Financial Literacy and the Early Withdrawal of Funds From Retirement Accounts

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This study examined the association between financial literacy and the decision to withdraw funds from different types of retirement accounts before retirement. Data from the 2012 and 2015 National Financial Capability Study were used to investigate if financial literacy may potentially influence the decision to dissave from funds already set aside for retirement. The results showed that lower financial literacy appeared to increase the likelihood to retract funds saved for retirement, across different types of retirement accounts. The importance of financial literacy persisted, even after controlling for income shocks to personal finances, the availability of precautionary savings as an alternative source of funding, and an extensive set of demographic variables.

Keywords: early withdrawals, financial behavior, financial literacy, retirement accounts

In the United States, concerns about future funding for Social Security and the decline in the use of pension benefits for retirement have placed more responsibility on employees to plan and save for their retirement. Currently, most retirement savings accumulate in tax-deferred accounts that include individual retirement accounts (IRAs) and employer-sponsored plans (ESPs), both of which have withdrawal restrictions before retirement age (59.5 years old) (Internal Revenue Service [IRS], 2020). A key condition for successful use of tax-deferred accounts, is keeping money placed in an account, reserved for retirement.

Preretirement withdrawals from retirement accounts appear to have increased over the years (Argento et al., 2015). These withdrawals usually come with a 10% penalty in addition to taxes on the amount withdrawn (IRS, 2020), unless associated with a job change, job loss, or allowable economic hardship. Hardship withdrawals are a specific type of withdrawals that require proof of economic hardship. The adverse economic effects of COVID-19 on households are likely to increase the number of withdrawals and the potential loss of future retirement income for households (Nagle, 2020), although the CARES act relaxes some of these restrictions and offers more exceptions (Deer, 2020).

Prior studies explaining the decision for early withdrawal of funds from retirement accounts implicitly assume that individuals are financially literate and can appropriately evaluate the costs and benefits of the decision to withdraw funds early (Amromin & Smith, 2003; Burman et al., 1999). Empirical studies of financial literacy, however, find overwhelming evidence of financial illiteracy among adults in financial decision-making, and consequently most adults may not be fully prepared to evaluate their options when making decisions about many financial matters (Kaiser & Menkhoff, 2017; Lusardi & Mitchell, 2014). The concern with financial literacy has particular salience to retirement decisions as they involve long-term planning and future-oriented thinking, and financial literacy may enhance financial planning, saving, and household wealth (van Rooij et al., 2012).

In this study, we empirically test the hypothesis of whether financial literacy is likely to influence withdrawal of funds from retirement accounts in the United States, as we are not aware of prior research in financial literacy that has investigated this important relationship. The household data for the study comes from the National Financial Capability Study (NFCS) among U.S. adults. The empirical model we specify is similar in form to the ones used in prior studies of

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financial literacy with NFCS data, especially those related to retirement such as saving, investing, or wealth building (Allgood & Walstad, 2016; Babiarz & Robb, 2014; Henager & Cude, 2016). We estimate the probit model using two separate years of NFCS data to explain the early withdrawal decision while controlling for the influence of financial literacy and other variables such as income shocks, precautionary savings, and demographics. We find that those adults with less financial literacy appear to be significantly more likely to withdraw funds early from retirement accounts. The findings have implications for financial counseling and planning with adults about the use of retirement funds.

Literature Review and Hypothesis

The decision to make an early withdrawal of funds from a retirement account is a complex one that requires weighing the costs and benefits. With early withdrawals for which hardship exclusions do not apply, the withdrawal is taxed at the current tax rate and a 10% penalty is charged on the amount withdrawn (IRS, 2020). In this case, the opportunity cost of early withdrawals is the amount withdrawn plus the penalty multiplied by $(1 + r)^N$, where "r" is the rate of return on the retirement account investments and "N" is the number of years until retirement. Whether this cost is greater or lesser than the benefits from using early withdrawal of funds to meet an immediate financial shortfall depends on the circumstances of the decision. For example, if other viable sources of cheaper funding than retirement funds are available to meet a pressing financial need or obligation, then the withdrawal decision is likely to be a financial mistake, but if these conditions do not hold, the use of early withdrawal of funds may be justified.

Several studies in economics have analyzed the decision to make an early withdrawal of funds from retirement accounts. However, most of such studies implicitly assume that households are financially literate and capable of making a withdrawal decision. Burman et al. (1999) evaluates the withdrawal decision assuming that households can compare current and expected future tax rates. In this analysis, if the expected marginal tax rate at retirement is greater than the cost associated with the current marginal tax rate and the 10% penalty (if applicable), then the household is more likely to take out funds as opposed to rolling them over. Amromin and Smith (2003) assume that households try to smooth the marginal utility of consumption across different stages of life and time periods, thus setting aside

funds for retirement in the present to ensure consumption smoothing in the future. From this perspective, households are likely to withdraw funds from retirement accounts in response to income and demographic shocks if borrowing from other sources is too limited or costly. To do the calculations suggested by both studies would be challenging as adults would likely have to compute the compounded loss to retirement savings, evaluate alternative sources of funding, and compare the costs and benefits associated with withdrawing funds.

