becomes $200 for A and $110 for B now. Assume for simplicity that the true discount rate is zero and that the expected future value will remain the same at the end of period 2. The manager should be indifferent between selling now or waiting for another period in this scenario. But if the manager's perceived discount rate increases to 50%, the perceived present value of selling later would decrease to $133 for A and $73 for B. In other words, the manager thinks he will lose $67 dollars if he sells A later rather than now and lose $37 dollars if he sells B later rather than now. In this example, while the manager tends to sell both A and B early under over-discounting, at the margin he is more likely to sell A than B.

participants (Williams et al., 1997; Bower and Forgas, 2001). Depression also tends to be accompanied by attentional bias for information with negative emotional valence (Williams et al. 1996). If bereaved fund managers are more sensitive to negative experiences, we predict that they are more likely to sell past loser stocks, especially those that experienced extreme low returns.

In our empirical tests of gain and loss realizations, we focus on bereaved fund managers' decision of eliminating stocks from their fund portfolio, because the complete removal of a stock from the portfolio is a cleaner measure of active decision than merely adjusting stocks' portfolio weights which are more likely to result from other considerations such as fund flows, liquidity, taxes, and portfolio rebalancing.

[Table 8 about here]

Table 8 presents the Fama-Macbeth regressions of elimination decisions. For each regression of the elimination decision over quarter *t*, the sample includes all stocks held by mutual fund managers at the end of quarter *t*-1. The dependent variable is a dummy variable which equals one if the stock is completely removed from the portfolio during quarter *t* (i.e., the stock is included in the fund's report in quarter *t*-1 but not in quarter *t*'s report), and zero otherwise. Each quarter we estimate a regression of elimination decision across all funds, and report the time-series averages of the coefficient and associated t-statistics in Table 8.

We first examine managers' propensity of gain realization using Model 1, where we assume a step function in the probability of stock elimination, and includes only indicator variables as independent variables: a *Negative Return Indicator* which equals one if the raw stock return in quarter *t* is negative, and zero otherwise; an *Event Indicator* which equals one if the fund-quarter is in the year following a parental death event, and zero otherwise; and the interaction of the two indicator variables.

The parameter estimates of Model (1) indicate that, consistent with the increased impatience, managers are more likely to sell past winner stocks after parental death events. The coefficient on *Event Indicator* represents the change in the probability of eliminating a past winner stock after the event, which shows that in the period after parental death, a manager's probability of eliminating a past winner stock is 2.1 percentage points higher than that in the pre-event period (or about 1/8 of the unconditional probability of elimination of around 16%).

The parameter estimates of Model (1) also indicate that, consistent with higher sensitivity to bad experience,

managers are more likely to sell past loser stocks after parental death events. The sum of the coefficients on *Event Indicator* and that on the interaction between *Event Indicator* and *Negative Return Indicator* represents the change in the probability of eliminating a past loser stock after the event. The results show that in the period after parental death, a manager's probability of eliminating a past loser stock is 3.7 (=0.021+0.016) percentage points higher than that in the pre-event period (or about 23% of the unconditional probability).

We do not have a direct prediction regarding the relative increase in the propensity to realize losses vis-à-vis gains. However, the positive coefficient on *Event Indicator* × *Negative Return Indicator* indicates that the increased propensity of loss realization is greater than the increased propensity of gain realization, suggesting that the effects of avoiding bad memories are more pronounced than those of seeking immediate gains.

[Figure 2 about here]

We plot the regression results of Model (1) in Panel A of Figure 2. The dashed line represents the respective probabilities of eliminating stocks with positive return and those with negative return. The solid line represents the corresponding probabilities during the one-year-period after parental death events. The plot clearly shows that parental deaths shift the probability curve upward for both stocks with positive returns and stocks with negative returns. These results are consistent with an increased propensity of gain realization driven by sadness-induced impatience, and an increased propensity of loss realization due to sadness-induced heightened sensitivity to bad experience and bad memories.