These implicit assumptions are in sharp contrast with the current research on financial literacy. One financial literacy study shows that when adults in the United States are asked simple questions on savings, inflation and risk diversification, only about one-third of the adult respondents from different age groups can answer the questions correctly (Lusardi & Mitchell, 2011). From a research perspective, this concern has resulted in the recognition that financial literacy is an important variable to be considered in empirical studies on financial behaviors, including retirement (Allgood & Walstad, 2016; Henager & Cude, 2016; Kimiyagahlam et al., 2019; Lusardi & Mitchell, 2017; van Rooij et al., 2012). What has not been studied in this line of research, however, is the effect of financial literacy on the early withdrawal decision. It is likely that those individuals with more financial literacy may be better able to evaluate the costs and benefits of an early withdrawal or are more able at acquiring and evaluating information on other financial options to withdrawing retirement funds.

This expectation about the likely effects of financial literacy on early withdrawals requires controlling for other influences that might explain the results. Some evidence in the research literature suggests that the financially literate are better able to deal with income shocks and are more likely to have precautionary savings (de Bassa Scheresberg, 2013; Kaiser & Menkhoff, 2017; Lusardi & Mitchell, 2014). The inclusion of variables controlling for precautionary savings ("rainy day" funds) or income shocks in our empirical model would be important for the analysis to assess the likely effects of having alternate sources of funding and experiencing unexpected income shocks relative to the likely effects of financial literacy on early withdrawals.

The hypothesis for the study is that adults who are more financially literate are less likely to receive income from

retirement accounts before retirement, either through a general withdrawal or a hardship withdrawal, after controlling for major demographic variables, negative income shocks, and access to precautionary savings. The support for this hypothesis comes from research on financial literacy as discussed in the introduction and literature review. Financial illiteracy is a known problem among adults and financial literacy appears to have positive influences on retirement planning (Lusardi & Mitchell, 2014). In addition, the early withdrawal of funds from retirement accounts, for whatever reason, is a complex financial decision for which the costs may not be easy to evaluate and the consequences may not be well considered. More financial literacy is likely to help adults weigh the costs and benefits when making a withdrawal decision.

Method

Data, Variables, and Sample Statistics

Data for the study came from the 2012 and 2015 administrations of the NFCS (FINRA Investor Education Foundation, 2021) that collected survey responses on the financial attitudes, financial behaviors, and financial literacy of a nationally representative samples of U.S. adults, ages 18–65 years or older. The survey's instruments in 2012 and 2015 are about the same, although some questions were added or deleted based on feedback from data users after each survey administration.

Table 1 lists and describes the variables used in the study. Most of the variables are demographic ones such as gender, age, highest level of education, household status, number of dependent children, employment status, and income. Other variables account for the financial condition or characteristics of a household, such as experiencing a large drop in income during the past 12 months, having unpaid health bills, having a student loan, and holding a mortgage. To control for the extraneous effect that the more financially literate are more likely to have precautionary savings, a control variable indicating whether the respondent has funds to cover 3 months of expenses is used in the model ("RainyDay"). The financial literacy score is based on the correct responses to five financial literacy items administered on the 2012 and 2015 surveys (M6–M10) that have been widely used in research studies (Hastings et al., 2013; Lusardi & Mitchell, 2014).

General information about early withdrawals was obtained from the same item (D20_3) on the 2012 and 2015 NFCS surveys. The item asked whether over the past 12 months

income was received due to withdrawing from a retirement account ("Withdrawal_general"). Information on hardship withdrawals was obtained using the same item (C11) in the two surveys ("Withdrawal_hardship"). No information was available in the surveys on whether a 10% tax penalty was applied to a withdrawal.

Several adjustments were made to the data from each year. First, the analysis only used respondents who were less than 55 years of age. The reason for the adjustment is that no penalties for withdrawals are applied after the age of 59.5 years old and ages in the NFCS are reported in ranges. The age of 59.5 fell within the 55–64 age range, so respondents above 55 years of age were excluded from the analysis. Second, retirement plans for IRAs and ESPs have different rules and conditions regarding withdrawals. With an ESP account, when leaving a job, a worker has the option to withdraw retirement funds from the account without penalty or to transfer those funds to another retirement account. In this case, workers who change jobs with ESPs may simply withdraw funds, because they have the option to do so. To account for the differences in rules for withdrawing funds from IRAs and ESPs, the respondents were grouped into three samples based on the type of retirement accounts that they reported (IRA only, ESP only, or both IRA and ESP).

Table 2 presents the sample data and weighted averages for all variables used for the analysis. The bottom row reports the number of observations in each type of account by year. Of particular note among the variables are the ones for withdrawals (general and hardship) and financial literacy. For adults with only IRAs and reporting receiving early withdrawal income, 17% report doing so in 2012, and 11% in 2015. Hardship withdrawals from IRAs only are 13% in 2012 and 11% 2015. For adults with only ESPs and obtaining early withdrawal income, 12% report them in 2012 and 10% in 2015. Only 4% of each ESP only sample report hardship withdrawals in both years. For adults with both an IRA and an ESP and taking out early withdrawals, 18% report them in 2012 and 19% in 2015, but about 17% report a hardship withdrawal in both years. The average financial literacy score for each sample is less than three points on the five-question literacy test.

Empirical Model

The dependent variable for withdrawals is binary, so probit models were used to analyze the data. The general forms of

TABLE 1. Description of Variables

Categories	Variables (with descriptions as necessary in parentheses)
Gender	Male, female
Age ranges	18–24; 25–34; 35–44; 45–54
Race	White, non-White
Education (highest level)	Educ_highschool (high school graduate or less); Educ_somecollege (some college education); Educ_collegeor+ (college graduate or postgraduate education)
Household status	Household_single; Household_married; Household_other (divorced, separated, or widower)
Dependent children (number)	Depend_child1; Depend_child2, Depend_child3; Depend_child4+ (4 or more dependent children)
Employment status	Employed_self (self-employed); Employed_full (full-time); Employed_part (part-time); Not_laborforce (not in the labor force and not looking for work); Unemployed
Income (annual in thousands or $k)	< $15k; $15–25k; $25–35k; $35–50k; $50–75k;$75–100k; $100–150k; >$150k
Financial shock	Income_drop (experienced a large income drop in the past 12 months)
Bills	Unpaid_healthbills (has unpaid health bills);
Loans	Student_loan (has student loans)
Housing	Mortgage (has a mortgage)
RainyDay	Household has rainy day funds that could cover expenses for 3 months
Financial Literacy	Fin_lit_score (score on big 5 financial literacy questions)
Withdrawal [general or hardship]	Withdrawal_general (obtained income through an early withdrawal from retirement accounts in the past 12 months). Withdrawal_hardship (obtained an early withdrawal from retirement accounts in the past 12 months for *hardship* reasons)

the probit model estimated for the three samples for each year are:

$$Model : P(Withdrawal = 1|\text{x}) = F\ (\text{x}\beta)$$

"Withdrawal" is a dummy variable indicating whether the respondent obtained income during the past 12 months from an early withdrawal from retirement accounts. Withdrawals were analyzed in two different ways, either the household generally reported receiving income through withdrawals from retirement accounts (*Withdrawal_general*) or a *hardship* withdrawal (see Tables 1 and 2). In both models, "*F*" is the normal cumulative distribution function (CDF) for the probit model, and "*β*" is the vector of coefficients to be estimated. In both models, "**x**" includes the financial literacy score, demographic variables (such as age, gender, race, income level, employment status, education level, and marital status), and other control variables on the financial state of the household.

It should also be noted that the effects of financial literacy are likely to be better estimated with the IRA only sample than the ESP sample, or with the IRA and ESP sample compared with the ESP only sample. The rationale for these expected differences is that, unlike an IRA, the withdrawal of funds from an ESP is permitted if there is a job loss or job separation. This development is more likely to be an exogenous event and less likely to be a planned strategy for retirement affected by financial literacy.

Results for Early Withdrawals
General Withdrawals
Table 3 shows the marginal effects on the likelihood to withdraw retirement funds early. The results for both years show that financial literacy is negative and significant in explaining the likelihood of receiving retirement income early through withdrawals from retirement accounts, for all relevant estimations in both years. For both the IRA only samples and the IRA and ESP samples, the results for 2012 and 2015 show that the marginal effect from answering one more question correctly on the five-item financial literacy assessment appears to reduce the likelihood of receiving early withdrawal income by anywhere from two to four percentage points.