Next, we extend the regression analysis in Model (1) to test whether the propensity of gain and loss realizations is more pronounced for larger gains and losses. Specifically, we also include the continuous variable of past stock returns (*Stock Return*) in Model (2) of Table 8, in addition to the existing *Negative Return Indicator* variable. The resulting model is motivated by Ben-David and Hirshleifer's (2014) finding that the probability of stock elimination is a V-shaped function of past returns. We capture this V-shape around zero using *Stock Return* (slope for stocks with positive prior returns) and *Stock Return*× *Negative Return Indicator* (slope for stocks with negative prior returns). We also include their respective interaction terms with *Event Indicator* to capture the shift in the propensity of gain and loss realizations as a function of parental deaths.

The parameter estimates are reported in Model (2) of Table 8. To facilitate the discussion of our findings,

we also plot the regression results in Panel B of Figure 2. First, we find a V-shape relation between probability of elimination and past returns. For stocks with positive returns, the probability of elimination is greater when the stock return is higher, as reflected by the significantly positive coefficient on *Stock Return* (0.073, t-stat 12.01). For stocks with negative returns, the probability of elimination is greater when stock return is *lower*, as reflected by the significantly negative coefficient on the interaction between *Stock Return* and *Negative Return Indicator* (-0.466, t-stat -31.95). This finding is consistent with the V-shape relation between individuals' selling decision and past stock returns as documented in Ben-David and Hirshleifer (2014).[19] Additionally, we observe an insignificant coefficient on the *Negative Return Indicator* itself, consistent with Ben-David and Hirshleifer who also find no discontinuity around zero return in the relation between selling decision and past return.

Turning to the effects of parental death events, results in Model (2) indicate two significant effects on the elimination decision by mutual fund managers. First, as predicted in Section 4.2.2, the results show that the increased propensity of gain realization after parental death events is larger for extreme past winner stocks. Specifically, the coefficient on the interaction between *Event Indicator* and *Stock Return* is positive (0.072, t-stat 1.96), which is both economically and statistically significant. Second, also as predicted, the results show that the increased propensity of loss realization is larger for extreme past loser stocks. Specifically, the coefficient on the triple interaction among *Event Indicator*, *Negative Return Indicator*, and *Stock Return* is significantly negative (-0.155, t-stat -2.93), suggesting that parental death events cause fund managers to be incrementally more likely to eliminate stocks with large negative returns. Graphically, these effects can be seen as steeper legs of the V-shaped curve for bereaved managers in Panel B of Figure 2.

To summarize, the results in Table 8 and Figure 2 indicate that while fund managers are more likely to eliminate both stocks with positive returns and stocks with negative returns after parental death events. These effects are much stronger for stocks with large positive returns and stocks with large negative returns. The results are consistent with sadness causing fund managers to be more impatient in realizing gains while more

[19] The setting in Ben-David and Hirshleifer (2014) differs from ours in two aspects. We examine mutual funds' elimination decision based on past stock return while they examine *retail invetors*' selling decision based on paper *gains/losses* since the investors' purchase. These differences likely contribute to the different tilts of the V-shape: theirs is leaning left (i.e., steeper positive leg), while ours is leaning right.

likely to avoid bad experiences by realizing losses more quickly.

5. Conclusion

We utilize mutual fund managers' parental deaths as exogenous shocks to examine whether and how sadness affects mutual fund managers' performance and investment behaviors. In contrast with the sadder-wiser hypothesis, our results support the alternative hypothesis that parental death inflicts sadness on mutual fund managers, reducing their cognitive ability and subsequently fund returns. Bereaved funds underperform their peers by over 3 percentage points around and following the parental death events, and the underperformance persists up to twelve months following the event. This effect is robust to employing various measures of fund performance, and is stronger when parental death is less expected.

We also provide evidence that the changes in mutual fund managers' investment behavior are consistent with the effects of sadness observed in experimental setting: Sadness makes people more risk-averse, less patient, and more sensitive to negative experiences. Our analyses on tracking errors, portfolio turnover, holding composition, return gap, and stock elimination indicate that the effects of laboratory-induced sadness seem to hold up among fund managers experiencing real-life sadness.

Our study contributes to the literature of behavioral finance by showing that sadness, a common emotional state, can have a large influence on professional investors. As we examine mutual fund managers who are widely considered to be relatively sophisticated investors, our findings suggest that individual investors may suffer a similar or even stronger impact when they experience sadness due to personal life events. The sum of these experiences is likely to generate substantial effects on their risk preferences as well as their investing performance.