As expected, financial literacy does not appear to have much of an influence on receiving income through early general

TABLE 2. Weighted Averages for Variables

Variables	IRA only 2012	IRA only 2015	ESP only 2012	ESP only 2015	ESP and IRA 2012	ESP and IRA 2015
Fin_lit_score	3.22	2.93	3.01	2.87	3.45	3.27
RainyDay	.5476	.5644	.3287	.3975	.6760	.7249
Income_drop	.3442	.2795	.2831	.2128	.2755	.2539
Unpaid_health	.2120	.1789	.3262	.2548	.2116	.2295
Student_loan	.2614	.2747	.2928	.3548	.2862	.3552
Has_mortgage	.3689	.3129	.4702	.4649	.6559	.6343
Male	.5473	.5666	.4749	.4768	.5917	.5766
Female	.4527	.4334	.5251	.5232	.4083	.4234
18–24	.1592	.1993	.0754	.0812	.0624	.0656
25–34	.2572	.2494	.2971	.3121	.2585	.2683
35–44	.2283	.2068	.3001	.3026	.2856	.3146
45–54	.3552	.3444	.3274	.3040	.3935	.3515
White	.6332	.5809	.6165	.6316	.6086	.6379
Non-White	.3668	.4191	.3835	.3684	.3914	.3621
Educ_highschool	.2813	.2383	.3136	.2210	.1614	.1395
Educ_somecollege	.3487	.2781	.3883	.3213	.2839	.2271
Educ_collegeor+	.3699	.4836	.2981	.4577	.5546	.6334
Household_single	.4704	.4898	.2672	.2816	.2376	.2445
Household_other	.1208	.1047	.1074	.0965	.0702	.0658
Household_married	.4088	.4055	.6254	.6218	.6921	.6896
Depend_child1	.1754	.1676	.2296	.2153	.2335	.2397
Depend_child2	.1294	.1538	.2129	.2258	.2490	.2498
Depend_child3	.0512	.0464	.0966	.0990	.0809	.0876
Depend_child4+	.0281	.0325	.0543	.0489	.0429	.0416
Nodepend_child	.6159	.5996	.4067	.4109	.3937	.3813
Employed_Self	.2114	.1645	.0392	.0374	.0950	.0889
Employed_part	.1008	.1614	.0834	.0789	.0698	.0689
Not_laborforce	.1900	.1775	.1624	.1595	.1052	.1052
Unemployed	.0831	.0780	.0490	.0342	.0397	.0221
Employed_full	.4147	.4186	.6660	.6900	.6904	.7147
<$15K	.0985	.1156	.0323	.0246	.0214	.0152
$15K–$25K	.0999	.0971	.0726	.0608	.0269	.0280
$25K–$35K	.1065	.1242	.1132	.0994	.0464	.0480
$35K–$50K	.1718	.1518	.1783	.1789	.0892	.1043
$50K–$75K	.2173	.2225	.2710	.2747	.2133	.2179
$75K–$100K	.1467	.1185	.1607	.1696	.2079	.2052
$100K–$150K	.1112	.1319	.1228	.1401	.2267	.2459
>$150K	.0481	.0384	.0490	.0519	.1682	.1353
Withdrawal_general	.1672	.1111	.1177	.0997	.1789	.1929
Withdrawal_hardship	.1329	.1091	.0427	.0374	.1699	.1749
Observations	642	712	4882	5229	2820	3878