This study also contributes to the mutual fund literature by underscoring the importance of fund managers' personal life events that can end up having a large negative effect on fund manager's performance. As such, our findings deliver both good and bad news about fund managers. On the one hand, the deterioration of performance around personal life events illustrates the crucial role that mutual fund managers play in creating value for their investors. On the other hand, our results indicate that even these professional money managers

are not immune to the impact of emotions caused by events of personal nature.

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Table 1: Sample Distribution

This table reports the distribution of our sample events and funds. Panel A reports the annual frequency of parental death events in our sample. Panel B reports the number of bereaved funds in our sample by investment objective codes.

Panel A. Number of Events (n = 205)			
Year	Number of Parental Deaths	Year	Number of Parental Deaths
1999	10	2007	18
2000	14	2008	15
2001	8	2009	25
2002	11	2010	11
2003	16	2011	17
2004	10	2012	12
2005	12	2013	14
2006	12		

Panel B. Number of Bereaved Funds (n = 1, 195)		
Lipper Objective Code	Lipper Objective Name	Number of Bereaved Funds
CA	Capital Appreciation Funds	27
EI	Equity Income Funds	25
FS	Financial Services Funds	12
G	Growth Funds	218
GI	Growth and Income Funds	145
H	Health/Biotechnology Funds	16
MC	Mid-Cap Funds	83
MR	Micro-Cap Funds	2
S	Specialty/Miscellaneous Funds	9
SG	Small-Cap Funds	140
TK	Science and Technology Funds	14
UT	Utility Funds	4
	Others	500

Table 2: Average Monthly Excess Fund Returns around Fund Managers' Parental Deaths

This table examines the performance of mutual funds around fund managers' parental death events. Monthly fund returns are benchmarked against funds with the same investment objective, after controlling for Carhart (1997) four-factor model (in Panel A) and Pastor and Stambaugh (2003) five-factor model (in Panel B). The factor models are estimated using 36-month time-series rolling regressions. These adjusted returns are calculated over three exclusive four-month windows around fund manager's parental death: Pre-Event months [-6:-3], Event months [-2:1], and Post-Event months [+2:+5], where month 0 is the month of the parental death. We then report the means of these adjusted returns as well as the differences between Pre-Event months and the subsequent two four-month windows as well as longer horizon windows: [+6:+12] and [+13:+24]. The *t*-statistics for the differences are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. 4-Factor Alphas

	Pre-Event	Event	Post-Event		
	[-6:-3]	[-2:+1]	[+2:+5]	[+6:+12]	[+13:+24]
4-Factor Alpha	0.07%	-0.22%	-0.13%	-0.11%	-0.09%
Difference (vs. Pre-Event)		-0.29%***	-0.20%*	-0.18%*	-0.16%
		(-2.47)	(-1.92)	(-1.77)	(-1.59)

Panel B. 5-Factor Alphas

	Pre-Event	Event	Post-Event		
	[-6:-3]	[-2:+1]	[+2:+5]	[+6:+12]	[+13:+24]
5-Factor Alpha	0.09%	-0.19%	-0.16%	-0.08%	-0.06%
Difference (vs. Pre-Event)		-0.28%***	-0.25%**	-0.17%*	-0.15%
		(-2.44)	(-2.26)	(-1.69)	(-1.61)

Table 3: Performance Difference around Fund Managers' Parental Deaths, as a Function of Managers' Age

This table reports the parameter estimates from regressing the performance difference in Table 2 on an intercept and an indicator variable *Young Manager*, which takes the value of 1 if the fund manager is at most 45 years old when his/her parent passes away, and 0 otherwise. The dependent variable in Panel A is the difference in the average excess returns for the Event months [-2:+1] and the Pre-Event months [-6:-3]. The dependent variable in Panel B is the difference in the average excess returns for the Post-Event months [+2:+12] and the Pre-Event months [-6:-3]. The *t*-statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Event Months [-2:+1]		
	Performance Difference: Event minus Pre-Event, in %	
	4 Factor Alpha	5 Factor Alpha
Intercept	-0.01	0.00
	(-0.06)	(0.01)
Young Manager (<=45)	-0.85***	-0.84***
	(-3.28)	(-3.37)