TABLE 3. Probit Marginal Effects for General Withdrawals

	IRA only		ESP only		ESP and IRA	
	2012	2015	2012	2015	2012	2015
Fin_lit_score	−0.0277**	−0.0225***	−0.0037	−0.0142***	−0.0252***	−0.0444***
	(0.011)	(0.007)	(0.004)	(0.004)	(0.007)	(0.005)
Rainy_Day	−0.1101***	0.0159	−0.0406***	−0.0217**	−0.0260	−0.0337**
	(0.033)	(0.022)	(0.011)	(0.009)	(0.018)	(0.017)
Income_drop	0.0656*	0.0666**	0.0423***	0.0915***	0.2025***	0.1619***
	(0.036)	(0.030)	(0.013)	(0.014)	(0.026)	(0.022)
Unpaid_healthbills	0.0544	0.0012	0.0868***	0.0636***	0.1301***	0.1739***
	(0.040)	(0.029)	(0.014)	(0.013)	(0.027)	(0.024)
Student_loan	0.0555	0.0435	0.0021	0.0300***	0.0287	0.0523***
	(0.039)	(0.029)	(0.012)	(0.010)	(0.021)	(0.017)
Has_mortgage	0.0380	0.0363	0.0072	0.0037	−0.0024	0.0078
	(0.035)	(0.027)	(0.012)	(0.010)	(0.018)	(0.016)
Male	0.0679**	0.0332	−0.0041	0.0107	0.0493***	0.0120
	(0.030)	(0.022)	(0.012)	(0.010)	(0.017)	(0.015)
18–24	0.0191	0.1401**	0.0089	0.0095	0.1735***	0.0624
	(0.053)	(0.063)	(0.025)	(0.021)	(0.063)	(0.041)
25–34	0.1169**	0.1140**	0.0012	0.0223*	0.0607**	0.0395*
	(0.056)	(0.050)	(0.015)	(0.013)	(0.025)	(0.021)
35–44	0.1188*	0.0486	0.0236*	0.0023	0.0086	−0.0120
	(0.053)	(0.042)	(0.014)	(0.012)	(0.021)	(0.018)
White	−0.0061	−0.0094	−0.0205*	−0.0007	−0.0438*	−0.0662***
	(0.030)	(0.021)	(0.012)	(0.010)	(0.018)	(0.016)
Educ_high school	0.1400***	0.0108	−0.0020	0.0020	0.0146	0.0227
	(0.054)	(0.030)	(0.015)	(0.013)	(0.025)	(0.023)
Ed_somecollege	0.0801**	0.0130	−0.0005	0.0211*	−0.0196	−0.0124
	(0.041)	(0.028)	(0.013)	(0.011)	(0.020)	(0.018)
Household_single	0.0790**	−0.0907**	0.0123	0.0135	−0.0211	−0.0318*
	(0.038)	(0.031)	(0.015)	(0.013)	(0.023)	(0.018)
Household_other	0.1032	0.0366	0.0118	0.0049	0.0156	−0.0324
	(0.073)	(0.044)	(0.017)	(0.016)	(0.032)	(0.027)
Depen_child1	0.0397	0.0180	0.0055	0.0143	0.0507**	0.0355*
	(0.046)	(0.032)	(0.014)	(0.013)	(0.025)	(0.021)
Depen_child2	0.0366	0.0306	0.0041	0.0183	−0.0194	0.0481*
	(0.052)	(0.037)	(0.016)	(0.014)	(0.022)	(0.022)
Depen_child3	−0.0773**	0.0127	0.0174	0.0128	0.0113	0.0217
	(0.029)	(0.051)	(0.021)	(0.018)	(0.035)	(0.031)
Depen_child4+	0.0240	−0.0439	0.0257	0.0066	0.0669	0.0264
	(0.097)	(0.044)	(0.026)	(0.023)	(0.055)	(0.038)
Employed_part	0.1522*	−0.0048	−0.0068	0.0304	−0.0553**	−0.0085
	(0.080)	(0.030)	(0.019)	(0.019)	(0.025)	(0.028)

TABLE 3. Probit Marginal Effects for General Withdrawals *(Continued)*

	IRA only		ESP only		ESP and IRA	
Employed_self	0.0242	−0.0195	0.0215	−0.0064	−0.0247	0.0112
	(0.042)	(0.027)	(0.030)	(0.021)	(0.024)	(0.028)
Not_laborforce	−0.0190	0.0184	−0.0206	−0.0310**	−0.0220	−0.0257
	(0.041)	(0.037)	(0.016)	(0.012)	(0.026)	(0.023)
Unemployed	0.0704	0.0574	0.0052	0.0178	−0.0206	0.0405
	(0.075)	(0.059)	(0.025)	(0.027)	(0.038)	(0.053)
<$15k	0.0448	−0.0673***	−0.0084	−0.0106	0.0103	0.0314
	(0.069)	(0.021)	(0.031)	(0.028)	(0.068)	(0.064)
$15k–$25k	0.0515	0.0413	−0.0364*	−0.0385***	0.0598	0.0312
	(0.069)	(0.054)	(0.019)	(0.014)	(0.052)	(0.052)
$25k–$35k	−0.0513	−0.0175	−0.0297*	−0.0255*	−0.0350	0.0650
	(0.037)	(0.033)	(0.017)	(0.014)	(0.033)	(0.047)
$35k–$50k	−0.0563	0.0106	−0.0047	−0.0274**	0.0083	0.0238
(0.037)	(0.037)	(0.015)	(0.012)	(0.032)	(0.031)	
$75k–$100k	0.0858	−0.0170	−0.0078	0.0123	−0.0177	0.0186
	(0.065)	(0.029)	(0.016)	(0.014)	(0.025)	(0.021)
$100k–$150k	0.0410	−0.0299	0.0489**	0.0052	−0.0085	0.0011
	(0.064)	(0.029)	(0.021)	(0.016)	(0.025)	(0.021)
>$150k	0.1754	0.0140	0.0049	0.0378	0.0388	0.0370
	(0.120)	(0.059)	(0.027)	(0.028)	(0.033)	(0.029)
Psuedo R ^{2}	0.2476	0.1538	0.0505	0.0765	0.2438	0.2990
Observations	642	712	4,882	5,229	2,820	3,878

Note. IRA = individual retirement accounts; ESP = employer-sponsored plans. Standard errors in parentheses.
Reference categories include Female, 45–54, Non-White, Educ_College+, Household_married, Nodepend_Child,
Employed_full, and 50K–75K.
*$p < .1.$ **$p < .05.$ ***$p < .01.$

withdrawals from ESP accounts. The effects of financial literacy appear to be mixed by sample year: insignificant in 2012 and significant in 2015. The marginal effects for either year also are substantially smaller (−0.004 to −0.014) compared with those in the IRA-related samples (−0.023 to −0.044).