Panel B. Post-Event Months [+2:+12]		
	Performance Difference: Post-Event minus Pre-Event, in %	
	4 Factor Alpha	5 Factor
Intercept	-0.27	-0.27
	(-1.24)	(-1.24)
Young Manager (<=45)	-0.02	-0.07
	(-0.08)	(-0.32)

Table 4: Abnormal Tracking Errors around Fund Managers' Parental Deaths

This table examines the abnormal tracking errors of mutual funds around fund managers' parental death events. Abnormal tracking error is the difference between a bereaved fund's tracking error and the average tracking error of all funds with the same investment objective. Tracking error of a fund is calculated as the volatility of fund daily returns in excess of the volatility of average daily returns of all funds with the same investment objective. These abnormal tracking errors are calculated over three exclusive four-month windows around fund manager's parental death: Pre-Event months [-6:-3], Event months [-2:+1], and Post-Event months [+2:+12], where month 0 is the month of the parental death. Panel A reports the abnormal tracking errors for Pre-Event months and Event months, respectively, as well as the difference. Panel B reports the corresponding abnormal tracking errors for Post-Event months. The *t*-statistics for the differences are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Event Months [-2:+1]

	Abnormal Tracking Error
Pre-Event [-6:-3]	0.08%
Event [-2:+1]	-0.11%
Difference	-0.18%***
	(-3.39)

Panel B. Post-Event Months [+2:+12]

	Abnormal Tracking Error
Pre-Event [-6:-3]	0.08%
Post-Event [+2:+12]	-0.31%
Difference	-0.39%***
	(-4.43)

Table 5: Portfolio Stock Sizes around Fund Managers' Parental Deaths

This table examines the fraction of fund portfolios allocated to large-cap and small-cap stocks around fund managers' parental death events. "Large" stocks are defined as stocks in the largest monthly quartile of market capitalizations, while "Small" stocks are stocks in the second quartile of market cap. The fractions are calculated for two separate fund holdings reports: the last report at or before month (-3) prior to the parental death event, and the first report at or after month (+3) after the event (month 0). Panel A presents the aggregate fraction of small and large stocks in the portfolio, respectively. Panel B reports the total portfolio weights of small and large stocks, respectively. These numbers are calculated for the last holding in the Pre-Event months (-9:-3) and the first holdings report in the Post-Event months (+3:+9). The *t*-statistics for the differences are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Equal-Weighted Fractions (Number of Firms)

	Small Stocks	Large Stocks
Pre-Event [-9:-3]	16.31%	79.20%
Post-Event [+3:+9]	15.61%	80.05%
Difference	-0.70%*	0.85%**
	(-1.89)	(2.10)

Panel B. Value-Weighted Fractions (Portfolio Weights)

	Small Stocks	Large Stocks
Pre-Event [-9:-3]	13.82%	83.73%
Post-Event [+3:+9]	13.18%	84.40%
Difference	-0.62%*	0.67%*
	(-1.78)	(1.82)

Table 6: Portfolio Turnover around Fund Managers' Parental Deaths

This table examines the fraction of fund portfolios being turned over around fund managers' parental death events. Turnover is calculated as the sum of absolute changes in portfolio weights for all stocks in each investor's portfolio, divided by two. We use 6-month windows to capture funds that report at semi-annual frequency. The event window is the 6-month [–2:+3] window around the event. For this window, turnover is measured using changes in portfolio holdings from the last available report prior to the window (i.e., in the [-8:-3] window) to the last available report during the [-2:+3] event window. The pre-event and post-event turnover in calculated in a similar manner. Panel A reports the turnover rates for the pre-event and event windows as well as their difference. Panel B reports the corresponding measures for the post-event window). The *t*-statistics for the mean differences are in parentheses; the p-values for the median differences are in square brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Event Months [-2:+3]		
	Mean	Median
Pre-Event Turnover [-14:-9] to [-8:-3]	40.53%	37.89%
Event Turnover [-8:-3] to [-2:+3]	32.20%	30.18%
	-8.33%***	-7.10%***
	(-9.51)	[<0.001]