Further investigations of the results were conducted using mediation analysis to assess whether financial literacy was affecting withdrawals directly, or indirectly by influencing households to have rainy day funds. The mediation analysis used the KHB method described in Kohler et al. (2011). The detailed results of the mediation analysis for each sample are not reported for brevity, but the basic finding is that the pathway between financial literacy and receiving early withdrawal income is overwhelmingly direct. The variable for having rainy day funds accounted for only small percentages of the total effect of financial literacy in all model estimations.

Adults who report experiencing a drop in income in the past 12 months appear to be significantly more likely to retract funds previously set aside for retirement for all six samples. Having unpaid health bills appears to increase the likelihood of withdrawing funds from retirement accounts in most samples. For the majority of the samples, the results also show that those with access to rainy day funds are less likely to dip into their retirement funds early.

No consistent findings are evident in the results for the demographic variables. In some samples but not others, whites appear to be significantly less likely than individuals from other races to withdraw early. In addition, in some samples but not others, younger individuals, especially those in the 25–34 year age range, appear to be significantly more likely to withdraw early when compared to those in the 45–54 year age range.

Hardship Withdrawals

Our hypothesis was also tested with the adults in each sample who reported taking out hardship withdrawals for each type of account in each of the two years for the analysis. As previously explained, hardship withdrawals require proof of economic hardship. With hardship withdrawals the 10% penalty for the early withdrawal of retirement funds is waived in most cases. In other respects, the cost is similar for both general or hardship withdrawals, as both are early withdrawals that reduce the accumulated funds saved for retirement and thus can adversely affect financial support during retirement. Therefore, our hypothesis of the negative relationship between more financial literacy and the early withdrawals of funds from retirement accounts would apply to both to general or hardship withdrawals.

Table 4 reports the estimated results for a hardship withdrawal. As expected, the results indicate that individuals with more financial literacy appear less likely to withdraw funds early from retirement accounts for hardship reasons. These results are statistically significant for all samples across both years. In addition, the mediation analysis that was conducted, but not reported for brevity, showed that the effect of financial literacy was almost fully direct.

The findings from the probit analysis of financial literacy on hardship withdrawals also provide further evidence that the characteristics of the sample matters. Financial literacy appears to have more effect on the results in the two IRA-related samples than in the ESP only samples, where the withdrawal decision may be due to job change. In the IRA only and IRA and ESP samples a one-point increase in the financial literacy score reduces the likelihood of a hardship withdrawal by about two to four percentage points depending on the sample and year, but the effect in the ESP samples is less than half a percentage point.

Discussion, Limitations, and Implications

Discussion

Across all samples and across both years, even after including the various financial and demographic variables as controls, financial literacy appears to dampen early withdrawals in the IRA-related samples. These results are in alignment with findings from studies on retirement planning and savings. Prior studies show financial literacy to be positively linked to saving for retirement (Kaiser & Menkhoff, 2017; Lusardi & Mitchell, 2014). The results from this study indicate that the converse also holds: financial literacy appears to be negatively related to dissaving from retirement accounts.

A few other findings from several financial variables in the estimations are noteworthy as they show that changes in income or financial circumstances are likely to increase the likelihood of withdrawals, consistent with results reported in prior studies (Amromin & Smith, 2003; Argento et al., 2015). For example, adults who report a large drop in income are more likely to withdraw funds early. In addition, in most samples, having unpaid health bills also appears to be a significant variable affecting withdrawals. Furthermore, across both types of withdrawals, and in about half of the samples, having student loans seems to increase the likelihood of withdrawals.

Limitations

Any empirical study will have data limitations. This study is no exception and four of them are worth noting. The first limitation is in relation to the ESP samples. Participation in ESP accounts depends on whether employers offer these types of plans in the workplace. Further, in case of job loss or job change, participants have the option to cash out the ESP funds without penalty or to transfer them to another account. When individuals gain access to funds through job loss or job change, this may cause them to withdraw the funds early. The second limitation is the lack of information on hardship withdrawals. Hardship withdrawals are not guaranteed across all ESPs. Unfortunately, this dataset does not provide information on whether all employers offer hardship withdrawals as options. Relatedly, it is unknown from the data why the funds are withdrawn, and whether or not the 10% penalty applied. A third limitation is not knowing information about household consumption and

TABLE 4. Probit Marginal Effects for Hardship Withdrawals

	IRA only		ESP only		ESP and IRA	
	2012	2015	2012	2015	2012	2015
Fin_lit_score	−0.0171*	−0.0191***	−0.0047**	−0.0031*	−0.0252***	−0.0386***
	(0.010)	(0.007)	(0.002)	(0.002)	(0.007)	(0.004)
Rainy_Day	−0.0998***	0.0040	−0.0071	0.0047	−0.0260	0.0118
	(0.028)	(0.015)	(0.007)	(0.005)	(0.018)	(0.011)
Income_drop	0.0925***	0.0843***	0.0315***	0.0533***	0.2025***	0.1546***
	(0.030)	(0.032)	(0.008)	(0.009)	(0.026)	(0.019)
Unpaid_healthbills	0.0321	0.0560**	0.0328***	0.0390***	0.1301***	0.1982***
	(0.028)	(0.028)	(0.008)	(0.008)	(0.027)	(0.024)
Student_loan	0.0899**	0.0362*	0.0045	0.0189***	0.0287	0.0569***
	(0.036)	(0.022)	(0.007)	(0.005)	(0.021)	(0.013)
Has_mortgage	0.0078	0.0002	0.0114	0.0107**	−0.0024	0.0205*
	(0.025)	(0.015)	(0.007)	(0.005)	(0.018)	(0.012)
Male	0.0188	0.0289**	0.0070	0.0069	0.0493***	0.0463***
	(0.021)	(0.014)	(0.007)	(0.005)	(0.017)	(0.011)
18–24	0.0031	0.1293**	0.0024	−0.0073	0.1735***	0.0734*
	(0.037)	(0.063)	(0.014)	(0.007)	(0.063)	(0.038)
25–34	−0.0288	0.0854*	−0.0053	−0.0034	0.0607**	0.0520***
	(0.028)	(0.045)	(0.008)	(0.006)	(0.025)	(0.020)
35–44	0.0264	0.0301	0.0012	0.0046	0.0086	0.0072
	(0.033)	(0.032)	(0.007)	(0.006)	(0.021)	(0.015)
White	0.0039	−0.0311*	−0.0064	−0.0146***	−0.0438**	−0.0449***
	(0.023)	(0.016)	(0.007)	(0.005)	(0.018)	(0.013)
Educ_high school	0.0335	−0.0056	−0.0090	−0.0019	0.0146	−0.0186
	(0.035)	(0.019)	(0.007)	(0.006)	(0.025)	(0.014)
Ed_somecollege	0.0092	0.0417	−0.0130**	0.0013	−0.0196	−0.0341***
	(0.028)	(0.026)	(0.006)	(0.005)	(0.020)	(0.012)
Household_single	0.0682**	−0.0731***	−0.0068	0.0098	−0.0211	−0.0130
	(0.032)	(0.023)	(0.008)	(0.007)	(0.023)	(0.014)
Household_other	0.0563	0.0092	0.0109	0.0105	0.0156	−0.0252
	(0.053)	(0.028)	(0.010)	(0.009)	(0.032)	(0.019)
Depen_child1	0.0632	0.0002	0.0091	−0.0019	0.0507**	0.0288*
	(0.040)	(0.021)	(0.009)	(0.006)	(0.025)	(0.017)
Depen_child2	0.1042*	0.0748*	0.0065	0.0042	−0.0194	0.0503**
	(0.058)	(0.039)	(0.010)	(0.006)	(0.022)	(0.020)
Depen_child3	0.0147	−0.0265*	0.0102	0.0017	0.0113	0.0322
	(0.056)	(0.015)	(0.012)	(0.008)	(0.035)	(0.024)
Depen_child4+	0.3631*	−0.0302*	0.0144	−0.0046	0.0669	0.0495*
	(0.177)	(0.013)	(0.015)	(0.010)	(0.055)	(0.030)

(Continued)