Panel B. Post-Event Months [+4:+9]		
	Mean	Mean
Pre-Event Turnover [-14:-9] to [-8:-3]	40.53%	37.89%
Post-Event Turnover [-2:+3] to [+4:+9]	33.91%	32.07%
Difference	-6.62%***	-6.55%***
	(-7.21)	[<0.001]

Table 7: Return Gap around Fund Managers' Parental Deaths

This table examines the return "gap" around fund managers' parental death events. Return gap is calculated as the difference between the fund's actual return and its hypothetical return calculated using the most recently available reported portfolio holdings The *t*-statistics for the differences are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Event Months [-2,+1]	
Pre-Event [-6,-3]	-0.31%
Event [-2,+1]	-0.38%
Difference	-0.07%
	(-2.27)

Panel B. Post-Event Months [+2,+5]	
Pre-Event [-6,-3]	-0.31%
Post-Event [+2:+5]	-0.35%
Difference	-0.05%
	(-1.48)

Panel C. Post-Event Months [+6,+12]	
Pre-Event [-6,-3]	-0.31%
Post-Event [+6:+12]	-0.34%
Difference	-0.03%
	(-1.00)

Table 8: Fama-Macbeth Regressions of Stock Elimination

This table examines the probability that a portfolio stock is removed from the portfolio. The sample includes all stocks in each fund's reported holdings at the end of quarter *t*-1. The dependent variable (*Elimination*) is an indicator variable that takes the value of 1 if the stock is not included in the fund's reported holdings at the end of quarter *t*. The independent variables include stock return in quarter *t* (*Stock Return)*, an indicator variable that takes the value of 1 if that stock return is negative (*Negative Return Indicator*), an indicator variable for fund-quarters that begin within 1 year since a fund manager's parental death (*Event Indicator*), their interactions, and (logged) market capitalization at the beginning of quarter *t*. We estimate quarterly regressions of elimination decision across all funds, and report the time-series averages of the coefficients. The associated *t*-statistics are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	Prob(*Elimination*)	
	(1)	(2)
Stock Return		0.073***
		(12.01)
Negative Return Indicator	0.038***	0.000
	(17.33)	(0.06)
Stock Return × Negative Return Indicator		-0.466***
		(-31.95)
Event Indicator	0.021**	0.012
	(2.32)	(1.47)
Event Indicator × Stock Return		0.072*
		(1.96)
Event Indicator × Negative Return Indicator	0.016**	0.013**
	(2.41)	(2.00)
*Event Indicator × Stock Return * Negative Return Indicator*		-0.155***
		(-2.93)
Log (Market Cap)	-0.008***	-0.004***
	(-12.85)	(-8.24)
Number of Quarters	95	95
Average R^2	0.006	0.013
Average Number of Observations	394,512	394,512

Figure 1: Cumulative Excess Fund Returns around Fund Managers' Parental Deaths

This figure displays the cumulative excess returns of mutual funds around fund managers' parental death events (i.e., month 0). Monthly fund returns are first benchmarked against Carhart (1997) four-factor model and Pastor and Stambaugh (2003) five-factor model to obtain alphas. These alphas are then benchmarked against funds with the same investment objective.

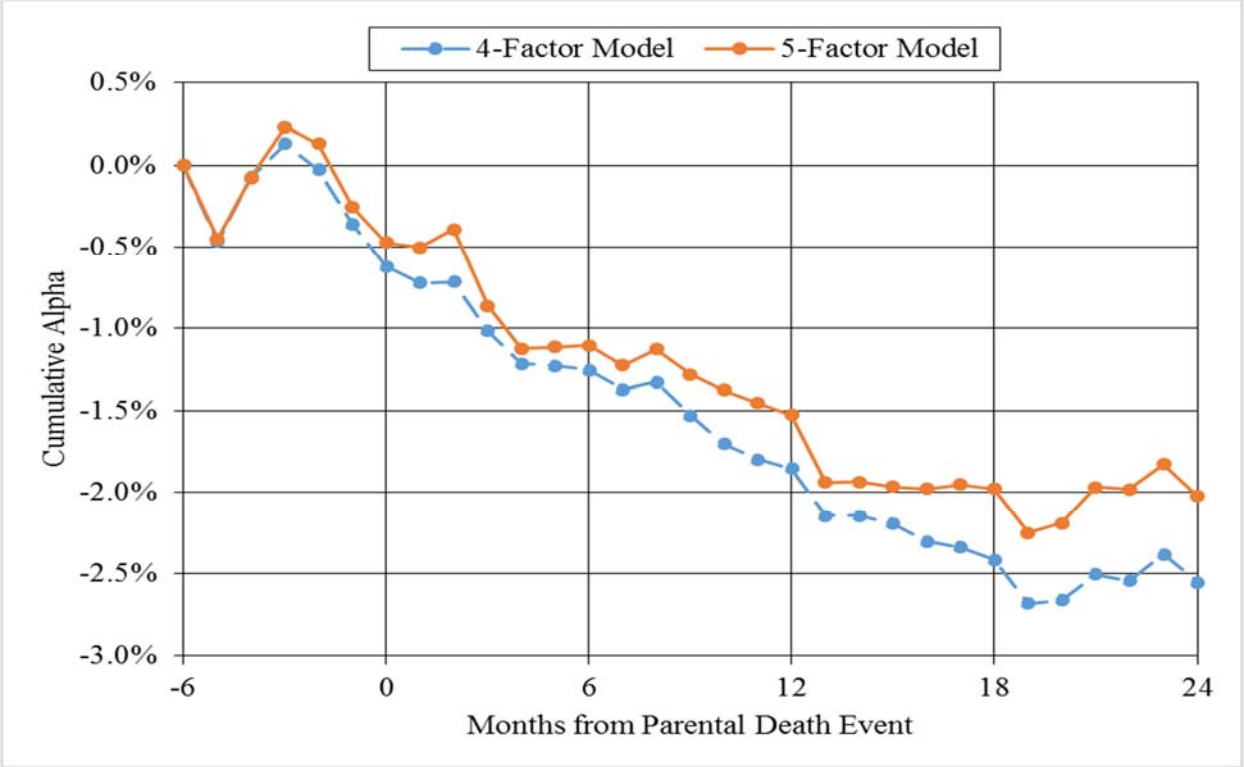
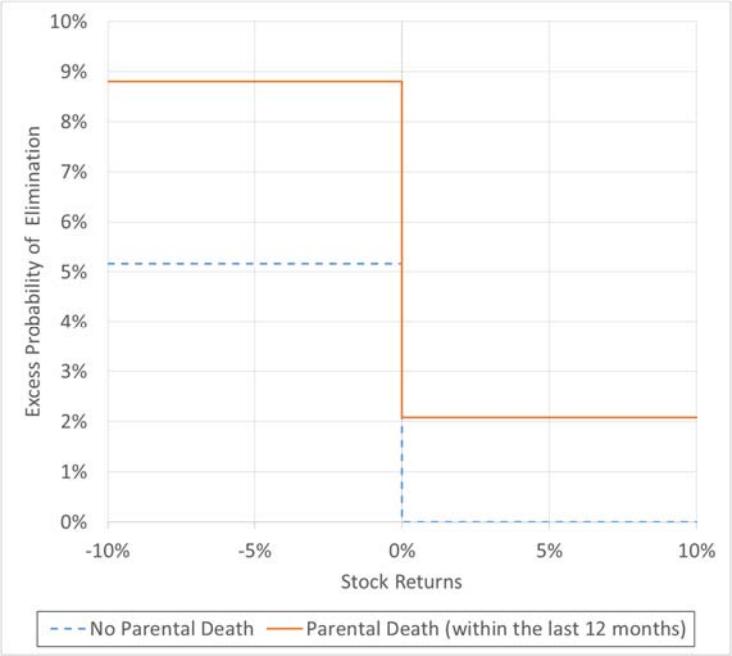


Figure 2: Stock Elimination and Stock Return

This figure depicts the parameter estimates from regressions predicting the probability that a portfolio stock is eliminated from the portfolio, as reported in Table 8. Panel A illustrates the estimates from Model 1 of Table 8 for two separate samples: fund managers experiencing parental death in the last 12 months, and the remaining funds. Panel B corresponds to the estimates from Model 2 of Table 8. Both panels report the excess probability of elimination after controlling for firm size.

Panel A: Estimates from Model 1 of Table 8



Panel B: Estimates from Model 2 of Table 8