TABLE 4. Probit Marginal Effects for Hardship Withdrawals *(Continued)*

	IRA only		ESP only		ESP and IRA	
Employed_part	−0.0096	−0.0125	−0.0175*	0.0113	−0.0553*	0.0022
	(0.032)	(0.019)	(0.007)	(0.009)	(0.025)	(0.023)
Employed_self	0.0448	−0.0122	−0.0102	0.0124	−0.0247	0.0337
	(0.034)	(0.018)	(0.011)	(0.013)	(0.024)	(0.027)
Not_laborforce	−0.0465**	0.0132	−0.0132	−0.0098*	−0.0220	−0.0002
	(0.023)	(0.028)	(0.008)	(0.006)	(0.026)	(0.019)
Unemployed	−0.0337	−0.0287*	0.0133	−0.0083	−0.0206	0.1023
	(0.028)	(0.016)	(0.016)	(0.008)	(0.038)	(0.081)
<$15k	0.1116	−0.0442***	−0.0006	0.0233	0.0103	0.1297
	(0.079)	(0.012)	(0.018)	(0.022)	(0.068)	(0.083)
$15k–$25k	0.1126	0.0055	−0.0106	−0.0135**	0.0598	0.0439
	(0.071)	(0.032)	(0.009)	(0.006)	(0.052)	(0.042)
$25k–$35k	−0.0571***	−0.0102	0.0055	−0.0005	−0.0350	0.0479
	(0.021)	(0.022)	(0.013)	(0.008)	(0.033)	(0.041)
$35k–$50k	−0.0151	0.0198	0.0044	−0.0027	0.0083	0.0235
(0.032)	(0.030)	(0.009)	(0.006)	(0.032)	(0.024)	
$75k–$100k	0.0385	0.0420	−0.0081	0.0147	−0.0177	0.0407**
	(0.047)	(0.040)	(0.008)	(0.009)	(0.025)	(0.019)
$100k–$150k	0.0213	0.0060	0.0109	−0.0012	−0.0085	−0.0066
	(0.045)	(0.029)	(0.011)	(0.008)	(0.025)	(0.015)
>$150k	0.0079	0.0482	−0.0205**	0.0222	0.0388	0.0087
	(0.061)	(0.060)	(0.008)	(0.016)	(0.033)	(0.020)
Psuedo R ^{2}	0.2769	0.3227	0.0769	0.1486	0.4373	0.5111
Observations	642	712	4882	5229	2820	3878

Note. IRA = individual retirement accounts; ESP = employer-sponsored plans. Standard errors in parentheses. Reference categories include Female, 45–54, Non-White, Educ_College+, Household_married, Nodepend_Child, Employed_full, and 50K–75K.
*$p < .1$. **$p < .05$. ***$p < .01$.

aggregate wealth. Although we use income as a proxy in the study, income and wealth levels do not always match up. Further research with a richer data set will permit studies to overcome some of these limitations. The fourth limitation is a general one that applies to studies using cross-sectional data. The statistical results from this study are consistent with the hypothesis that individuals with more financial literacy are less likely to withdraw funds early from retirement accounts. Nevertheless, the statistical relationship that was identified may not be a causal one as other unobserved variables or selection factors not captured in the NFCS dataset or the analysis may have influenced the results.

Implications for Practitioners

This study investigates another likely effect of financial literacy on the mirror image of saving for retirement—dissaving from already amassed retirement funds. The results appear to show that financial literacy is a contributor to whether a worker makes an early withdrawal from a retirement account. Individuals with less financial literacy seem to be more likely to withdraw funds early from retirement accounts than individuals with more financial literacy. The influence of financial literacy appears to be present regardless of whether it is for general or hardship reasons, or the year in which the funds are withdrawn. The potential

influence of financial literacy is evident even after controlling for income shocks, precautionary savings, and an extensive set of demographic variables for households.

Our results, and the reported poor financial literacy in the United States, suggest that when advising or planning around early withdrawals, it is important to make sure that clients understand both the long- and short- term consequences of withdrawing funds early from retirement accounts. Early withdrawals may have severe costs for workers who are trying to build wealth for retirement. In the long term, loss of these retirement funds will reduce wealth accumulated to cover retirement expenses. In the short term, when retirement funds are withdrawn early, they may be subject to extra taxes and penalties.

Despite the costs associated with taking out funds early from retirement accounts, early withdrawals are not always financial mistakes. Households may have to withdraw funds early to meet unexpected expenses if no other sources of funding are readily available and if the benefits of withdrawals outweigh the costs. Overall, however, the cost and benefits of the early withdrawal decision will depend on the financial condition of the household. Our findings suggest that financial counselors, planners, and educators may help households better understand the costs and benefits associated with early withdrawals from retirement accounts. In doing so, they will be helping their clients evaluate the financial options and offer alternative solutions to a retirement withdrawal, should they be available or more beneficial.

Another takeaway of this study is that lack of financial literacy is a deficit that continues to be problematic, for yet another financial behavior— withdrawing funds that are set aside for retirement, early. One avenue through which financial literacy of adults could be enhanced is through the design and delivery of financial education programs (Wagner, 2019; Xu, 2018). Though the topic is beyond the scope of this study, participating in financial education programs is often positively linked to higher financial literacy (Kaiser & Menkhoff, 2017; Xiao & O'Neill, 2016). Adults also would likely benefit from more information and education from financial counselors and planners about the costs and consequences of dissaving from retirement accounts and how to better prepare for financial shocks to household income or expenses that may make it necessary to consider an early withdrawal from retirement accounts.

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